

Curriculum Vitae: Tapabrata Ray

CONTACT INFORMATION

Professor, School of Engineering and Technology,
University of New South Wales, Canberra
ACT 2600, Australia.

Tel: +61 2 51145201;
E-mail: t.ray@unsw.edu.au
WWW: MDO Webpage

- CAREER SUMMARY**
- I am a Professor with the *School of Engineering and Technology, University of New South Wales (UNSW), Canberra*. In 2005, I established the Multidisciplinary Design Optimization Group at UNSW Canberra. I obtained my B.Tech (Hons.) in 1990, M.Tech in 1993 and PhD in 1997 from *Indian Institute of Technology, Kharagpur, India*. Between 1995 and 2004, I held several positions with national research institutes in Singapore (*Information Technology Institute, Institute of High Performance Computing and Temasek Labs at National University of Singapore*). Since December 2004, I had been with UNSW, Canberra as an academic.
 - I have secured external competitive research grants close to **3.2M AUD**, internal grants worth **430K AUD in cash** and funding for **13 PhD Scholarships** including 2 Elite UNSW Scientia PhD Scholarships. I have authored well over **300** full-refereed publications (**120** in journals; **85** of them in **Q1**). As of January 2025, I have **h-index** of **43** with **7442** citations (SCOPUS) and **51** with **10460** citations in Google Scholar. Codes developed by the group have been used by numerous groups worldwide. The MDO Group at UNSW had been the sole optimization technology provider to the **Australian Space Research Program**. I have successfully supervised **31 HDR** (24 PhD and 7 Masters) students at UNSW to completion. Currently I am supervising **3 HDR** students (**2** as joint supervisor and **1** as secondary supervisor).
 - In terms of teaching, I had been the coordinator responsible for the design and delivery of all mechanical engineering design courses i.e. Mechanical Design-1 (Third Year UG) and Mechanical Design-2 (Fourth Year UG) for several years. In 2024, I have taken on delivery of Computational Problem Solving (First Year UG) course in 2024 and for several years I taught Computer Aided Design Tool CATIA to first year UG students. I have also taught Naval Architecture to UNSW undergraduates. Between 1997 and 1999, I have taught several courses in the field of Naval Architecture i.e. Ship Stability, Ship Maneuverability, Resistance and Propulsion and Ship Design to practitioners (Chief Engineers and Captains) at the *Singapore Maritime Academy*.
 - I served as a **Member of the College of Experts, Australian Research Council (2017-2019)**, as an **Associate Editor of IEEE Transactions on Evolutionary Computation (2017-2019)** and **IEEE Transactions on Cybernetics (2016-2019)** and Chair of the IEEE Computational Intelligence Society, ACT Chapter (2015-2016). Currently I serve as an **Associate Editor of ACM Transactions on Evolutionary Learning and Optimization (2020-)** and **Member of Journal Editorial Advisory Board for Engineering Optimization**, an Academic Expert Panel Member for International Association of the Engineering Modelling, Analysis and Simulation Community (NAFEMS) and as Member of the IEEE Task forces (Constrained Optimization; Data-Driven Evolutionary Optimization of Expensive Problems; Many Objective Optimization). I have also been the reviewer of major national and international grant schemes (ARC, EPSRC, Swedish Knowledge Foundation) etc. I have been appointed as a **Member of the FWO Review College (2025 – 2027)**.

RESEARCH INTERESTS

The primary research focus lies in the area of Multidisciplinary Optimization, which is at the crossroads of two fields i.e. Computational Intelligence and Design Optimization. The aim is to develop novel, practical and efficient algorithms for the solution of computationally expensive optimization problems. Such problems are commonly encountered in virtually all fields of science and engineering, such as in multidisciplinary design, biochemical pathway modeling, therapy planning, optimal management of natural resources etc. Specific research areas include constrained optimization, multi/many objective optimization, robust optimization, surrogate assisted optimization, multifidelity optimization and shape optimization.

ACADEMIC APPOINTMENTS

- **Professor**, School of Engineering and Technology, University of New South Wales, Canberra: *Jan 2017 to present*.
- **Acting Head of School**, School of Engineering and Technology, University of New South Wales, Canberra: *May 2023 to Dec 31, 2023*.

- **Associate Professor**, School of Engineering and Information Technology, University of New South Wales, Canberra: *Jan 2014 to 2016*.
- **Future Fellow, Australian Research Council**: *Aug 2012 to Aug 2016*.
- **Senior Lecturer**, School of Engineering and Information Technology, University of New South Wales, Canberra: *July 2007 to Aug 2012*.
- **Lecturer**, School of Aerospace, Civil and Mechanical Engineering, University of New South Wales, Canberra: *Dec 2004 to June 2007*.
- **Senior Research Scientist**, Temasek Laboratories, National University of Singapore, Singapore: *Aug 2001 to Nov 2004*.
- **i-HPC Fellow**, Institute of High Performance Computing, Singapore: *June 1999 to Aug 2001*.
- **Lecturer**, Singapore Maritime Academy, Singapore Polytechnic, Singapore: *June 1997 to June 1999*.
- **Member of Technical Staff**, Information Technology Institute, Singapore: *April 1996 to June 1997*.
- **Research Associate**, Department of Ocean Engineering & Naval Architecture, Indian Institute of Technology, Kharagpur, India: *Jan 1996 to March 1996*.

In addition to the above, I have held **Visiting Appointments** with National University of Singapore, University of Birmingham (UK) and University of Warwick (UK).

AWARDS

- **2019 Australia Japan Emerging Research Leaders Exchange Program**.
- **2017 Australia Japan Emerging Research Leaders Exchange Program**, Selected as one of 5 researchers across Australia (one among two in the area of ICT).
- **2014 Australia Japan Emerging Research Leaders Exchange Program**, Selected as one of 8 researchers across Australia (one among two in the area of ICT).
- **Future Fellowship**, 2012–2016, Australian Research Council.
- **Sir Anthony Mason Fellowship**, 2006, University of New South Wales (UNSW).
- **SEIT Supervision Excellence Award**, 2011, School of Engineering and Information Technology, UNSW, Canberra.
- **SEIT Award for Excellence in Research Publications**, 2012, School of Engineering and Information Technology, UNSW, Canberra.

EDUCATION

- **Graduate Certificate in University Learning and Teaching**, University of New South Wales, Australia, 2007.
- **Ph.D.**, Indian Institute of Technology, Kharagpur, India, June 1997.
- **M.Tech.**, Indian Institute of Technology, Kharagpur, India, August 1993.
- **B.Tech. (Hons.)**, Indian Institute of Technology, Kharagpur, India, August 1990.

GRANTS

External Grants: Worth close to 3.2 million AUD

- Defence Science Partnership Research Contract, Frankcombe, Sutherland, **Ray**, and Tian, 250,000 AUD, 2023-2024.
- ARC Discovery Grant, Australian Research Council: Singh, **Ray** and Sinha, “Evolutionary computation for expensive bilevel multiobjective problems,”, 390,000 AUD, 2022-2024.
- Honda Research Institute (GmbH): Singh, **Ray**, and Kenny, “Research Contract”, 48,000 AUD, 2024.
- Honda Research Institute (GmbH): Singh, **Ray**, and Kenny, “Research Contract”, 33,356 AUD, 2023.
- Honda Research Institute (GmbH): Singh, **Ray**, and Kenny, “Research Contract”, 33,107 AUD, 2023.
- Honda Research Institute (GmbH): Singh, **Ray**, and Kenny, “Research Contract”, 31,080 AUD, 2022.
- Honda Research Institute (GmbH): Singh, **Ray**, and Kenny, “Research Contract”, 21,664 AUD, 2022.
- Honda Research Institute (GmbH): Singh and **Ray**, “Research Contract”, 47,544 AUD, 2022.
- Honda Research Institute (GmbH): Singh and **Ray**, “Research Contract”, 47,619 AUD, 2021.
- Honda Research Institute (GmbH): Singh and **Ray**, “Research Contract”, 23,622 AUD, 2021.
- Honda Research Institute (GmbH): Singh and **Ray**, “Research Contract”, 49,628 AUD, 2019.
- Honda Research Institute (GmbH): Singh and **Ray**, “Research Contract”, 30,639 AUD, 2019.
- ARC Discovery Grant, Australian Research Council: **Ray**, Li and Branke, “A novel and efficient approach for optimization involving iterative solvers,”, 360,000 AUD, 2019-2021.
- Department of Defence, Capability Systems Centre Research Contract: Ryan, Singh and **Ray**, 157,500 AUD, 2018.

- Australia-Germany Joint Research Cooperation Scheme: Singh, Bhattacharjee, **Ray**, Mostaghim, Moritz, “Identification of solutions of interest to aid evolutionary multi-objective optimization and decision-making”, Universities Australia and DAAD, 23,500 AUD, 2017-2018.
- ARC Future Fellowship, Australian Research Council: **Ray**, “Development of methods and algorithms to support multidisciplinary optimization”, 539,768 AUD, 2012-2016.
- ARC Discovery Grant, Australian Research Council: Young, Lai, **Ray** and Bomphrey, “Intriguing aerodynamics of bees, hoverflies and beyond”, 380,000 AUD, 2013-2015.
- Australian Space Research Program Grant: Boyce *et al.*, “Scramjet-based access-to-space systems”, 5,000,000 AUD (796K AUD to UNSW), 2010-2013.

Internal Grants: UNSW and UNSW Canberra: Worth 430K AUD in Cash and funding for 13 PhD Scholarships.

- Silverstar grant, UNSW : Hazell, **Ray**, Kleine and Escobedo. “Micro-architected structures for collision-resistance applications”, 20,000 AUD, 2018.
- Defence Related Research Grant, UNSW : **Ray** and Ryan, “Optimum design of tests: Uncovering system vulnerabilities and performance envelopes”, 19,600 AUD, 2018.
- Scientia PhD Scholarship, UNSW: Singh, Sarker and **Ray**, Evolutionary computation for environmental modeling and optimization, 40,000 AUD per annum for 4 years plus Tution Fee Waiver + 10,000 per annum for collaborative initiatives.
- Scientia PhD Scholarship, UNSW: **Ray**, “Development of optimization methods for the design of novel materials, 40,000 AUD per annum for 4 years plus Tution Fee Waiver + 10,000 per annum for collaborative initiatives.
- Defence Related Research Grant, UNSW : **Ray** and Ryan, “Identification of solutions of interest from large data sets: Pathway to informed decision making”, 18,000 AUD, 2016.
- Silverstar grant, UNSW : **Ray**, “A novel learning approach for simulation based optimization”, 20,000 AUD, 2016.
- Future Fellowship and Discovery Project Support, UNSW, **Ray**, 70,000 AUD, 2015.
- Special Research Grant, UNSW Canberra: Singh and **Ray**, “Finding knee solutions to aid decision making for multi/many-objective optimization problems”, 3,906 AUD, 2015.
- RTS PhD Scholarship, UNSW Canberra: Sreenatha and **Ray**, “Design and development of Eco-friendly Underwater Vehicle”, Australian Postgraduate Award Rates, 2014.
- RTS PhD Scholarship, UNSW Canberra: Singh and **Ray**, “Development of optimization methods for problems involving multi-fidelity analysis”, Australian Postgraduate Award Rates, 2014.
- PhD Scholarship, UNSW: **Ray**, Complementing ARC Discovery Grant: **Ray**, Australian Postgraduate Award Rates, 2013.
- ARC Support Grant, UNSW Canberra: Young, Lai, **Ray** and Bomphrey, “Intriguing aerodynamics of bees, hoverflies and beyond”, 50,000 AUD, 2013.
- PhD Scholarship, UNSW: **Ray**, Complementing ARC Future Fellowship: **Ray**, Australian Postgraduate Award Rates, 2012.
- Goldstar Award, UNSW: Young, Lai, **Ray** and Bomphrey, “Exploiting the extraordinary aerodynamics of bees and hoverflies”, 40,000 AUD, 2012.
- Special Research Grant, UNSW Canberra: **Ray**, “Development of efficient schemes to deal with equality constraints in black box optimization problems”, 7,100 AUD, 2012.
- Silverstar Award, UNSW Canberra: Lai, Young and **Ray**, “Can we learn from nature to outfly the fly”, 30,000 AUD, 2011.
- PhD Scholarship, UNSW, Complementing Australian Space Research Program External Grant: Australian Postgraduate Award Rates, 2010.
- RTS PhD Scholarship, UNSW Canberra: **Ray** and Abbass, “Uncovering the secrets of good design beyond optimization”, Australian Postgraduate Award Rates, 2010.
- Major Research Equipment and Infrastructure Scheme, UNSW: Garratt, Ougrinovski, **Ray**, Pota and Anavatti, “Satellite positioning and inertial navigation system”, 35,000 AUD, 2010.
- Defence Security Application Research Centre (DSARC), PhD Scholarship, UNSW Canberra : Neely, Riesen, **Ray** and Odam, “Prediction and measurement of heating distributions on hypersonic vehicles”, Australian Postgraduate Award Rates, 2010.
- UNSW-ADFA Collaboration Grant, UNSW Canberra: Prusty and **Ray**, “Development of a novel fatigue life prediction model for characterization of composites exposed to extreme temperatures”, 18,000 AUD, 2010.
- Special Research Grant, UNSW Canberra, **Ray**, “Development of optimization methods to deal with the fundamental challenges in many objective optimization problems”, 6,000 AUD, 2009.
- Defence Security Application Research Centre (DSARC), PhD Scholarship, UNSW Canberra:

- Ray**, Boyce and Coleman, “Development of methods for spatial approximation and prediction of flow fields”, Australian Postgraduate Award Rates, 2008.
- Silverstar Award, UNSW Canberra: Lai, Young and **Ray**, “Float like a butterfly: The physics of optimal flapping wing flight”, 20,000 AUD, 2008.
 - Learning and Teaching Grant, UNSW Canberra: Smith, **Ray** and Fien, “Integrating physical and virtual learning spaces with a problem based learning framework”, 10,000 AUD, 2008.
 - Defence Related Research Grant, UNSW Canberra: **Ray** and Sreenatha, “Development of a dynamic, micro, hybrid optimization algorithm for multi-objective online UAV path planning”, 12,000 AUD, 2007.
 - Defence Security Application Research Centre (DSARC), PhD Scholarship, UNSW Canberra: **Ray**, Smith and Cannon, “Development of optimization methods for trans-dimensional optimization for concept evolution”, Australian Postgraduate Award Rates, 2007.
 - Faculty Research Grant, UNSW Canberra: Young and **Ray**, “Aerodynamic optimization of flapping-wing micro air vehicle propulsion using multi fidelity models and evolutionary algorithm”, 12,000 AUD, 2006.
 - Faculty Research Grant, UNSW Canberra: Boyce, Tsai Her Mann, **Ray**, Young, Kleine, Muddford and Neely, “Collaborative UNSW/Singapore investigations of supersonic and hypersonic shock wave/boundary layer interactions in controlled pressure gradients”, 21,000 AUD, 2006.
 - Special Research Grant, UNSW Canberra: **Ray**, “Development of novel optimization algorithms”, 5,000 AUD, 2006.
 - RTS PhD Scholarship, UNSW Canberra: Boyce and **Ray**, “Multidisciplinary design optimization for hypersonic air-breathing propulsion”, Australian Postgraduate Award Rates, 2006.
 - RTS PhD Scholarship, UNSW Canberra: **Ray** and Smith, “Framework for design optimization operating on a CAD system”, Australian Postgraduate Award Rates, 2006.
 - UNSW-ADFA Collaboration Grant, UNSW Canberra: Kara, Kayis, Sarker, Abbass, **Ray** and Freeman, “A complex systems approach to quantifying Forrester effect in manufacturing supply chain”, 12,000 AUD, 2005.

