Souma Chowdhury

Assistant Professor
Mechanical and Aerospace Engineering
246 Bell Hall, University at Buffalo, Buffalo, NY 14260

Phone: (716) 645-3059
Email: soumacho@buffalo.edu
http://adams.eng.buffalo.edu

Education

Doctor of Philosophy in Mechanical Engineering (Graduated – Aug 2012)
RENSSELAER POLYTECHNIC INSTITUTE, NY   Department of Mechanical, Aerospace and Nuclear Engineering
Adviser: Prof. Achille Messac, Co-Adviser: Prof. Luciano Castillo
PhD Dissertation: *Integrative Modeling and Novel Particle Swarm-based Optimal Design of Wind Farms*

Masters of Science in Mechanical Engineering (Graduated – Dec 2008)
FLORIDA INTERNATIONAL UNIVERSITY, FL   Department of Mechanical and Materials Engineering
Adviser: Prof. George S. Dulikravich
MS Thesis: *Modified Predator-Prey (MPP) Algorithm for Single- and Multi-Objective Optimization Problems*

Bachelor of Technology (Honors) in Mechanical Engineering (Graduated – June 2007)
INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR, INDIA   Department of Mechanical Engineering
Adviser: Prof. Suman Chakraborty, Co-Adviser: Prof. Nirupam Chakraborty

Summary of Research Experience/Accomplishments

- Established and currently directing the **Adaptive Design Algorithms Models and Systems (ADAMS)** Lab
- **Current areas of fundamental research**:
  - *Nature-inspired Computing*: Evolutionary, Swarm Intelligence, and Neural Algorithms for optimization, machine learning, and autonomous systems design.
  - *Design Optimization***:** Mixed-Integer Nonlinear Programming, Multi-objective Optimization, Uncertainty Quantification in Metamodels, Adaptive Model Refinement in Multi-fidelity Optimization.
- **Areas of engineering (research) applications:**

  @ University at Buffalo →
  - *Multi-agent Systems*: decentralized task planning, swarm-bots, aerial and indoor swarm systems for disaster response and environmental monitoring, distributed analytics for industrial IoT.
  - *Autonomous Systems*: hybrid UAV design and controls, UAV noise mitigation for co-robotic environments, cooperative/non-cooperative collision avoidance, flapping wing flight, and energy-autonomous UGV.
  - *Multi-fidelity Optimization*: bio-inspired flow tailoring, EV battery thermal management, parameter estimation in atomistic-scale models, aperiodic metamaterials design, and building energy management.

  Prior to UB → Wind Farm Design, Product Platform Planning.
- **Publications Authored/Co-Authored:**

  2 Book Chapters, 28 Journal Articles, and 75 Full-length Conference Articles; 1284 citations, h-index of 17.

- **Sponsored Research:**
  - **Co-PI** on new **DARPA** Award (Physics of AI program).
  - **PI** on prior/carry-over **NSF** Award (CMMI ESD program).

Summary of Professional Experiences

- **Research Advisor Roles:**

  Advising 3 PhD students; Advising 2 MS students (both MS Thesis); Advised (graduated) 13 MS students (7 MS Thesis, 6 MS Project); and Advising 2 Undergraduate researchers.

- **Educator/Teaching Roles:**

  Taught two Graduate level courses and three Undergraduate level courses

- **Professional Roles:**
  - *Review Panelist for NSF* (twice); also served as ad hoc reviewer; (CBET & CISE)
  - *Reviewer* for 20 Peer-reviewed Journals in the areas of Design, Energy, Robotics, and AI.
  - *Member* (selected) of the AIAA MDO Technical Committee (MDO-TC); *Organizer and Chair of* Sessions in ASME IDETC/ Power-Energy, AIAA Scitech/ Aviation, ISSMO WCSMO, and OPTI conferences
  - *Organizing* the Student Paper Competition and Multifidelity Workshop in AIAA Aviation conference.

Prior Work Experience

Assistant Research Professor – MISSISSIPPI STATE UNIVERSITY (Sep 2013 to Dec 2015), Department of Aerospace Engineering, Center for Advanced Vehicular Systems (CAVS), and faculty of Computational Engineering. Primary responsibilities included:

- Perform research in *multidisciplinary modeling and optimization*, with applications to *wind energy systems, energy-efficient buildings, electric vehicle integration, unmanned aerial systems, and brain injury mitigation.*
- Preparation of grants/proposals to Funding Agencies (NSF/NASA/DOE)
- Co-advising PhD students in the Multidisciplinary Design Optimization Laboratory

Research Assistant Professor - SYRACUSE UNIVERSITY (Sep 2012 to Aug 2013), Department of Mechanical and Aerospace Engineering. Primary responsibilities included:

- Performing & supervising research in *multidisciplinary optimization* and *statistical modeling*, and their applications to complex wind energy systems and energy-efficient building systems
- Preparation of proposals for research funding (NSF)
- Co-advising PhD students in the Multidisciplinary Design Optimization Laboratory

Note: Prior to graduating with Doctorate (in 2012), Souma Chowdhury had been employed in various TA, RA, GA, and intern positions as an undergraduate and graduate student.

Awards and Honors

- Renewable Energy Top Paper Award, Elsevier, 2015
- 3rd place ($5,000 award) in the ASME Innovation Showcase Competition, Montreal, Canada, 2012
- Awarded $5,000 Summer Foundry funding by RPI for tech start-up, 2012
- 2nd place ($2,500 award) in the RPI Business Plan Competition, 2012
- Awarded NYSERDA CleanTech start-up funding through the Syracuse Tech Garden

Courses Taught

Courses taught/teaching at University at Buffalo

Graduate-level Courses (two)

- MAE 552: Heuristic Optimization for Engineering Design
  - Taught in Spring 2016, Spring 2017, and Spring 2018.
- MAE 550: Optimization in Engineering Design
  - Teaching in Fall 2018.