INVITED
PRESENTATIONS

University of Birmingham (UK), University of Liverpool (UK), Cranfield University (UK), University of Warwick (UK), at the Machine Learning for Aerospace Symposium, Marseille (France), Institute of Engineers (Australia), ACM Workshop (Australia), South China University of Technology (China), Jilin University (China), Tohoku University (Japan), Osaka Prefecture University (Japan), Doshisha University (Japan), Kyushu University (Japan), Shinshu University (Japan), Japan Aerospace Exploration Agency (JAXA), Honda Innovation Labs (Japan) and Otto von Guericke University (Germany).

POSTGRADUATE
SUPERVISION

I have successfully supervised **32 HDR** (24 PhD and 8 Masters) students at UNSW to completion. Currently I am supervising **3 HDR** students (**2** as joint supervisor and **1** as secondary supervisor).

Graduated Students: Primary supervisor

- Dr. Mohammad Mohiuddin Mamun, “Efficient algorithms for computationally expensive multifidelity optimization problems”, PhD, Graduated 2022.
- Dr. Mohamed Mohamed, “Computational advances in continuum topology optimization”, PhD, Graduated 2022.
- Dr. Ahsanul Habib, “Efficient algorithms for computationally expensive optimization problems”, PhD, Graduated 2019.
- Dr. Kalyan Shankar Bhattacharjee, “Development of efficient optimization methods for the solution of computationally expensive optimization problems”, PhD, Graduated 2018.
- Dr. Md. Monjurul Islam, “Development of efficient bi-level optimization methods”, PhD, Graduated 2018.
- Dr. Min Liu, “Development of realistic transportation modeling framework”, PhD, Graduated 2014.
- Dr. Md. Asafuddoula, “Methods for constraint handling and many objective optimization”, PhD, Graduated 2014.
- Dr. Mohammad Sharif Khan, “Development of methods for two dimensional and three dimensional optimization”, PhD, Graduated 2014.
- Mr. Amit Kumar Saha, “Practical design optimization techniques”, Masters, Graduated 2012.
- Dr. Ahmad Faisal Mohamad Ayob, “Development of an optimization framework for the design of high speed planing craft”, PhD, Graduated 2011.
- Dr. Hemant Kumar Singh, “Development of optimization methods to deal with current challenges in engineering design optimization”, PhD, Graduated 2011.
- Mr. Gordon P. Briggs, “Trade studies towards an Australian indigenous space launch system”,

Masters, Graduated 2010.

- Dr. Amitay Isaacs, “Development of optimization methods to solve computationally expensive problems”, PhD, Graduated 2009.

Graduated Students: Joint supervisor

- Dr. Seyedamirhossein Mortazavi, “Demand responsive transport modeling”, PhD, Graduated 2024.
- Dr. Md. Juel Rana, “Machine learning enhanced evolutionary algorithm for multi-objective unit commitment problem”, PhD, Graduated 2023.
- Mr. Ismail Mohamed Ali, “Development of an efficient optimization algorithm for resource constrained project scheduling problems”, Masters, Graduated 2016.
- Dr. Khairul Alam, “Development of framework for design optimization of underwater vehicles”, PhD, Graduated 2013.
- Mr. Obinna Kenneth Ihesiolor, “Vibration based damage detection in composite structures using computational intelligence tools”, Masters, Graduated 2012.

Graduated Students: Co-supervisor

- Dr. Kamrul Hasan Rahi, “ Design of computationally efficient algorithms for expensive optimization problems”, PhD, Graduated 2024.
- Mr. Rounak Niloy Saha, “ Design of optimization algorithms to search across multiple concept spaces”, Masters, Graduated 2024.
- Dr. Huynh Nhat Quang, “Mining explicit and implicit relationships in data using symbolic regression”, PhD, Graduated 2023.
- Mr. Kamrul Hasan Rahi, “Selective evaluation based strategies for constrained evolutionary optimization”, Masters, Graduated 2020.
- Dr. Zafer Leylek, “Global Surrogate Modelling of Gas Turbine Aerodynamic Performance”, PhD, Graduated 2018.
- Dr. Shelvin Chand, “Automated design of heuristics for the resource constrained project scheduling problem”, PhD, Graduated 2018.
- Dr. Andrey Kirsanov, “Systems architecture for autonomous underwater vehicle simulators”, PhD, Graduated 2018.
- Dr. Md. Forhad Zaman, “Development of efficient optimization algorithms for economic dispatch problems”, PhD, Graduated 2017.
- Dr. Kamrun Nahar, “A low cost method for glyphosate analysis, and site investigation and modelling of glyphosate fate and transport from genetically modified canola farmland in Parkes, NSW, Australia”, PhD, Graduated 2016.
- Mr. David Drohan, “Inflatable lifejacket requirements for encumbered military personnel”, Masters, Graduated 2015.
- Mr. Peter Hayes, “Stability requirements of naval landing craft ”, Masters, Graduated 2014.
- Dr. Caixia Li, “Improving cooperative transportation management and route guidance systems under provision of realtime traffic information”, PhD, Graduated 2014.
- Dr. Osama Ibrahim Hassanein Hassan, “ Black-box identification and control for autonomous underwater vehicles”, PhD, Graduated, 2013.

In addition to the above, I have supervised 9 Masters Student of High Performance Computation for Engineered Systems (HPCES) under the [Singapore-MIT Alliance Program](#) at the National University of Singapore between 2001 and 2004.

Ongoing Students: Joint supervisor

- Mr. Ankush Kapoor “Development of an improved cardiovascular stent design using topology optimisation”, PhD Student (UNSW Sydney).
- Mr. Andrea Colombo, Computational evaluation and optimization of conorary stent designs to improve clinical outcome after percutaneous coronary intervention, PhD Student (UNSW Sydney).

Ongoing Students: Secondary supervisor

- Mr. Md. Rasel Sarker, “Dynamic control and multi-objective optimization of wind turbine using nature-inspired algorithms”, PhD Student.

TEACHING
EXPERIENCE

University of New South Wales, Canberra, March 2005 till date.

- Lecturer: Computational Problem Solving (ZPEM 1307), First Year Undergraduate Course in S1-2024.
- Lecturer and Course Coordinator: Mechanical Design 1 (ZEIT 3700), Third Year Undergraduate Course in S2-2023, S2-2022, S2-2021, S2-2020, S2-2019, S2-2018, S2-2017, S2-2016, S2-2012, S2-2011 and S2-2010.

- Lecturer and Course Coordinator: Mechanical Design 2 (ZEIT 4700), Fourth Year Undergraduate Course in S1-2024, S1-2023, S1-2022, S1-2021, S1-2020, S1-2019, S1-2018, S1-2017, S1-2012, S1-2011 and S1-2010.
- Lecturer and Coordinator for CATIA Labs: Engineering Practice and Design (ZEIT 1501), First Year Undergraduate Course in S2-2021, S2-2020, S2-2019, S2-2018, S2-2017, S1-2012, S1-2011 and S1-2010.
- Lecturer and Coordinator for CATIA Labs: Introduction to Mechanical and Aeronautical Engineering (ZEIT 1504), First Year Undergraduate Course in S1-2022.
- Lecturer : Naval Architecture and Marine Engineering (ZEIT 4005), Elective Course in S2-2010 and S2-2007.
- In addition to the above, I have supervised 16 Undergraduate Thesis Projects at UNSW, Canberra.

Singapore Maritime Academy, Singapore, June 1997 to June 1999.

- Lecturer for the following subjects: Naval Architecture, Ship Stability, Ship Construction, Ship Structures, Ship Resistance and Propulsion, Ship Maneuverability.

PROFESSIONAL SERVICE

- Associate Editor, ACM Transactions on Evolutionary Learning and Optimization (2020-).
- Member of the FWO Review College (2025 – 2027).
- Member of the Editorial Advisory Board (2013 till date), Engineering Optimization.
- Member, College of Experts, Australian Research Council (2017-2019).
- Associate Editor, IEEE Transactions on Evolutionary Computation (2017-2019).
- Associate Editor, IEEE Transactions on Cybernetics (2016-2019).
- **General Chair** : Australasian Conference on Artificial Life and Computational Intelligence-2016.
- **Chair** : IEEE Computational Intelligence Society, ACT Chapter(2015-2016).
- **Reviewer** of more than 10 top tier journals in the field such as IEEE Transactions on Evolutionary Computation, Structural and Multidisciplinary Optimization, ASME Journal of Mechanical Design, AIAA Journal, Computer Methods in Applied Mechanics and Engineering etc.
- **Member of the Program Committee** of a number of premier conferences in the field e.g. Genetic and Evolutionary Computing Conference (GECCO), Congress on Evolutionary Computation (CEC), Evolutionary Multicriterion Optimization (EMO), Parallel Problem Solving from Nature (PPSN) etc.
- **Examiner** of a number of PhD dissertations and **External Examiner** of the Course Optimum Design, Mechanical and Aerospace Engineering Department, University of Pretoria, South Africa, 2012.
- Member of the Academic Expert Panel, International Association of the Engineering Modelling, Analysis and Simulation Community (NAFEMS). Industry members include Boeing, Alstom, Dassault Systemes UK Ltd, Rolls Royce etc.
- Reviewer of ARC, EPSRC and Swedish Knowledge Foundation Grant Applications.

PROFESSIONAL MEMBERSHIPS

- **Senior Member**, Institute for Electrical and Electronics Engineers (IEEE)
- **Member**, Association for Computing Machinery (ACM)

PUBLICATIONS

I have authored well over **300** full-refereed publications (**120** in journals; **85** of them in **Q1**).

Books

1. Prusty, B.G., Sul, J., and **Ray, T.**, *Fatigue behaviour of short fibre composites*, Nova Science Publishers, New York, USA, 2011.

Magazines (Non-Refereed)

1. Sarker, R., and **Ray, T.**, “Agent-based evolutionary algorithms: Emerging paradigm or buzzwords?” in *OR/MS Today*, vol. 38(5):44, 2011.
2. **Ray, T.**, and Sarker, R., Evolutionary algorithms deliver promising results to gas lift optimization problems,” in *World Oil*, vol. 229(4):141–142, 2008.

Scholarly Book Chapters

1. Bhattacharjee, K.S., Singh, H. and **Ray, T.**, “Many-Objective optimization with limited computing budget,” *High-Performance Simulation Based Optimization* (Bartz-Beielsten, T., Filipic, B., Korosec, P., Talbi, E.G. eds.), vol. 833 of *Studies in Computational Intelligence*, pp. 17–46, Springer Berlin Heidelberg, 2020.

2. Hassanein, O.I., Anavatti, S., Pratama, M. and **Ray, T.**, “Autonomous underwater vehicles,” in *Intelligent Marine Vehicles: Theory and Applications* (Joo, E.M., Wang, N., Zhichao, L., Pratama, M. and Sharma, S., eds.), Nova Science Publishers, 2018.
3. Bhattacharjee, K.S., Isaacs, A. and **Ray, T.**, “Multiobjective optimization using an evolutionary algorithm embedded with multiple spatially distributed surrogates,” *Multi-objective Optimization: Techniques and Applications in Chemical Engineering* (G.P. Rangaiah, ed.), pp. 135–155, Singapore: World Scientific, 2017.
4. Hassanein, O.I., Anavatti, S., and **Ray, T.**, “On-line adaptive fuzzy modeling and control for autonomous underwater vehicle,” in *Recent Advances in Robotics and Automation*, (Sen Gupta, G., Bailey, D., Demidenko, S. and Carnegie, D. eds.), vol. 480 of *Studies in Computational Intelligence*, pp. 57–70, Springer Berlin Heidelberg, 2013.
5. **Ray, T.**, and Sarker, R., “Memetic algorithms in constrained optimization,” in *Handbook of Memetic Algorithms*, (Neri, F., Moscato, P. and Cotta, C. eds.), vol. 379 of *Studies in Computational Intelligence*, pp. 135–151, Springer Berlin Heidelberg, 2012.
6. Sarker, R., and **Ray, T.**, “Agent based evolutionary search: An introduction,” in *Agent-Based Evolutionary Search* (Hiot, L.M., Ong, Y.S., Sarker, R.A. and Ray, T. eds.), vol. 5 of *Adaptation, Learning, and Optimization*, pp. 1–12, Springer Berlin Heidelberg, 2010.
7. Singh, H., and **Ray, T.**, “Divide and conquer in coevolution: A difficult balancing act,” in *Agent-Based Evolutionary Search* (Hiot, L.M., Ong, Y.S., Sarker, R.A. and Ray, T. eds.), vol. 5 of *Adaptation, Learning, and Optimization*, pp. 117–138, Springer Berlin Heidelberg, 2010.
8. **Ray, T.**, Isaacs, A., and Smith, W., “Multi-objective optimization using surrogate assisted evolutionary algorithm,” in *Multi-objective Optimization: Techniques and Applications in Chemical Engineering* (Rangaiah, G.P. ed.), pp. 131–151, Singapore: World Scientific, 2009.
9. **Ray, T.**, Singh, H., Isaacs, A., and Smith, W., “Infeasibility driven evolutionary algorithm for constrained optimization,” in *Constraint Handling in Evolutionary Optimization* (Mezura-Montes, E. ed.), vol. 198 of *Studies in Computational Intelligence*, pp. 147–167, Springer Berlin Heidelberg, 2009.
10. Isaacs, A., **Ray, T.**, and Smith, W., “Set representation and multi-parent learning within an evolutionary algorithm for optimal design of trusses,” in *Linkage in Evolutionary Computation* (Ping Chen, Y. and Hiot, L.M. eds.), vol. 157 of *Studies in Computational Intelligence*, pp. 419–439, Springer Berlin Heidelberg, 2008.
11. **Ray, T.**, Isaacs, A., and Smith, W., “A memetic algorithm for dynamic multi-objective optimization,” in *Multi-objective Memetic Algorithms* (Goh, C.K., Tan, K.C. and Ong, Y.S. eds.), vol. 171 of *Studies in Computational Intelligence*, pp. 353–367, Springer Berlin Heidelberg, 2008.
12. **Ray, T.**, and Sarker, R., “Optimum oil production planning using an evolutionary approach,” in *Evolutionary Scheduling* (Dahal, K.P., Tan, K.C. and Cowling, P.I. eds.), vol. 49 of *Studies in Computational Intelligence*, pp. 273–292, Springer Berlin Heidelberg, 2007.
13. **Ray, T.**, “A neural network assisted optimization framework and its use for optimum process parameter identification in sheet metal forming,” in *Artificial Neural Networks in Finance and Manufacturing* (Kamruzzaman, J., Begg, R. and Sarker, R. eds.), pp. 221–235, Idea Group, 2006.
14. Venkatarayalu, N.V., and **Ray, T.**, “Application of multiobjective optimization in electromagnetic design,” in *Real-World Multi-Objective System Engineering* (Nedjah, N.M. and de Macedo, L. eds.), pp. 77–100, Springer Berlin Heidelberg, 2005.
15. **Ray, T.**, “Applications of multi-objective evolutionary algorithms in engineering design,” in *Applications of Multiobjective Evolutionary Algorithms* (Coello, C.A.C. and Lamont, G.B. eds.), vol. 1, pp. 29–52, World Scientific Pub Co Inc, 2004.

Refereed Journal Articles

1. Colombo, A., Chiastra, C., Gallo, D., Loh, P.H., Dokos, S., Zhang, M., Keramati, H., Carbonaro, D., Migliavacca, F., **Ray, T.**, Jepson, N., and Beier, S., “Advancements in coronary bifurcation stenting techniques: Insights from computational and bench testing studies,” *International Journal for Numerical Methods in Biomedical Engineering*, In Press, Accepted 01/2025.
2. Kapoor, A., **Ray, T.**, Jepson, N., and Beier, S., “Comprehensive geometric parameterization and computationally efficient 3D shape matching optimization of realistic stents,” *ASME Journal of Mechanical Design*, In Press, Accepted 11/2024.
3. Kenny, A., **Ray, T.**, and Singh, H., “A framework for design optimization across multiple concepts,” *Nature Scientific Reports*, vol. 14, no. 1, pp. 7858, 2024. [Q1].
4. Mortazavi, A., Ghasri, M., and **Ray, T.**, “A linearly decreasing deterministic annealing algorithm for the multi-vehicle dial a ride problem,” *PLoS One*, vol. 19, no. 2, 2024. [Q1].
5. Saha, R.N., Singh, H., and **Ray, T.**, “A benchmark test suite for evolutionary multi-objective multi-concept optimization,” *Swarm and Evolutionary Computation*, vol. 84, pp. 101429, 2024, [Q1].
6. Mortazavi, A., Ghasri, M., and **Ray, T.**, “Integrated-demand responsive transport in low-demand areas: A case study of Canberra, Australia,” *Transportation Research Part D*, vol. 127, pp. 104036, 2024.[Q1].
7. Kapoor, A., Jepson, N. Bressloff, N.W., Low, P.H., **Ray, T.**, and Beier, S., “The road to the ideal stent: A review of stent design optimisation methods, findings, and opportunities,” *Materials & Design*, vol. 237, pp. 112556, 2024. [Q1].
8. Rana, M.J., Rahi, K.H., **Ray, T.**, and Sarker, R., “EV hosting capacity enhancement in a community microgrid through dynamic price optimization based demand response,” *IEEE Transactions on Cybernetics*, issue 12, pp. 7431-7442, 2023, [Q1].
9. Rahi, K.H., Singh, H., and **Ray, T.**, “A steady-state algorithm for solving expensive multi-objective optimization problems with non-parallelizable evaluations,” *IEEE Transactions on Evolutionary Computation*, vol. 27, no. 5, pp. 1544-1558, 2023. [Q1].
10. Kenny, A., **Ray, T.**, and Singh, H., “An iterative two-stage multi-fidelity optimization algorithm for computationally expensive problems,” *IEEE Transactions on Evolutionary Computation*, vol. 27, no. 3, pp. 520-534, 2023.[Q1].
11. Singh, H., **Ray, T.**, Rana, M.J., Limmer, S., Rodemann, T. and Olhofer, M., “Investigating the use of linear programming and evolutionary algorithms for multi-objective electric vehicle charging problem,” *IEEE Access*, vol. 10, pp. 115322-115337, 2022, [Q1].
12. Mamun, M., Singh, H., and **Ray, T.**, “An approach for computationally expensive multi-objective optimization problems with independently evaluable objectives ,” *Swarm and Evolutionary Computation*, vol. 75, pp. 101146, 2022, [Q1].
13. Mamun, M., Singh, H., and **Ray, T.**, “A multifidelity approach for bilevel optimization with limited computing budget,” *IEEE Transactions on Evolutionary Computation*, vol. 26, issue 2, pp. 392-399, 2022, [Q1].
14. Mohamed, T., and **Ray, T.**, “Approximation schemes for stochastic compliance-based topology optimization with many loading scenarios,” *Structural and Multidisciplinary Optimization*, vol. 65, 138, 2022, [Q1].
15. **Ray, T.**, and Sarker, R., “Genetic algorithm for solving a gas lift optimization problem,” *Journal of Petroleum Science and Engineering*, vol. 59, no. 1-2, pp. 84–96, 2007, [Q1].
16. Liew, K.M., **Ray, T.**, and Tan, P.K., “Computational swarm strategies for single objective design optimization problems,” *International Journal for Computational Methods in Engineering Science and Mechanics*, vol. 8, no. 1, pp. 11–21, 2006.
17. **Ray, T.**, Singh, H., Rahi, K.H., Rodemann, T. and Olhofer, M., “Towards identification of solutions of interest for multi-objective problems considering both objective and variable space information,” *Applied Soft Computing*, vol. 119, pp. 108505, 2022, [Q1].
18. Wang, B., Singh, H., and **Ray, T.**, “Adjusting normalization bounds to improve hyper-volume based search for expensive multi-objective optimization,” *Complex and Intelligent Systems*, pp. 1-17, 2021.

19. Rana, M.J., Rahi, K.H., **Ray, T.**, and Sarker, R., “An efficient optimization approach for flexibility provisioning in community microgrids with an incentive-based demand response scheme,” *Sustainable Cities and Society*, Vol. 74, pp. 103218, 2021, [Q1].
20. Mohamed, T., and **Ray, T.**, “Robust and stochastic compliance-based topology optimization with finitely many loading scenarios,” *Structural and Multidisciplinary Optimization*, vol. 64, pp. 3439–3452, 2021, [Q1].
21. Rahi, K.H., Singh, H., and **Ray, T.**, “Partial evaluation strategies for expensive evolutionary constrained optimization,” *IEEE Transactions on Evolutionary Computation*, vol. 25, issue 6, pp. 1103 - 1117, 2021, [Q1].
22. Gharlegghi, R., Wright, H., Luvio, V., Jepson, N., Luo, Z., Senthurnathan, A., Babaei, B., Prusty, G., **Ray, T.**, and Beier S., “A multi-objective optimization of stent geometries,” *Journal of Biomechanics*, vol. 125, 10575, 2021, [Q1].
23. Rahi, K.H., Singh, H., and **Ray, T.**, “Feasibility-ratio based sequencing for computationally efficient constrained optimization,” *Swarm and Evolutionary Computation*, vol. 62, 2021, [Q1].
24. Rana, M.J., Zaman, M.F., **Ray, T.**, and Sarker, R., “Real-time scheduling of community microgrid,” *Journal of Cleaner Production*, vol. 286, March 2021, [Q1].
25. Rahi, K.H., Singh, H., and **Ray, T.**, “Bump hunting embedded differential evolution for constrained design optimization,” *ASME Journal of Mechanical Design*, pp. 1-28, 2020, [Q1].
26. Rana, M.J., Zaman, M.F., **Ray, T.**, and Sarker, R., “Heuristic enhanced evolutionary algorithm for community microgrid scheduling,” *IEEE Access*, vol. 8, pp. 76500-76515, 2020, [Q1].
27. Mohamed, T., and **Ray, T.**, “Adaptive continuation solid isotropic material with penalization for volume constrained compliance minimization,” *Computer Methods in Applied Mechanics and Engineering*, vol. 363, 2020, [Q1].
28. Habib, A., Singh, H., Chugh, T., **Ray, T.** and Miettinen, K., “A multiple surrogate assisted decomposition based hybrid evolutionary algorithm for expensive multi/many-objective optimization,” *IEEE Transactions on Evolutionary Computation*, vol. 23, issue 6, pp. 1000-1014, 2019, [Q1].
29. Chand, S., Singh, H., and **Ray, T.**, “Evolving rollout-justification based heuristics for resource constrained project scheduling problems,” *Swarm and Evolutionary Computation*, vol. 50, pp. 100556, 2019, [Q1].
30. Singh, H., Bhattacharjee, K.S., and **Ray, T.**, “Distance based subset selection for benchmarking in evolutionary multi/many-objective optimization,” *IEEE Transactions on Evolutionary Computation*, vol. 23, issue 5, pp. 904-912, 2019, [Q1].
31. Habib, A., Singh, H., and **Ray, T.** “A multiple surrogate assisted multi/many-objective multi-fidelity evolutionary algorithm,” *Information Sciences*, vol. 502, pp. 537-555, 2019, [Q1].
32. Singh, H., Islam, M., Ryan, M. and **Ray, T.** “Nested evolutionary algorithms for computationally expensive bilevel optimization problems: Variants and their systematic analysis,” *Swarm and Evolutionary Computation*, vol. 48, pp. 329-344, 2019, [Q1].
33. Liu, C., Zhao, Q., Yan, B., Elsayed, S., **Ray, T.** and Sarker, R., “Adaptive sorting-based evolutionary algorithm for many-objective optimization,” *IEEE Transactions on Evolutionary Computation*, vol. 23, issue 2, pp. 247–257, 2019, [Q1].
34. Chand, S., Singh, H., and **Ray, T.**, “Evolving heuristics for the resource constrained project scheduling problem with dynamic resource disruptions,” *Swarm and Evolutionary Computation*, vol. 44, pp. 897–912, 2019, [Q1].
35. Liu, Z., Bhattacharjee, K.S., Tian, F.B., Young, J., **Ray, T.** and Lai, J.C.S., “Kinematic optimization of a flapping foil power generator using a multi-fidelity evolutionary algorithm,” *Renewable Energy*, vol. 132, pp. 543–557, 2019, [Q1].

36. Huynh, Q.N., Chand, S, Singh, H. and **Ray, T.**, “Genetic programming with mixed integer linear programming based library search,” *IEEE Transactions on Evolutionary Computation*, vol. 22, issue 5, pp. 733–747, 2018, [Q1].
37. Elsayed, S., Sarker, R., Coello, Coello, C. and **Ray, T.**, “Adaptation of operators and continuous control parameters in differential evolution for constrained optimization,” *Soft Computing*, vol. 22, issue 19, pp. 6595–6616, 2018, [Q1].
38. Asafuddoula, M., Singh, H. and **Ray, T.**, “An enhanced decomposition based evolutionary algorithm with adaptive reference vectors,” *IEEE Transactions on Cybernetics*, vol. 48, issue 8, pp. 2321–2334, 2018, [Q1].
39. Bhattacharjee, K.S., Singh, H. and **Ray, T.**, “Multiple surrogate assisted many-objective optimization for engineering design,” *ASME Journal of Mechanical Design*, 140(5), 2018, [Q1].
40. Habib, A., Singh, H., and **Ray, T.**, “A multiple surrogate assisted evolutionary algorithm for optimization involving iterative solvers,” *Engineering Optimization*, vol. 50(9), pp. 1625–1644, 2018.
41. Chand, S., Huynh, Q.N., Singh, H., **Ray, T.**, and Wagner, M., “On the use of genetic programming to evolve priority rules for resource constrained project scheduling problems,” *Information Sciences*, vol. 432, pp. 146–163, 2018, [Q1].
42. Zaman, M.F., Elsayed, S., **Ray, T.**, and Sarker, R., “Evolutionary algorithms for finding Nash equilibria in electricity markets,” *IEEE Transactions on Evolutionary Computation*, vol. 22, issue 4, pp. 536–549, 2017, [Q1].
43. Islam, M., Singh, H., and **Ray, T.**, “An enhanced memetic algorithm for single objective bilevel optimization problems,” *Evolutionary Computation*, vol. 25, Issue 4, pp. 607–642, 2017, [Q1].
44. Li, C., Anavatti, S., and **Ray, T.**, “A path-based solution algorithm for dynamic traffic assignment,” *Networks & Spatial Economics*, vol. 17, issue 3, pp 841–860, 2017, [Q1].
45. Alam, K., **Ray, T.**, and Anavatti, S., “Design optimization of an unmanned underwater vehicle using low and high fidelity models,” *IEEE Transactions on Systems, Man and Cybernetics: Systems*, vol. 47, no. 11, pp. 2794–2808, 2017, [Q1].
46. Elsayed, S., Sarker, R., **Ray, T.** and Coello, Coello, C., “Consolidated optimization algorithm for resource-constrained project scheduling problems,” *Information Sciences*, vol. 418–419, pp. 346–362, 2017, [Q1].
47. Zhang, Z., Zhan, C., Shankar, K., Morozov, E., Singh, H., and **Ray, T.**, “Sensitivity analysis of inverse algorithms for damage detection in composites,” *Composite Structures*, vol. 176, pp. 844–859, 2017, [Q1].
48. Bhattacharjee, K.S., Singh, H., Ryan, M. and **Ray, T.**, “Bridging the gap: Many-objective optimization and informed decision-making,” *IEEE Transactions on Evolutionary Computation*, vol. 21, issue 5, pp. 813–820, 2017, [Q1].
49. Bhattacharjee, K.S., Singh, H. and **Ray, T.**, “A novel decomposition based evolutionary algorithm for engineering design optimization,” *ASME Journal of Mechanical Design*, 139(4), pp. 041403-1–041403-11, 2017, [Q1].
50. Zaman, M.F., Elsayed, S., **Ray, T.**, and Sarker, R., “Co-evolutionary approach for strategic bidding in competitive electricity markets,” *Applied Soft Computing*, vol. 51, pp. 1–22, 2017, [Q1].
51. Islam, M., Singh, H., and **Ray, T.**, “A surrogate assisted approach for single-objective bilevel optimization,” *IEEE Transactions on Evolutionary Computation*, vol. 21, issue 5, pp. 681–696, 2017, [Q1].
52. Bhattacharjee, K.S., Singh, H. and **Ray, T.**, “An approach to generate comprehensive piecewise linear interpolation of Pareto outcomes to aid decision making,” *Journal of Global Optimization*, vol. 68, issue 1, pp. 71–93, 2017, [Q1].
53. Branke, J., Asafuddoula, M., Bhattacharjee, K.S. and **Ray, T.**, “Efficient use of partially converged simulations in evolutionary optimization,” *IEEE Transactions on Evolutionary Computation*, vol. 21, issue 1, pp. 52–64, 2017, [Q1].

54. Li, C., Anavatti, S., and **Ray, T.**, “A path-based flow formulation for the traffic assignment problem,” *Transportation Planning and Technology*, vol. 39, no. 6, pp. 597–611, 2016.
55. Hassanein, O.I., Anavatti, S., Shim, H., and **Ray, T.**, “Model-based adaptive control system for autonomous underwater vehicles,” *Ocean Engineering*, vol. 127, pp. 58–69, 2016, [Q1].
56. Bhattacharjee, K.S., Singh, H. and **Ray, T.**, “Multi-objective optimization with multiple spatially distributed surrogates,” *ASME Journal of Mechanical Design*, 138(9), pp. 091401-1–091401-10, 2016, [Q1].
57. Zaman, M.F., Elsayed, S., **Ray, T.**, and Sarker, R., “Evolutionary algorithms for power generation planning with uncertain renewable energy,” *Energy, The international journal*, vol. 112, pp. 408–419, 2016, [Q1].
58. Singh, H., Bhattacharjee, K.S., and **Ray, T.**, “A projection based approach for constructing piecewise linear Pareto front approximations,” *ASME Journal of Mechanical Design*, 138(9), pp. 091404-1–091404-12, 2016, [Q1].
59. Zaman, M.F., Elsayed, S., **Ray, T.**, and Sarker, R., “Configuring two-algorithm-based evolutionary approach for solving dynamic economic dispatch problems,” *Engineering Applications of Artificial Intelligence*, vol. 53, no. 2, pp. 105–125, 2016, [Q1].
60. Zaman, M.F., Elsayed, S., **Ray, T.**, and Sarker, R., “Evolutionary algorithms for dynamic economic dispatch problems,” *IEEE Transaction on Power Systems*, vol. 31, no. 2, pp. 1486–1495, 2016, [Q1].
61. Asafuddoula, M., **Ray, T.**, and Sarker, R., “Differential evolution algorithm with constraint sequencing: An efficient approach for problems with inequality constraints,” *Applied Soft Computing*, vol. 36, pp. 101–113, 2015, [Q1].
62. Asafuddoula, M., Singh, H., and **Ray, T.**, “Six sigma robust design optimization using a many-objective decomposition based evolutionary algorithm,” *IEEE Transactions on Evolutionary Computation*, vol. 19, no. 4, pp. 490–507, 2015, [Q1].
63. **Ray, T.**, Asafuddoula, M., Singh, H., and Alam, K., “An approach to identify six sigma robust solutions of multi/many-objective engineering design optimization problems,” *ASME Journal of Mechanical Design*, vol. 137(5), pp. 051404-1–051404-14, 2015, [Q1].
64. Asafuddoula, M., **Ray, T.**, and Sarker, R., “A decomposition based evolutionary algorithm for many objective optimization,” *IEEE Transactions on Evolutionary Computation*, vol. 19, no. 3, pp. 445–460, 2015, [Q1].
65. Asafuddoula, M., **Ray, T.**, and Sarker, R., “Improved self-adaptive constraint sequencing approach for constrained optimization problems,” *Applied Mathematics and Computation*, vol. 253, pp. 23–29, 2015, [Q1].
66. Wang, C., Shankar, K., Ashraf, M., Morozov, E., and **Ray, T.**, “Surrogate assisted optimization design of composite riser,” *Proceedings of Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications*, pp. 14644207-14539304, 2014.
67. Alam, K., **Ray, T.**, and Anavatti, S., “A brief taxonomy of autonomous underwater vehicle design literature,” *Ocean Engineering*, vol. 88, pp. 627–630, 2014, [Q1].
68. Liu, M., Singh, H., and **Ray, T.**, “Application specific instance generators for capacitated arc routing problem variants,” *Transportation Research Part C*, vol. 43, part 3, pp. 249–266, 2014, [Q1].
69. Ihesiulor, O.K., Shankar, K., Zhang, Z., and **Ray, T.**, “Validation of algorithms for delamination detection in composite structures using experimental data,” *Journal of Composite Materials*, vol. 48, no. 8, pp. 969–983, 2014, [Q1].
70. Alam, K., **Ray, T.**, and Anavatti, S., “Design and construction of an autonomous underwater vehicle,” *Neurocomputing*, vol. 142, pp. 16–20, 2014, [Q1].
71. Sarker, R., Elsayed, S., and Ray, T., and **Ray, T.**, “Differential evolution with dynamic parameters selection for optimization problems,” *IEEE Transactions on Evolutionary Computation*, vol. 18, issue 5, pp. 689–707, 2014, [Q1].

72. Asafuddoula, M., **Ray, T.**, and Sarker, R., “An adaptive hybrid differential evolution algorithm for single objective optimization,” *Applied Mathematics and Computation*, vol. 231, pp. 601–618, 2014, [Q1].
73. Li, C., Anavatti, S., and **Ray, T.**, “Analytical Hierarchy Process using fuzzy inference technique for real time route guidance system,” *IEEE Transactions on Intelligent Transportation Systems*, vol. 15, no. 1, pp. 84–93, 2014, [Q1].
74. Ihesiulor, O.K., Shankar, K., Zhang, Z., and **Ray, T.**, “Delamination detection with error and noise polluted natural frequencies using computational intelligence concepts,” *Composites Part B: Engineering*, vol. 56, pp. 906–925, 2014, [Q1].
75. Khan, M., Mohamad, A.F.A., Isaacs, A., and **Ray, T.**, “An efficient memetic algorithm for 3D shape matching problems,” *Engineering Optimization*, vol. 46(5), pp. 687–703, 2014.
76. Ihesiulor, O.K., Shankar, K., Zhang, Z., and **Ray, T.**, “Efficiencies of algorithms for vibration-based delamination detection: A comparative study,” *Journal of Mechanics of Materials and Structures*, vol. 8, no. 5-7, pp. 247–282, 2013.
77. Hassanein, O.I., Anavatti, S., and **Ray, T.**, “Black-box tool for nonlinear system identification based upon fuzzy system,” *International Journal of Computational Intelligence and Applications*, vol. 12, no. 2, pp. 1359999-1(21), 2013.
78. Zhang, Z., Shankar, K., **Ray, T.**, Morozov, E., and Tahtali, M., “Vibration based inverse algorithms for detection of delamination in composites,” *Composite Structures*, vol. 102, pp. 226–236, 2013, [Q1].
79. Singh, H., **Ray, T.**, and Sarker, R., “Optimum oil production planning using infeasibility driven evolutionary algorithm,” *Evolutionary Computation*, vol. 21, no. 1, pp. 65–82, 2013, [Q1].
80. Hassanein, O.I., Anavatti, S., and **Ray, T.**, “Improved fuzzy neural modeling for underwater vehicles,” *World Academy of Science, Engineering and Technology*, vol. 71, pp. 1208–1214, 2012.
81. Mohamad, A.F.A., **Ray, T.**, and Smith, W., “Beyond hydrodynamic design optimization of planing craft,” *Transactions of Society of Naval Architects and Marine Engineers*, pp. 473–485, 2012.
82. Mohamad, A.F.A., **Ray, T.**, and Smith, W., “A hydrodynamic preliminary design optimization framework for high speed planing craft,” *Journal of Ship Research*, vol. 56, pp. 35–47, 2012.
83. Khan, M., Mohamad, A.F.A., Isaacs, A., and **Ray, T.**, “A smart repair embedded memetic algorithm for 2D shape matching problems,” *Engineering Optimization*, vol. 44(10), pp. 1229–1243, 2012.
84. Alam, K., **Ray, T.**, and Anavatti, S., “A new robust design optimization approach for unmanned underwater vehicle design,” *Journal of Engineering for the Maritime Environment*, vol. 226, pp. 235–249, 2012.
85. Mohamad, A.F.A., **Ray, T.**, and Smith, W., “Uncovering secrets behind low resistance planing craft hull forms through optimization,” *Engineering Optimization*, vol. 43(11), pp. 1161–1173, 2011.
86. Mohamad, A.F.A., **Ray, T.**, and Smith, W., “Beyond hydrodynamic design optimization of planing craft,” *Journal of Ship Production and Design*, vol. 27, no. 1, pp. 1–13, 2011.
87. Sul, J.H., Prusty, G., and **Ray, T.**, “Prediction of low cycle fatigue life of short fibre composites at elevated temperatures using surrogate modelling,” *Composites Part B: Engineering*, vol. 42, issue 6, pp. 1453–1460, 2011, [Q1].
88. Saha, A., and **Ray, T.**, “Practical robust design optimization using evolutionary algorithms,” *ASME Journal of Mechanical Design*, 133(10), pp. 101012-1–101012-19, 2011, [Q1].
89. Singh, H., Isaacs, A., and **Ray, T.**, “A Pareto corner search evolutionary algorithm and dimensionality reduction in many-objective optimization problems,” *IEEE Transactions on Evolutionary Computation*, vol. 15, issue 4, pp. 539–556, 2011, [Q1].

90. Hassanein, O.I, Anavatti, S., and **Ray, T.**, “Robust position control for two-link manipulator,” *International Journal of Artificial Intelligence*, vol. 7, pp. 347–359, 2011.
91. Ogawa, H., Boyce, R.R., Isaacs, A., and **Ray, T.**, “Multi-objective design optimization of inlet and combustor for axisymmetric scramjets,” *Open Thermodynamics Journal*, vol. 4, pp. 86–91, 2010.
92. Samal, M., Anavatti, S., **Ray, T.**, and Garrat, M., “A computationally efficient approach for NN based identification of a rotary wing UAV,” *International Journal of Control, Automation and Systems*, vol. 8, no. 4, pp. 727–734, 2010.
93. Singh, H., and **Ray, T.**, “C-PSA: Constrained Pareto simulated annealing for constrained multi-objective optimization,” *Information Sciences*, vol. 180, no. 13, pp. 2499–2513, 2010, [Q1].
94. Isaacs, A., **Ray, T.**, and Smith, W., “Multi-objective design optimization using multiple adaptive spatially distributed surrogates,” *International Journal of Product Development*, vol. 9, no. 1-3, pp. 188–217, 2009.
95. Sarker, R., and **Ray, T.**, “An improved evolutionary algorithm for solving multi-objective crop planning models,” *Computers and Electronics in Agriculture*, vol. 68, issue 2, pp. 191–199, 2009, [Q1].
96. Ramanath, D., **Ray, T.**, and Boyce, R.R., “Evolutionary algorithm shape optimization of a hypersonic flight experiment nose cone,” *Journal of Spacecraft and Rockets*, vol. 45, no. 3, pp. 428–437, 2008.
97. **Ray, T.**, and Sarker, R., “EA for solving combined machine layout and job assignment problems,” *Journal of Industrial and Management Optimization*, vol. 4, pp. 631–646, 2008.
98. Briggs, G.P., **Ray, T.**, and Milthorpe, J.F., “Optimal design of an Australian medium launch vehicle,” *Innovations in Systems and Software Engineering*, vol. 3, pp. 105–116, 2007.
99. **Ray, T.**, and Smith, W., “A surrogate assisted parallel multiobjective evolutionary algorithm for robust engineering design,” *Engineering Optimization*, vol. 38(8), pp. 997–1011, 2006.
100. Venkatarayalu, N.V., **Ray, T.**, and Gan, Y.B., “Multilayer dielectric filter design using a multiobjective evolutionary algorithm,” *IEEE Transactions on Antennas and Propagation*, vol. 53, no. 11, pp. 3625–3632, 2005, [Q1].
101. Won, K.S., and **Ray, T.**, “A framework for design optimization using surrogates,” *Engineering Optimization*, vol. 37(7), pp. 685–703, 2005.
102. Liew, K.M., Tan, H., **Ray, T.**, and Tan, M.J., “Optimal process design of sheet metal forming for minimum springback via an integrated neural network evolutionary algorithm,” *Structural and Multidisciplinary Optimization*, vol. 26, no. 3-4, pp. 284–294, 2004, [Q1].
103. Liew, K.M., Tan, P.K., and **Ray, T.**, “Leader identification and leader selection: its effect on a swarm’s performance for multi-objective design optimization problems,” *Structural and Multidisciplinary Optimization*, vol. 28, no. 2-3, pp. 156–169, 2004, [Q1].
104. Venkatarayalu, N.V., and **Ray, T.**, “Optimum design of Yagi-Uda antennas using computational intelligence,” *IEEE Transactions on Antennas and Propagation*, vol. 52, no. 7, pp. 1811–1818, 2004, [Q1].
105. Liew, K.M., He, X.Q., and **Ray, T.**, “On the use of computational intelligence in the optimal shape control of functionally graded smart plates,” *Computer Methods in Applied Mechanics and Engineering*, vol. 193, no. 42, pp. 4475–4492, 2004, [Q1].
106. **Ray, T.**, and Tsai, H.M., “Swarm algorithm for single- and multiobjective airfoil design optimization,” *AIAA Journal*, vol. 42, no. 2, pp. 366–373, 2004, [Q1].
107. **Ray, T.**, “Golinski’s speed reducer problem revisited,” *AIAA Journal*, vol. 41, no. 3, pp. 556–558, 2003, [Q1].
108. **Ray, T.**, and Liew, K.M., “Society and Civilization: An optimization algorithm based on the simulation of social behaviour,” *IEEE Transactions on Evolutionary Computation*, vol. 7, no. 4, pp. 386–396, 2003, [Q1].

109. Akhtar, S., Tai, K., and **Ray, T.**, “A socio-behavioural simulation model for engineering design optimization,” *Engineering Optimization*, vol. 34(4), pp. 341–354, 2002.
110. Liew, K.M., **Ray, T.**, Tan, H., and Tan, M.J., “Evolutionary optimization and use of neural network for optimum stamping process design for minimum springback,” *Journal of Computing and Information Science in Engineering*, pp. 38–44, 2002.
111. Tai, K., Cui, G.Y., and **Ray, T.**, “Design synthesis of path generating compliant mechanisms by evolutionary optimization of topology and shape,” *ASME Journal of Mechanical Design*, vol. 124(3), pp. 492–500, 2002, [Q1].
112. **Ray, T.**, and Liew, K.M., “A swarm metaphor for multi-objective design optimization,” *Engineering Optimization*, vol. 34(2), pp. 141–153, 2002.
113. **Ray, T.**, Liew, K.M., and Saini, P., “An intelligent information sharing strategy within a swarm for unconstrained and constrained optimization problems,” *Soft Computing: A Fusion of Foundations, Methodologies and Applications*, vol. 6(1):, pp. 38–44, 2002.
114. **Ray, T.**, and Saini, P., “Engineering design optimization using a swarm with an intelligent information sharing among individuals,” *Engineering Optimization*, vol. 33(6), pp. 735–748, 2001.
115. **Ray, T.**, and Tai, K., “An evolutionary algorithm with a multilevel pairing strategy for single and multiobjective optimization,” *Foundations of Computing and Decision Sciences*, vol. 26(1), pp. 75–98, 2001.
116. **Ray, T.**, Tai, K., and Seow, K.C., “Multiobjective design optimization by an evolutionary algorithm,” *Engineering Optimization*, vol. 33(4), pp. 399–424, 2001.
117. **Ray, T.**, “Intelligent concept exploration using artificial neural network model,” *Transactions of Society of Naval Architects and Marine Engineers*, 1998.
118. **Ray, T.**, Gokarn, R.P., and Sha, O.P., “Neural network applications in naval architecture and marine engineering,” *Artificial Intelligence in Engineering*, vol. 10(3), pp. 213–226, 1996.
119. **Ray, T.**, Gokarn, R.P., and Sha, O.P., “A global optimization model for ship design,” *Computers in Industry*, vol. 26(2), pp. 175–192, 1995, [Q1].
120. **Ray, T.**, Gokarn, R.P., and Sha, O.P., “A partial discrete optimization model for preliminary ship design,” *Journal of Institution of Naval Architects*, 1994.
121. **Ray, T.**, and Sha, O.P., “Multicriteria optimization model for a containership design,” *Marine Technology*, vol. 31(4), pp. 258–268, 1994.

Lecture Notes

1. Kenny, A., **Ray, T.**, and Singh, H., “An extension of the welded beam problem that Includes multiple interacting design concepts,” in *Proceedings of EMO 2025: Evolutionary Multi-Criterion Optimization*, (Canberra, Australia), Accepted 11/2024.
2. Wang, B., Singh, H., and **Ray, T.**, “Selective evaluations for expediting multi-objective bilevel optimization,” in *Proceedings of EMO 2025: Evolutionary Multi-Criterion Optimization*, (Canberra, Australia), Accepted 11/2024.
3. Kenny, A., **Ray, T.**, Limmer, S., Singh, H., Rodemann, T. and Olhofer, M., “A hierarchical dissimilarity metric for automated machine learning pipelines, and visualizing search behaviour,” in *Proceedings of EvoStar 2024*, (Aberystwyth, UK), pp. 115-129, Springer Nature Switzerland, 2024.
4. Kenny, A., **Ray, T.**, Singh, H., and Li, X., “A test suite for multi-objective multi-fidelity optimization,” in *Proceedings of EMO 2023: Evolutionary Multi-Criterion Optimization*, (Leiden, Netherlands), vol. 13970 of *Lecture Notes in Computer Science*, pp. 361–373, Springer, 2023.
5. Chen, Y., Singh, H., Zhou, A., and **Ray, T.**, “A fast converging evolutionary algorithm for constrained multiobjective portfolio optimization,” in *Proceedings of EMO 2021: Evolutionary Multi-Criterion Optimization*, (Shenzhen, China), vol. 12654 of *Lecture Notes in Computer Science*, pp. 283–295, Springer, 2021.

6. Wang, B., Singh, H., and **Ray, T.**, “Investigating normalization bounds for hypervolume-based infill criterion for expensive multiobjective optimization,” in *Proceedings of EMO 2021: Evolutionary Multi-Criterion Optimization*, (Shenzhen, China), vol. 12654 of *Lecture Notes in Computer Science*, pp. 519–530, Springer, 2021.
7. Gharlegghi R., Wright H., Khullar S., Liu J., **Ray, T.** and Beier S., “Advanced multi-objective design analysis to identify ideal stent design,” in *Proceedings of Joint MICCAI-Workshops on Computing and Visualization for Intravascular Imaging and Computer Assisted Stenting*, (Shenzhen, China), vol. 11794 of *Lecture Notes in Computer Science*, pp. 193–200, Springer, 2019.
8. Bhattacharjee, K.S., Singh, H., and **Ray, T.**, “Optimum wind farm layouts: A many-objective perspective and case study,” in *Proceedings of EMO 2019: Evolutionary Multi-Criterion Optimization*, (Michigan, USA), vol. 11411 of *Lecture Notes in Computer Science*, pp. 707–718, Springer, 2019.
9. **Ray, T.**, Habib, A., Singh, H., and Ryan, M., “Uncovering performance envelopes through optimum design of tests,” in *Proceedings of AI 2018: Advances in Artificial Intelligence*, *Lecture Notes in Computer Science*, (Wellington, New Zealand), pp. 445–457, Springer, 2018.
10. Singh, H., Bhattacharjee, K.S., **Ray, T.**, and Mostaghim, S., “Investigation of a simple distance based ranking metric for decomposition-based multi/many-objective evolutionary algorithms,” in *Proceedings of AI 2018: Advances in Artificial Intelligence*, *Lecture Notes in Computer Science*, (Wellington, New Zealand), pp. 384–396, Springer, 2018.
11. Bhattacharjee, K.S., Singh, H., and **Ray, T.**, “Enhanced Pareto interpolation method to aid decision making for discontinuous Pareto optimal fronts,” in *Proceedings of AI 2017: Advances in Artificial Intelligence*, vol. 10400 of *Lecture Notes in Computer Science*, (Melbourne, Australia), pp. 93–105, Springer, 2017.
12. Islam, M.M., Singh, H., and **Ray, T.**, “Use of a non-nested formulation to improve search for bilevel optimization,” in *Proceedings of AI 2017: Advances in Artificial Intelligence*, (Melbourne, Australia), vol. 10400 of *Lecture Notes in Computer Science*, pp. 106–118, Springer, 2017.
13. Habib, A., Singh, H. and **Ray, T.**, “A batch infill strategy for computationally expensive optimization problems,” in *Proceedings of ACALCI 2017: Artificial Life and Computational Intelligence*, (Geelong, Australia), vol. 10142 of *Lecture Notes in Computer Science*, pp. 74–85, Springer, 2017.
14. Lu, K., Branke, J., and **Ray, T.**, “Improving efficiency of bi-level worst case optimization,” in *Proceedings of PPSN 2016: Parallel Problem Solving from Nature*, (Edinburgh, UK), vol. 9921 of *Lecture Notes in Computer Science*, pp. 410–420, Springer, 2016.
15. Singh, H., Alam, K., and **Ray, T.**, “Use of infeasible solutions during constrained evolutionary search: A short survey,” in *Proceedings of Artificial Life and Computational Intelligence*, (Canberra, Australia), vol. 9592 of *Lecture Notes in Computer Science*, pp. 193–205, Springer, 2016.
16. Zaman, F., Elsayed, S., Sarker, R., and **Ray, T.**, “Double action genetic algorithm for scheduling the wind-thermal generators,” in *Proceedings of Artificial Life and Computational Intelligence*, (Canberra, Australia), vol. 9592 of *Lecture Notes in Computer Science*, pp. 258–269, Springer, 2016.
17. Bhattacharjee, K.S., Singh, H., and **Ray, T.**, “A study on performance metrics to identify solutions of interest from a trade-off set,” in *Proceedings of Artificial Life and Computational Intelligence*, (Canberra, Australia), vol. 9592 of *Lecture Notes in Computer Science*, pp. 66–77, Springer, 2016.
18. Ismail, M.A., Elsayed, S., **Ray, T.**, and Sarker, R. “A differential evolution algorithm for solving resource constrained project scheduling problems,” in *Proceedings of Artificial Life and Computational Intelligence*, (Canberra, Australia), vol. 9592 of *Lecture Notes in Computer Science*, pp. 209–220, Springer, 2016.
19. Islam, M., Singh, H., and **Ray, T.**, “A nested differential evolution based algorithm for solving multi-objective bilevel optimization problems,” in *Proceedings of Artificial Life and Computational Intelligence*, (Canberra, Australia), vol. 9592 of *Lecture Notes in Computer Science*, pp. 101–112, Springer, 2016.

20. Bhattacharjee, K.S., Singh, H., and **Ray, T.**, “An evolutionary algorithm with classifier guided constraint evaluation strategy for computationally expensive optimization problems,” in *Proceedings of AI 2015: Advances in Artificial Intelligence*, (Canberra, Australia), vol. 9457 of *Lecture Notes in Computer Science*, pp. 49–62, Springer, 2015.
21. Bhattacharjee, K.S., Singh, H., and **Ray, T.**, “Cost to evaluate versus Cost to learn ? Performance of selective evaluation strategies in multiobjective optimization,” in *Proceedings of AI 2015: Advances in Artificial Intelligence*, (Canberra, Australia), vol. 9457 of *Lecture Notes in Computer Science*, pp. 63–75, Springer, 2015.
22. Singh, H., Asafuddoula, M., Alam, K., **Ray, T.**, “Re-design for robustness: An approach based on many objective optimization,” in *Proceedings of EMO 2015: Evolutionary Multi-Criterion Optimization*, (Guimaraes, Portugal), vol. 9019 of *Lecture Notes in Computer Science*, pp. 343–357, Springer, 2015.
23. Hassanein, O.I., Anavatti, S., and **Ray, T.**, “Hybrid neuro-fuzzy network identification for autonomous underwater vehicle,” in *Proceedings of SEMCCO 2013: Swarm, Evolutionary, and Memetic Computing*, (Chennai, India), vol. 8298 of *Lecture Notes in Computer Science*, pp. 287–297, Springer, 2013.
24. Kirsanov, A., Anavatti, S., and **Ray, T.**, “Path planning with respect of flows and dynamic obstacles for the autonomous underwater vehicle,” in *Proceedings of SEMCCO 2013: Swarm, Evolutionary, and Memetic Computing*, (Chennai, India), vol. 8298 of *Lecture Notes in Computer Science*, pp. 476–486, Springer, 2013.
25. Asafuddoula, M., **Ray, T.**, and Sarker, R., “A decomposition based evolutionary algorithm for many objective optimization with systematic sampling and adaptive epsilon control,” in *Proceedings of EMO 2013: Evolutionary Multi-Criterion Optimization*, (Sheffield, UK), vol. 7811 of *Lecture Notes in Computer Science*, pp. 312–427, Springer, 2013.
26. Alam, K., **Ray, T.**, and Anavatti, S., “An evolutionary approach for the design of autonomous underwater vehicles,” in *Proceedings of AI 2012: Advances in Artificial Intelligence*, (Sydney, Australia), vol. 7691 of *Lecture Notes in Computer Science*, pp. 279–290, Springer, 2012.
27. Asafuddoula, M., **Ray, T.**, and Sarker, R., “A self-adaptive differential evolution algorithm with constraint sequencing,” in *Proceedings of AI 2012: Advances in Artificial Intelligence*, (Sydney, Australia), vol. 7691 of *Lecture Notes in Computer Science*, pp. 182–193, Springer, 2012.
28. Khan, M., and **Ray, T.**, “A memetic algorithm for efficient solution of 2D and 3D shape matching problems,” in *Proceedings of AI 2012: Advances in Artificial Intelligence*, (Sydney, Australia), vol. 7691 of *Lecture Notes in Computer Science*, pp. 362–372, Springer, 2012.
29. Liu, M., and **Ray, T.**, “Efficient solution of capacitated arc routing problems with a limited computational budget,” in *Proceedings of AI 2012: Advances in Artificial Intelligence*, (Sydney, Australia), vol. 7691 of *Lecture Notes in Computer Science*, pp. 791–802, Springer, 2012.
30. Singh, H., **Ray, T.**, and Smith, W., “Performance of infeasibility empowered memetic algorithm (IEMA) on engineering design problems,” in *Proceedings of AI 2010: Advances in Artificial Intelligence*, (Adelaide, Australia), vol. 6464 of *Lecture Notes in Computer Science*, pp. 425–434, Springer, 2011.
31. Isaacs, A., **Ray, T.**, and Smith, W., “An efficient hybrid algorithm for optimization of discrete structures,” in *Proceedings of SEAL 2008: Simulated Evolution and Learning*, (Melbourne, Australia), vol. 5361 of *Lecture Notes in Computer Science*, pp. 625–634, Springer, 2008.
32. Singh, H., Isaacs, A., **Ray, T.**, and Smith, W., “A study on the performance of substitute distance based approaches for evolutionary many objective optimization,” in *Proceedings of SEAL 2008: Simulated Evolution and Learning*, (Melbourne, Australia), vol. 5361 of *Lecture Notes in Computer Science*, pp. 401–410, Springer, 2008.
33. Singh, H., Isaacs, A., **Ray, T.**, and Smith, W., “Infeasibility driven evolutionary algorithm (IDEA) for engineering design optimization,” in *Proceedings of AI 2008: AI 2008: Advances in Artificial Intelligence*, (Auckland, New Zealand), vol. 5360 of *Lecture Notes in Computer Science*, pp. 104–115, Springer, 2008.

34. Isaacs, A., **Ray, T.**, and Smith, W., “An evolutionary algorithm with spatially distributed surrogates for multiobjective optimization,” in *Proceedings of ACAL 2007: Progress in Artificial Life*, (Gold Coast, Australia), vol. 4828 of *Lecture Notes in Computer Science*, pp. 257–268, Springer, 2007.
35. Puttige, V., Anavatti, S., and **Ray, T.**, “Comparative analysis of multiple neural networks for online identification of a UAV,” in *Proceedings of AI 2007: Advances in Artificial Intelligence*, (Gold Coast, Australia), vol. 4830 of *Lecture Notes in Computer Science*, pp. 120–129, Springer, 2007.
36. **Ray, T.**, and Won, K.S., “An evolutionary algorithm for constrained bi-objective optimization using radial slots,” in *Proceedings of International Conference on Knowledge-Based and Intelligent Information and Engineering Systems*, (Melbourne, Australia), vol. 3684 of *Lecture Notes in Computer Science*, pp. 49–56, Springer, 2005.

Full Refereed Conference Papers

1. Kenny, A., **Ray, T.**, Limmer, S., Singh, H., Rodemann, T., and Olhofer, M., “Using Bayesian optimization to improve hyperparameter search in TPOT,” in *Proceedings of Genetic and Evolutionary Computation Conference*, (Melbourne, Australia), pp. 340–348, 2024.
2. Wang, B., Singh, H., and **Ray, T.**, “Improving the performance of bilevel evolutionary algorithms using variable associations,” *Proceedings of IEEE Congress on Evolutionary Computation*, (Yokohama, Japan), pp. 1–8, 2024.
3. Saha, R.N., Singh, H., and **Ray, T.**, “A brief review of multi-concept multi-objective optimization problems,” in *2023 IEEE Symposium Series On Computational Intelligence*, (Mexico City, Mexico), pp. 1511–1517, 2023.
4. Wang, B., Singh, H., and **Ray, T.**, “An evaluation of simple solution transfer strategies for bilevel multiobjective optimization,” *Proceedings of IEEE Congress on Evolutionary Computation*, (Chicago,USA), pp. 1–8, 2023.
5. Rahi, K.H., Singh, H., and **Ray, T.**, “A generalized surrogate-assisted evolutionary algorithm for expensive multi-objective problems,” *Proceedings of IEEE Congress on Evolutionary Computation*, (Chicago,USA), pp. 1–8, 2023.
6. Kenny, A., **Ray, T.**, Limmer, S., Singh, H., Rodemann, T., and Olhofer, M., “Hybridizing TPOT with Bayesian optimization,” in *Proceedings of Genetic and Evolutionary Computation Conference*, (Lisbon, Portugal), pp. 502–510, 2023.
7. Lette, M., Rahi, K.H., Singh, H., and **Ray, T.**, “Vertical-axis wind turbine design using surrogate-assisted optimization with physical experiments in-loop,” in *Proceedings of Genetic and Evolutionary Computation Conference*, (Lisbon, Portugal), pp. 1391–1399, 2023.
8. Huynh, Q.N., Singh, H., and **Ray, T.**, “Improved genetic programming for symbolic regression: Case studies on practical applications,” in *2022 IEEE Symposium Series On Computational Intelligence*, (Singapore), pp. 1135–1142, 2022.
9. Wang, B., Singh, H., and **Ray, T.**, “Investigating neighborhood solution transfer schemes for bilevel optimization,” *Proceedings of IEEE Congress on Evolutionary Computation*, (Padua, Italy), pp. 1–8, 2022.
10. **Ray, T.**, Mamun, M., and Singh, H., “A simple evolutionary algorithm for multi-modal multi-objective optimization,” *Proceedings of IEEE Congress on Evolutionary Computation*, (Padua, Italy), pp. 1–8, 2022.
11. Huynh, Q.N., Singh, H., and **Ray, T.**, “Discovery of implicit relationships from data using linear programming and mixed integer linear programming,” in *Proceedings of Genetic and Evolutionary Computation Conference, Companion*, (Boston, USA), pp. 558–561, 2022.
12. Wang, B., Singh, H., and **Ray, T.**, “Comparing expected improvement and Kriging believer for expensive bilevel optimization,” *Proceedings of IEEE Congress on Evolutionary Computation*, (Kraków, Poland), pp. 1635–1642, 2021.
13. Parker, B., Singh, H., and **Ray, T.**, “Multi-objective optimization across multiple concepts: A case study on lattice structure design,” in *Proceedings of Genetic and Evolutionary Computation Conference*, (Lille, France), pp. 1035–1042, 2021.

14. Wang, B., Singh, H., and **Ray, T.**, “Bridging Kriging believer and expected improvement using bump hunting for expensive black-box optimization,” in *Proceedings of Genetic and Evolutionary Computation Conference Companion*, (Lille, France), pp. 211–212, 2021.
15. Rana, M.J., Zaman, M.F., **Ray, T.**, and Sarker, R., “Economic environmental scheduling of community microgrid using evolutionary algorithm,” in *Proceedings of IEEE Symposium Series on Computational Intelligence*, (Canberra, Australia), pp. 2770–2777, 2020.
16. **Ray, T.**, Singh, H., Habib, A., Rodemann, T. and Olhofer, M., “Online intensification of search around solutions of interest for many-objective optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Glasgow,UK), pp. 1–8, 2020.
17. Habib, A., Rahi, K.H., Singh, H., and **Ray, T.**, “Wind-turbine design optimization using a many-objective evolutionary algorithm,” in *Proceedings of Genetic and Evolutionary Computation Conference*, (Cancun, Mexico), pp. 267–268, 2020.
18. Rahi, K.H., Habib, A., Singh, H., and **Ray, T.**, “Expediting the convergence of evolutionary algorithms by identifying promising regions of the search space,” in *Proceedings of Genetic and Evolutionary Computation Conference*, , (Cancun, Mexico), pp. 201–202, 2020.
19. Habib, A., Singh, H., and **Ray, T.**, “A component-wise study of K-RVEA: Observations and potential future developments,” in *Proceedings of Genetic and Evolutionary Computation Conference*, , (Prague, Czech Republic), pp. 201–202, 2019.
20. Huynh, Q.N., Singh, H., and **Ray, T.**, “Investigating the use of linear programming to solve implicit symbolic regression problems,” in *Proceedings of Genetic and Evolutionary Computation Conference*, , (Prague, Czech Republic), pp. 344–345, 2019.
21. Singh, H., **Ray, T.**, Rodemann, T. and Olhofer, M., “Identifying solutions of interest for practical many-objective problems using recursive expected marginal utility,” in *Proceedings of Genetic and Evolutionary Computation Conference*, (Prague, Czech Republic), pp. 1734–1741, 2019.
22. Chand, S., Singh, H. and **Ray, T.**, “Rollout based heuristics for the quantum circuit compilation problem,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Wellington, New Zealand), pp. 951–958, 2019.
23. Rahi, K.H., Singh, H. and **Ray, T.**, “Investigating the use of sequencing and infeasibility driven strategies for constrained optimization,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Wellington, New Zealand), pp. 1643–1650, 2019.
24. Chand, S., Singh, H. and **Ray, T.**, “Team selection using multi-/many-objective optimization with integer linear programming,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Rio de Janeiro, Brazil), pp. 2523–2530, 2018.
25. Islam, M., Singh, H. and **Ray, T.**, “Efficient global optimization for solving computationally expensive bilevel optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Rio de Janeiro, Brazil), pp. 181–188, 2018.
26. Chand, S., Singh, H. and **Ray, T.**, “Heuristic algorithm for solving resource constrained project scheduling problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (San Sebastian, Spain), pp. 225–232, 2017.
27. Bhattacharjee, K.S., Singh, H., **Ray, T.** and Zhang, Q. , “Decomposition based evolutionary algorithm with a dual set of reference vectors,” in *Proceedings of IEEE Congress on Evolutionary Computation*,(San Sebastian, Spain), pp. 105–112, 2017.
28. Habib,A., Singh, H., and **Ray, T.**, “A study on the effectiveness of constraint handling schemes within efficient global optimization framework,” in *Proceedings of IEEE Symposium Series on Computational Intelligence*, (Athens, Greece), Available Online, 2016.
29. Huynh, Q.N., Singh, H., and **Ray, T.**, “Improving symbolic regression through a semantics driven framework,” in *Proceedings of IEEE Symposium Series on Computational Intelligence*, (Athens, Greece), Available Online, 2016.
30. Milowski, J., Bhattacharjee, K.S., Singh, H. and **Ray, T.**, “Electric vehicles for Australia: A cost-benefit analysis,” in *Proceedings of Twenty Fourth National Conference of the Australian Society for Operations Research* , (Canberra, Australia).

31. Li, C., Anavatti, S., **Ray, T.**, and Shim, H., “A game-theoretic approach to the analysis of traffic assignment,” in *Proceedings of Twentieth Asia-Pacific Symposium on Intelligent and Evolutionary Systems*, (Canberra, Australia), pp. 17–30, 2016.
32. Zaman, M.F., Elsayed, S.M., **Ray, T.**, and Sarker, R., “An evolutionary framework for the bi-objectives dynamic economic and environmental dispatch problems,” in *Proceedings of Twentieth Asia-Pacific Symposium on Intelligent and Evolutionary Systems*, (Canberra, Australia), pp. 495–508, 2016..
33. Huynh, Q.N., Singh, H., and **Ray, T.**, “A semantics based symbolic regression framework for mining explicit and implicit equations from data,” in *Proceedings of Genetic and Evolutionary Computation Conference*, , (Denver, USA), 2016.
34. Asafuddoula, M., Singh, H. and **Ray, T.**, “A CUDA implementation of an improved decomposition based evolutionary algorithm for multi-objective optimization,” in *Proceedings of Genetic and Evolutionary Computation Conference*, (Denver, USA), 2016.
35. Zaman, M.F., Elsayed, S.M., **Ray, T.**, and Sarker, R., “A Co-evolutionary approach for optimal bidding strategy of multiple electricity suppliers,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Vancouver, Canada), pp. 3507–3514, 2016.
36. Habib, A., Singh, H. and **Ray, T.**, “A multi-objective formulation based batch infill strategy for efficient global optimization,” in *Proceedings of IEEE Congress on Evolutionary Computation* (Vancouver, Canada), pp. 4336–4343, 2016.
37. Islam, M., Singh, H. and **Ray, T.**, “ A memetic algorithm for solving bilevel optimization problems with multiple followers,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Vancouver, Canada), pp. 1901–1908, 2016.
38. Huynh, Q.N., Singh, H. and **Ray, T.**, “Optimum redesign of scale-free networks with robustness and cost considerations,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Vancouver, Canada), pp. 529–536, 2016.
39. Chand, S., Singh, H. and **Ray, T.**, “Finding robust solutions for resource constrained project scheduling problems Involving Uncertainties,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Vancouver, Canada), pp. 225–232, 2016.
40. Bhattacharjee, K.S., Singh, H., **Ray, T.** and Branke, J., “Multiple surrogate assisted multiobjective optimization using improved pre-selection,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Vancouver, Canada), pp. 4328–4335, 2016.
41. Zaman, M.F., Sarker, R., and **Ray, T.**, “An evolutionary approach for scheduling solar-thermal power generation system,” in *Proceedings of Conference on Computers & Industrial Engineering*, (Metz, France), 2015.
42. Singh, H., and **Ray, T.**, “Many-objective optimization in engineering design: Case studies using a decomposition based evolutionary algorithm,” in *Proceedings of Eleventh World Congress of Structural and Multidisciplinary Optimization*, (Sydney, Australia), 2015.
43. Bhattacharjee, K.S., and **Ray, T.**, “A novel constraint handling strategy for expensive optimization problems,” in *Proceedings of Eleventh World Congress of Structural and Multidisciplinary Optimization*, (Sydney, Australia), 2015.
44. Asafuddoula, M., **Ray, T.** and Sigh, H. “Characterizing Pareto front approximations in many-objective optimization,” in *Proceeding of Genetic and Evolutionary Computation Conference* , (Madrid, Spain), pp. 607–614, 2015.
45. Asafuddoula, M., **Ray, T.**, Isaacs, A., and Sigh, H., “Performance of a steady state quantum genetic algorithm for multi/many-objective engineering optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Sendai, Japan), pp. 893–899, 2015.
46. Bhattacharjee, K.S., and **Ray, T.**, “Selective evaluation in multiobjective optimization: A less explored avenue,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Sendai, Japan), pp. 1893–1899, 2015.
47. Islam, M., Singh, H. and **Ray, T.**, “A memetic algorithm for the solution of single objective bilevel optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Sendai, Japan), pp. 1643–1650, 2015.

48. Wang, B., Singh, H. and **Ray, T.**, “A multi-objective genetic programming approach to uncover explicit and implicit equations from data,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Sendai, Japan), pp. 1129–1136, 2015.
49. Ismail, M.A., Elsayed, S., **Ray, T.** and Sarker, R., “Memetic algorithm for solving resource constrained project scheduling problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Sendai, Japan), pp. 2761–2767, 2015.
50. Tajbaksh, S.E., **Ray, T.**, Liu, Y., and Reed, M., “Joint power control and resource scheduling in wireless heterogeneous networks,” in *Proceedings of Twenty Second International Conference on Telecommunications*, (Sydney, Australia), 2015.
51. Zaman, M.F., Sarker, R., and **Ray, T.**, “Solving an economic and environmental dispatch problem using evolutionary algorithm,” in *Proceedings of IEEE International Conference on Industrial Engineering and Engineering Management*, (Kuala Lumpur, Malaysia), 2015.
52. Leylek, Z., Neely, A.J., **Ray, T.**, “Global surrogate modelling of gas turbine aerodynamic performance,” in *Proceedings of Nineteenth Australasian Fluid Mechanics Conference*, (Melbourne, Australia), 2014.
53. Liu, M., Singh, H., and **Ray, T.**, “A benchmark generator for dynamic capacitated arc routing problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Beijing, China), pp. 579–586, 2014.
54. Liu, M., Singh, H., and **Ray, T.**, “A memetic algorithm with a new split scheme for solving dynamic capacitated arc routing problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Beijing, China), pp. 595–602, 2014.
55. Alam, K., **Ray, T.**, and Anavatti, S., “Practical application of an evolutionary algorithm for the design and construction of a six-inch submarine,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Beijing, China), pp. 2825–2832, 2014.
56. Elsayed, S., **Ray, T.**, and Sarker, R., “A surrogate-assisted differential evolution algorithm with dynamic parameters selection for solving expensive optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Beijing, China), pp. 1062–1068, 2014.
57. Singh, H., Isaacs, A., and **Ray, T.**, “A hybrid surrogate based algorithm (HSBA) to solve computationally expensive optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Beijing, China), pp. 1069–1075, 2014.
58. Singh, H., Asafuddoula, M., and **Ray, T.**, “Solving problems with a mix of hard and soft constraints using modified infeasibility driven evolutionary algorithm (IDEA-M),” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Beijing, China), pp. 983–990, 2014.
59. Asafuddoula, M., **Ray, T.**, and Sarker, R., “An efficient constraint handling approach for optimization problems with limited feasibility and computationally expensive constraint evaluations,” in *Proceedings of Genetic and Evolutionary Computation Conference*, (Amsterdam, The Netherlands), pp. 113–114, 2013.
60. Kirsanov, A., **Ray, T.**, and Anavatti, S., “3D tools for the robust design optimization of an autonomous underwater vehicle,” in *Proceedings of IEEE International Symposium on Control, Automation, Industrial Informatics and Smart Grid*, (Mysore, India), pp. 1730–1737, 2013.
61. Li, C., Anavatti, S., and **Ray, T.**, “Application of a non-cooperative game theory based traffic assignment,” in *Proceedings of IEEE International Symposium on Control, Automation, Industrial Informatics and Smart Grid*, (Mysore, India), pp. 1124–1128, 2013.
62. **Ray, T.**, Asafuddoula, M., and Isaacs, A., “A steady state decomposition based quantum genetic algorithm for many objective optimization,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Cancun, Mexico), pp. 1817–2824, 2013.
63. Elsayed, S., Sarker, R., and **Ray, T.**, “Differential evolution with automatic parameter configuration for solving the CEC2013 competition on real-parameter optimization,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Cancun, Mexico), pp. 1932–1937, 2013.

64. Asafuddoula, M., **Ray, T.**, Sarker, R., “Evaluate till you violate: A differential evolution algorithm based on partial evaluation of the constraint set ,” in *Proceedings of IEEE Symposium Series on Computational Intelligence*, (Singapore), pp. 31–37, 2013.
65. Zhang, Z., Shankar, K., **Ray, T.**, and Tahtali, M., “Delamination monitoring of composite plates using vibration-based surrogate assisted optimization,” in *Proceedings of Fifteenth Australian International Aerospace Congress*, (Melbourne, Australia), 2013.
66. Asafuddoula, M., **Ray, T.**, and Sarker, R., “A differential evolution algorithm with constraint sequencing,” in *Proceeding of Third Global Congress on Intelligent Systems*, (Wuhan, China), pp. 68–71, 2012.
67. Hassanein, O.I, Salman, S.A., Anavatti, S., and **Ray, T.**, “ANFN Controller Based On Differential Evolution for Autonomous Underwater Vehicles,” in *Proceedings of First International Conference on Innovative Engineering Systems*, (Alex, Egypt), pp. 184–189, 2012.
68. Ihesiulor, O.K., Shankar, K., Zhang, Z., and **Ray, T.**, “Delamination detection using methods of computational intelligence,” in *Proceedings of Sixth Global Conference on Power Control and Optimization*, (Las Vegas, USA), pp. 303–310, 2012.
69. Ihesiulor, O.K., Shankar, K., Zhang, Z., and **Ray, T.**, “Effectiveness of artificial neural networks and surrogate-assisted optimization techniques in delamination detection for structural health monitoring,” in *Proceedings of Twenty Third IASTED International Conference on Modelling and Simulation*, (Banff, Canada), 2012.
70. Alam, K., **Ray, T.**, and Anavatti, S., “A study on the drag estimation of an AUV based on numerical methods,” in *Proceedings of Advances in Control and Optimization of Dynamical Systems*, (Bangalore, India), pp. 1–6, 2012.
71. Asafuddoula, M., **Ray, T.**, Sarker, R., and Alam, K., “An adaptive constraint handling approach embedded MOEA/D,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Brisbane, Australia), pp. 2516–2513, 2012.
72. Elsayed, S., Sarker, R., and **Ray, T.**, “Parameters adaptation in differential evolution,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Brisbane, Australia), pp. 2989–2996, 2012.
73. Hassanein, O.I, Anavatti, S., and **Ray, T.**, “Improved fuzzy neural modeling based on differential evolution for underwater vehicles,” in *Proceedings of World Congress in Computer Science, Computer Engineering, and Applied Computing*, (Las Vegas, USA), 2012.
74. Khan, M., and **Ray, T.**, “Shape representation and a morphing scheme to support flapping wing research,” in *Proceedings of First International Conference on Pattern Recognition Methods and Applications*, (Algarve, Portugal), pp. 494–499, 2012.
75. Li, C., Anavatti, S., and **Ray, T.**, “Adaptive route guidance system with real-time traffic information,” in *Proceedings of Fifteenth International IEEE Conference on Intelligent Transportation Systems*, (Anchorage, USA), pp. 367–372, 2012.
76. Li, C., Anavatti, S., and **Ray, T.**, “Implementing analytical hierarchy process using fuzzy inference technique in route guidance system,” in *Proceedings of International Conference on Artificial Intelligence*, (Las Vegas, USA), pp. 1–5, 2012.
77. Li, C., Anavatti, S., and **Ray, T.**, “An AHP-Fuzzy approach for incorporation of drivers requirement in route guidance system,” in *Proceedings of Advances in Control and Optimization of Dynamical Systems*, (Bangalore, India), pp. 1–5, 2012.
78. Mohamad, A.F.A., **Ray, T.**, and Smith, W., “The quest for optimum high speed planning craft design,” in *Proceedings of Pacific International Maritime Conference*, (Sydney, Australia), pp. 507–516, 2012.
79. Saha, A., and **Ray, T.**, “A repair mechanism for active inequality constraint handling,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Brisbane, Australia), pp. 1240–1247, 2012.
80. Saha, A., and **Ray, T.**, “Equality constrained multi-objective optimization,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Brisbane, Australia), pp. 47–53, 2012.

81. Saha, A., **Ray, T.**, Ogawa, H., and Boyce, R.R., “Learning from evolutionary algorithm based design optimization of axisymmetric scramjet inlets,” in *Proceedings of Eleventh Australian Space Science Conference*, (Canberra, Australia), pp. 351–357, 2011.
82. Alam, K., **Ray, T.**, and Anavatti, S., “Design of a toy submarine using underwater vehicle design optimization framework,” in *Proceedings of IEEE Symposium on Computational Intelligence in Vehicles and Transportation Systems*, (Paris, France), pp. 23–29, 2011.
83. Alam, K., Singh, H., Isaacs, A., **Ray, T.**, and Anavatti, S., “Design optimization of a model submarine: A reverse engineering approach,” in *Proceedings of EUROGEN*, (Capua, Italy), pp. 200–212, 2011.
84. Asafuddoula, M., **Ray, T.**, and Sarker, R., “An adaptive differential evolution algorithm and its performance on real world optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (New Orleans, USA), pp. 1057–1062, 2011.
85. Hassanein, O.I, Anavatti, S., and **Ray, T.**, “Fuzzy modelling and control for autonomous underwater vehicle,” in *Proceedings of Fifth International Conference on Automation, Robotics and Applications*, (Wellington, New Zealand), pp. 169–174, 2011.
86. Hassanein, O.I, Anavatti, S., and **Ray, T.**, “Genetic fuzzy controller for robot manipulator position control based upon inverse dynamics,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (New Orleans, USA), pp. 4202–4209, 2011.
87. Khan, M., Mohamad, A.F.A., Isaacs, A., and **Ray, T.**, “A novel evolutionary approach for 2D shape matching based on B-Spline modelling,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (New Orleans, USA), pp. 655–661, 2011.
88. Li, C., Anavatti, S., and **Ray, T.**, “Short-term traffic prediction using different techniques,” in *Proceedings of Thirty seventh Annual Conference on IEEE Industrial Electronics Society*, (Melbourne, Australia), pp. 2423–2428, 2011.
89. Mohamad, A.F.A., **Ray, T.**, and Smith, W., “Scenario-based hydrodynamic design optimization of high speed planing craft for coastal surveillance,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (New Orleans, USA), pp. 354–361, 2011.
90. Ogawa, H., Alazet, Y., Boyce, R.R., Isaacs, A., and **Ray, T.**, “Design optimization of axisymmetric scramjets for access-to-space,” in *Proceedings of Nineth Australian Space Science Conference*, (Sydney, Australia), pp. 1–10, 2011.
91. Saha, A., **Ray, T.**, and Smith, W., “Towards practical evolutionary robust multi-objective optimization,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (New Orleans, USA), pp. 2123–2130, 2011.
92. Saha, A., and **Ray, T.**, “How does the good old genetic algorithm fare at real world optimization?” in *Proceedings of IEEE Congress on Evolutionary Computation*, (New Orleans, USA), pp. 1049–1056, 2011.
93. Singh, H., and **Ray, T.**, “Performance of a hybrid EA-DE-Memetic algorithm on CEC 2011 real world optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (New Orleans, USA), pp. 1322–1326, 2011.
94. Mohamad, A.F.A., **Ray, T.**, and Smith, W., “A framework for scenario-based hydrodynamic design optimization of hard chine planing craft,” in *Proceedings of Ninth International Conference on Computer and IT Applications in the Maritime Industries*, (Gubbio, Italy), pp. 7–19, 2010.
95. Hassanein, O.I, Anavatti, S., and **Ray, T.**, “Genetic PD control for two-link manipulator using inverse dynamics,” in *Proceedings of International Conference on Intelligent Unmanned System*, (Bali, Indonesia), 2010.
96. Mohamad, A.F.A., **Ray, T.**, and Smith, W., “Hydrodynamic design optimization of a hard chine planing craft for coastal surveillance,” in *Proceedings of International Maritime Conference*, (Sydney, Australia), pp. 72–82, 2010.
97. Singh, H., **Ray, T.**, and Smith, W., “Performance of infeasibility empowered memetic algorithm for CEC 2010 constrained optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Barcelona, Spain), pp. 3770–3777, 2010.

98. Singh, H., **Ray, T.**, and Smith, W., “Surrogate assisted simulated annealing (SASA) for constrained multi-objective optimization,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Barcelona, Spain), pp. 4202–4209, 2010.
99. Ashraf, M.A., Isaacs, A., Young, J., Lai, J.C.S., and **Ray, T.**, “Numerical simulation and multi-objective design of flow over oscillating airfoil for power extraction,” in *Proceedings of Conference on Modelling Fluid Flow*, (Budapest, Hungary), pp. 221–228, 2009.
100. Isaacs, A., **Ray, T.**, and Smith, W., “Memetic algorithm for dynamic bi-objective optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Trondheim, Norway), pp. 1707–1713, 2009.
101. **Ray, T.**, and Yao, X., “A cooperative coevolutionary algorithm with correlation based adaptive variable partitioning,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Trondheim, Norway), pp. 983–989, 2009.
102. Saxena, D., **Ray, T.**, Deb, K., and Tiwari, A., “Constrained many objective optimization: A way forward,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Trondheim, Norway), pp. 545–552, 2009.
103. Singh, H., Isaacs, A., **Ray, T.**, and Smith, W., “An improved secondary ranking for many objective optimization problems,” in *Proceedings of Eleventh Annual Conference on Genetic and Evolutionary Computation Conference*, (Montreal, Canada), pp. 1837–1838, 2009.
104. Singh, H., Isaacs, A., Nguyen, T.T., **Ray, T.**, and Yao, X., “Performance of infeasibility driven evolutionary algorithm (IDEA) on constrained dynamic single objective optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Trondheim, Norway), pp. 3127–3134, 2009.
105. Isaacs, A., Puttige, V., **Ray, T.**, Smith, W., and Anavatti, S., “Development of a memetic algorithm for dynamic multi-objective optimization and its application to online system identification,” in *Proceedings of IEEE International Joint Conference on Neural Networks*, (Hong Kong), pp. 548–554, 2008.
106. Isaacs, A., **Ray, T.**, and Smith, W., “Blessings of maintaining infeasible solutions for constrained multi-objective optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Hong Kong), pp. 2780–2787, 2008.
107. **Ray, T.**, and Smith, W., “Robust ship designs - balancing uncertainty - impacts of future trends,” in *Proceedings of Pacific International Maritime Conference*, (Sydney, Australia), pp. 1–10, 2008.
108. Sidek, M., Prusty, G., and **Ray, T.**, “Determination of ship grounding and accident scenarios of a geographical area using risk analysis,” in *Proceedings of Pacific International Maritime Conference*, (Sydney, Australia), pp. 1–10, 2008.
109. Singh, H., Isaacs, A., **Ray, T.**, and Smith, W., “A simulated annealing algorithm for single objective trans-dimensional optimization problems,” in *Proceedings of Eighth International Conference on Hybrid Intelligent Systems*, (Barcelona, Spain), pp. 19–24, 2008.
110. Singh, H., Isaacs, A., **Ray, T.**, and Smith, W., “A simulated annealing algorithm for constrained multi-objective optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Hong Kong), pp. 1655–1662, 2008.
111. Smith, W., and **Ray, T.**, “Preliminary frigate design using a multi-objective evolutionary algorithm,” in *Proceedings of Pacific International Maritime Conference*, (Sydney, Australia), pp. 1–10, 2008.
112. Isaacs, A., **Ray, T.**, and Smith, W., “A hybrid evolutionary algorithm with simplex local search,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Singapore), pp. 1701–1708, 2007.
113. Isaacs, A., **Ray, T.**, and Smith, W., “Novel evolutionary algorithm with set representation scheme for truss design,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Singapore), pp. 3902–3908, 2007.
114. Sanders, G., and **Ray, T.**, “Optimal offline path planning of a fixed wing unmanned aerial vehicle (UAV) using an evolutionary algorithm,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Singapore), pp. 4410–4416, 2007.

115. Sarker, R., **Ray, T.**, and da Fonseca, J.B., “An evolutionary algorithm for machine layout and job assignment problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Singapore), pp. 3991–3997, 2007.
116. **Ray, T.**, and Sarker, R., “Multiobjective evolutionary approach to the solution of gas lift optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Vancouver, Canada), pp. 3182–3188, 2006.
117. Briggs, G., **Ray, T.**, and Milthorpe, J.F., “Optimization of a launch vehicle stack model using an evolutionary algorithm,” in *Proceedings of Systems Engineering, Test and Evaluation Conference*, (Melbourne, Australia), 2006.
118. Brown, M., Mudford, N.R., Neely, A.J., and **Ray, T.**, “Robust design optimization of two-dimensional scramjet inlets,” in *Proceedings of Fourteenth AIAA/AHI International Space Planes and Hypersonic Systems and Technologies Conference*, (Canberra, Australia), AIAA 2006-8140, 2006.
119. Deepak, R., **Ray, T.**, and Boyce, R.R., “Nose cone design optimization for a hypersonic flight experimental trajectory,” in *Proceedings of Fourteenth AIAA/AHI International Space Planes and Hypersonic Systems and Technologies Conference*, (Canberra, Australia), AIAA 2006-7998 2006.
120. Sarker, R., Freeman, G., Kara, S., Kayis, B., **Ray, T.**, and Abbass, H., “A multi-agent approach for analysing material flow in a manufacturing supply chain,” in *Proceedings of Second International Intelligent Logistics Systems Conference*, (Brisbane, Australia), pp. 20.1–20.11, 2006.
121. Sarker, R., and **Ray, T.**, “Multiobjective evolutionary algorithms for solving constrained optimization problems,” in *Proceedings of International Conference on Computational Intelligence for Modelling, Control and Automation, and International Conference on Intelligent Agents, Web Technologies and Internet Commerce (CIMCA-IAWTIC)*, (Vienna, Austria), pp. 197–202, 2005.
122. **Ray, T.**, “A comprehensive framework for multidisciplinary design optimization,” in *Proceedings of Fifteenth International Conference on Engineering Design, The Practice of Engineering Design*, (Brisbane, Australia), pp. 462–463, 2005.
123. **Ray, T.**, and Won, K.S., “A comprehensive framework for multidisciplinary design optimization,” in *Proceedings of Third International Conference on Computational Intelligence, Robotics and Autonomous Systems*, (Singapore), 2005.
124. Chan, K.P., and **Ray, T.**, “An evolutionary algorithm to maintain diversity in the parametric and the objective space,” in *Proceedings of Third International Conference on Computational Intelligence, Robotics and Autonomous Systems*, (Singapore), 2005.
125. Liu, Y., and **Ray, T.**, “Performance of surrogates within a framework for robust optimal design,” in *Proceedings of Fifteenth International Conference on Engineering Design: Engineering Design and the Global Economy*, (Canberra, Australia), pp. 2913–2924, 2005.
126. Sarker, R., and **Ray, T.**, “Simultaneous optimization of multi-objective linear and nonlinear problems,” in *Proceedings of Eighteenth National Conference of the Australian Society for Operations Research*, (Perth, Australia), pp. 163–170, 2005.
127. Sarker, R., Kara, S., Freeman, G., Kayis, B., **Ray, T.**, and Abbass, H., “A multi-agent simulation study for supply chain operation,” in *Proceedings of Computational Intelligence for Modelling, Control and Automation, International Conference on Intelligent Agents and International Conference on Web Technologies and Internet Commerce*, (Vienna, Austria), vol. 1, pp. 728–733, 2005.
128. Won, K.S., and **Ray, T.**, “Performance of kriging and cokriging based surrogate models within the unified framework for surrogate assisted optimization,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Portland, USA), vol. 2, pp. 1577–1585, 2004.
129. **Ray, T.**, Venkatarayalu, N. V., Won, K. S., and Chan, K. P., “Study on the behaviour and implementation of parent centric crossover within the generalized generation gap model,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Canberra, Australia), vol. 2, pp. 1996–2003, 2003.

130. Venkatarayalu, N.V., and **Ray, T.**, “Single and multi-objective design of Yagi-Uda antennas using computational intelligence,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Canberra, Australia), vol. 2, pp. 1237–1242, 2003.
131. Won, K.S., **Ray, T.**, and Tai, K., “A framework for optimization using approximate functions,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Canberra, Australia), vol. 3, pp. 1520–1527, 2003.
132. Won, K.S., **Ray, T.**, and Tai, K., “Modelling and managing approximate functions within an optimization framework,” in *Proceedings of Second International Conference on Computational Intelligence, Robotics and Autonomous Systems*, (Singapore), 2003.
133. **Ray, T.**, “A behavioural model for single and multi-objective design optimization,” in *Proceedings of International Conference on Ship and Ocean Technology*, (Kharagpur, India), 2002.
134. **Ray, T.**, “Constrained robust optimal design using a multiobjective evolutionary algorithm,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Honolulu, USA), vol. 1, pp. 419–424, 2002.
135. **Ray, T.**, Ling, P.C., and Tai, K., “A new fitness assignment and parent selection strategy within an evolutionary algorithm for constrained optimization problems,” in *Proceedings of Fourth Asia Pacific Conference on Simulated Evolution and Learning* (Singapore), 2002.
136. **Ray, T.**, and Liew, K.M., “A swarm with an effective information sharing mechanism for unconstrained and constrained single objective optimization problems,” in *Proceedings of IEEE Congress on Evolutionary Computation*, (Seoul, South Korea), vol. 1, pp. 75–80, 2001.
137. **Ray, T.**, and Saini, P., “A simple illustration of optimization using a swarm,” in *Proceedings of International Conference on Computational Intelligence, Robotics and Autonomous Systems*, (Singapore), pp. 29–34, 2001.
138. **Ray, T.**, Tai, K., and Seow, K.C., “An evolutionary algorithm for constrained optimization,” in *Proceedings of Genetic and Evolutionary Computation Conference*, (Las Vegas, USA), pp. 771–777, 2000.
139. **Ray, T.**, Gokarn, R.P., and Sha, O.P., “An integrated decision support system for concept design,” in *Proceedings of International Conference on Maritime Technology*, (Singapore), pp. 161–177, 1995.
140. **Ray, T.**, Gokarn, R.P., and Sha, O.P., “Analysis of ship design under uncertainty in the multiple criteria decision making framework,” in *Proceedings of International Symposium on Practical Design of Ships and Mobile Units*, (Seoul, South Korea), vol. 2, pp. 1264–1266, 1995.

Abstract/Extended Abstract Refereed Conference Papers

1. de Baar, J.H.S., Lylek, Z., Habib, A., Neely, A.J., and **Ray, T.**, “Multi-fidelity efficient global optimisation of the geometry of a transonic axial compressor,” in *Proceedings of International Society of Air-breathing Engines Conference*, ISABE-2017-22544, (Manchester, UK), 2017.
2. Saha, A., **Ray, T.**, Ogawa, H., and Boyce, R.R., “Robust design optimization of high performance axisymmetric scramjets based on surrogate assisted evolutionary algorithms,” in *Proceedings of Twenty Eighth International Congress of the Aeronautical Sciences*, (Brisbane, Australia), 2012.
3. Smith, W., Mohamad, A.F.A., and **Ray, T.**, “The design of high speed planing craft using an optimization framework,” in *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, (Houston, USA), IMECE2012-85844, 2012.
4. Zhang, Z., Ihesiulor, O.K., Shankar, K., and **Ray, T.**, “Comparison of inverse algorithms for delamination detection in composite laminates,” in *Proceedings of ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, (Georgia, USA), pp. 577–585, 2012.
5. Liu, M., and **Ray, T.**, “A memetic algorithm with random key crossover and modified neighborhood search for the solution of capacitated arc routing problems,” in *Proceedings of Sixth International Conference on Genetic and Evolutionary Computing*, (Kitakyushu, Japan), pp. 433–436, 2012.

6. Liu, M., and **Ray, T.**, “A memetic algorithm with a novel split approach for efficient solution of modified capacitated arc routing problems,” in *Proceedings of International Conference on Operations Research*, (Zurich, Switzerland), pp. 128–134, 2011.
7. Ogawa, H., Brown, L., Boyce, R.R., and **Ray, T.**, “Multiobjective design optimization of axisymmetric scramjet nozzle and external components considering static stability by using surrogate assisted evolutionary algorithms,” in *Proceedings of International Society of Air-breathing Engines*, (Gothenburg, Sweden), pp. 1–14, 2011.
8. Mohamad, A.F.A., Nik, W., **Ray, T.**, and Smith, W., “Hull surface information retrieval and optimization of high speed planing craft,” in *Proceedings of First International Conference in Mechanical Engineering Research*, (Pahang, Malaysia), 2011.
9. Fearnley, J., and **Ray, T.**, “Design and development of a six inch sub,” in *Proceedings of First Submarine Institute of Australia Technology Conference*, (Adelaide, Australia), 2011.
10. Gover, N., Hill, C., Alam, K., **Ray, T.**, and Anavatti, S., “Design and development of a small, low-cost UUV for shallow water operations,” in *Proceedings of First Submarine Institute of Australia Technology Conference*, (Adelaide, Australia), 2011.
11. Ogawa, H., Alazet, Y., Pudsey, A., Boyce, R.R., Isaacs, A., and **Ray, T.**, “Full flow-path optimization of axisymmetric scramjet engines,” in *Proceedings of Seventeenth AIAA International Space Planes and Hypersonic Systems and Technologies Conference*, (San Francisco, USA), pp. 1762–1775, 2011.
12. Ogawa, H., Boyce, R.R., Isaacs, A., and **Ray, T.**, “Multi-objective design optimization of inlet and combustor for axisymmetric scramjets,” in *Proceedings of Australian Combustion Symposium*, (Brisbane, Australia), pp. 1–5, 2009.
13. Mohamad, A.F.A., **Ray, T.**, and Smith, W., “An optimization framework for the design of Planning Craft,” in *Proceedings of International Conference on Computer Applications in Shipbuilding*, (Shanghai, China), 2009.
14. Isaacs, A., **Ray, T.**, and Tsai, H.M., “Constrained aerodynamic shape optimization using an evolutionary algorithm with spatially distributed surrogates,” in *Proceedings of Twenty Sixth AIAA Applied Aerodynamic Conference*, (Honolulu, USA), 2008.
15. Briggs, G.P., **Ray, T.**, and Milthorpe, J.F., “Evolutionary algorithm’s use in optimization of a launch vehicle stack model,” in *Proceedings of Forty fifth AIAA Aerospace Sciences Meeting and Exhibition*, (Reno, USA), AIAA 2007-364, 2007.
16. **Ray, T.**, and Smith, W., “Surrogate assisted evolutionary algorithm for multi-objective optimization,” in *Proceedings of AIAA Specialist MDO Conference*, (Rhode Island, USA), AIAA 2006-8140, 2006.
17. Won, K.S., Tsai, H.M., **Ray, T.**, and Liu, F., “Flutter simulation and prediction via identification of non-linear impulse response,” in *Proceedings of Forty Third AIAA Aerospace Sciences Meetings and Exhibition*, (Reno, USA), AIAA 2005-834, 2005.
18. **Ray, T.**, and Tsai, H.M., “A parallel hybrid optimization algorithm for robust airfoil design,” in *Proceedings of Forty Second AIAA Aerospace Science Meeting and Exhibition*, (Reno, USA), AIAA 2004-905, 2004.
19. Rao, C.S., **Ray, T.**, and Tsai, H.M., “Aircraft configuration design using a multidisciplinary optimization approach,” in *Proceedings of Forty Second AIAA Aerospace Sciences Meeting and Exhibition*, (Reno, USA), AIAA 2004-536, 2004.
20. Ng, K.Y., Tan, C.M., **Ray, T.**, and Tsai, H.M., “Single and multiobjective wing planform and airfoil shape optimization using a swarm algorithm,” in *Proceedings of Forty first AIAA Aerospace Sciences Meeting*, (Reno, USA), AIAA 2003-45, 2003.
21. Tan, C.M., **Ray, T.**, and Tsai, H.M., “A comparative study of evolutionary algorithm and swarm algorithm for airfoil shape optimization problems,” in *Proceedings of Forty First AIAA Aerospace Sciences Meeting*, (Reno, USA), AIAA 2003-102, 2003.
22. **Ray, T.**, and Tsai, H.M., “Some issues in NURBS representation of airfoil shapes for optimization,” in *Proceedings of Eighth International Conference on Numerical Grid Generation in Computational Field Simulations*, (Missisipi, USA), pp. 815–825, 2002.

23. **Ray, T.**, Tsai, H.M., and Tan, C.M., “Effects of solver fidelity on a parallel search algorithm’s performance for airfoil shape optimization problems,” in *Proceedings of Ninth AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization Conference*, (Atlanta, USA), 2002.
24. Tan, H., Liew, K.M., **Ray, T.**, and Tan, M.J., “Evolutionary algorithm for optimal process design in composite sheet metal forming for minimum springback,” in *Proceedings of Seventh International Conference NUMIFORM 2001: Simulations of Materials Processing: Theory, Methods and Applications*, (Toyohashi, Japan), pp. 723–727, 2001.
25. Tai, K., Cui, G.Y., and **Ray, T.**, “Design synthesis of path generating complaint mechanisms by evolutionary optimization of topology and shape,” in *Proceedings of ASME Design Automation Conference*, (Maryland, USA), 2000.
26. **Ray, T.**, “Mathematical modelling for large scale system optimization,” in *Proceedings of Pacific Asian Conference on Expert Systems*, (Singapore), pp. 742–747, 1997.
27. **Ray, T.**, Heng, K.J., and Khoong, C.M., “Mathematical modelling and optimization of a real life dynamic facility,” in *Proceedings of Ship and Ocean Technology Conference*, (Kharagpur, India), 1997.
28. **Ray, T.**, and Mallick, S.K., “A decision model for optimum FPSO acquisition and management,” in *Proceedings of Offshore Technology Conference*, (Houston, USA), pp. 333–338, 1997.
29. **Ray, T.**, “A neural network model for design applications,” in *Proceedings of National Seminar on Aerospace Structures*, (Bombay, India), 1996.
30. Sha, O.P., **Ray, T.**, and Gokarn, R.P., “An artificial neural network model for preliminary ship design,” in *Proceedings of Eighth International Conference on Computer Applications in Shipbuilding*, (Bremen, Germany), vol. 2, pp. 10–15. 1994.
31. **Ray, T.**, Gokarn, R.P., and Sha, O.P., “Selection of the main propulsion plant at the preliminary design stage using multiple criteria decision making,” in *Proceedings of International Maritime Conference*, (Bombay, India), pp. 3–14, 1994.