Undergraduate-level Courses (one)

- MAE 376: Applied Mathematics for MAE
  - Taught/teaching in Fall 2016, Fall 2017, and Fall 2018.

Courses taught prior to UB

- Introduction to Practical Design Optimization (*Undergraduate course in MAE, Syracuse University*)
- Advanced Practical Design Optimization (*Graduate course in MAE, Syracuse University*)
- Programming for Mechanical Engineers (*Undergraduate course in ME, Florida Intl. University*)

Grants/Funding (external)

1. **DARPA Award**: Amount: **$499,394** (Phase 1, awarded; Sep 24, 2018 – Jun 24, 2019), $487,347 (Phase 2, pending; Jun 25, 2019 – Mar 24, 2020); PI: Rahul Rai, Co-PIs: Souma Chowdhury & David Doermann; Sub-contract: PARC – Title: *Physics LEArning (PLEA): A hybrid physics guided machine learning approach for predictive modeling of complex systems*. Disruption Opportunity/The Physics of Artificial Intelligence program.

2. **NSF Award: 1642340**; Carryover Amount: **$45,668**; Jan 2016 – Sep 2016; PI: Souma Chowdhury – *Systems of Systems Approach and Uncertainty Mitigation/Exploitation for Wind Farm Design*, CMMI: Engineering Systems Design Program. (***carry-over from Mississippi State University (MSU)***).

   Original Award at MSU: **$ 369,023**, CMMI 1437746, 07/16/13 – 05/31/16: PI: Chowdhury; (prior PI: Messac).

3. **U Buffalo (seed) Award:** Amount: $35,000; Sep 1, 2017 – Aug 31, 2018; PIs: Souma Chowdhury, Mostafa Nouh, and Christina Stocking; *Noise Regulation in Small Unmanned Aerial Vehicles: Towards Ergonomic Integration in Complex Warehouse Environments*, SMART CoE Exploratory Funding.

Research Supervision at University at Buffalo

Advising 3 PhD Students:

- **Payam Ghassemi** (Spring 2017 – present)
  Ph.D. dissertation (tentative): *Decentralized asynchronous task perception and planning in cooperative multi-agent systems*.

- **Amir Behjat** (Fall 2017 – present)
  Ph.D. dissertation (tentative): *Concurrent design of morphology and intelligence architectures for robust and lifelong autonomy*

- **Chen Zeng** (Spring 2019 – present)
  Ph.D. dissertation (tentative): *Topological representation and co-design of intelligent reconfigurable systems*

Advised/Advising 10 Master's Thesis Students (8 graduated, 2 ongoing):

- **Maulikkumar Dhameliya** (Spring 2017 – present)
  MS Thesis (tentative): *Design, fabrication, and testing of swarm of micro-bots*.

- **Krushang Gabani** (Fall 2018 – present)
  MS Thesis (tentative): *Quadcopter UAV control and planning for non-cooperative collision avoidance*

- **Sharat Chidambaram** (graduated – August 2018)
  MS Thesis: *Neuroevolution in control of intelligent systems: benchmark testing, simulated and physical demonstrations.*

- **Sidharth Sher** (graduated – August 2018)
  MS Thesis: *Investigating virtual environment and optimal behavior of swarm robots.*

- **Sumeet Lulekar** (graduated – August 2018)
  MS Thesis: *Passive surface flow tailoring with optimized bio-inspired riblets on 3D-airfoil.*

- **Vivek Bhavsar** (graduated – August 2018)
  MS Thesis: *Coupled aerodynamic/dynamic model and optimization of an avian inspired flight.*

- **Chen Zeng** (graduated – August 2018)
  MS Thesis: *Coupled aerodynamic/dynamic model and optimization of an avian inspired flight.*

- **Sanchit Gupta** (graduated – August 2017)
  MS Thesis: *Small Autonomous System for Emergency Response: Platform Development, Computer Vision and Flight testing.*

- **Steve Paul** (graduated – August 2017)
  MS Thesis: *A Bio-inspired Neural System for Energy Optimal Collision Avoidance by Unmanned Aerial Vehicles.*

- **Chenrui Guo** (graduated – May 2017)
  MS Thesis: *Optimal Online Path Planning with Multi-Obstacles Avoidance for Autonomous Fixed-Wing Unmanned Aerial Vehicles.*

Advised 6 M.S. Project Students (all graduated):

- Rishab Turakia (August 2017), *Optimized Scheduling of Distributed Generation and Storage Systems.*
- Divya Vani, (August 2017), *Investigation of Passive Surface Flow Control features for Aerodyn. Efficiency.*
- Bing Xu (May 2017), *Structure Analysis and Optimization of Transitioning UAV.*
- Kaige Zhu (May 2017), *Energy Prediction & Optimization for Source Side and Demand Side with Storage.*
- Srinivas Adulla (December 2016) *Design Of Automated Battery Swap Station For A Quadcopter.*
- Ben Rinauto, (August 2016), *A Computational Framework for Designing a Reconfigurable UAV.*

Advising 2 Undergraduate Students:

- Niranjan Ravichandra (Fall 2017 – present), *Adaptive wireless transmission and design of hexapod robots.*
- Andrew Hoffman (Fall 2018 - present), *Inter-agent communication and evaluation of swarm-bots.*

Research Supervision prior to University at Buffalo

- Co-advisor to: Ali Mehmani, PhD: Doctoral Dissertation title: *Uncertainty-Integrated Surrogate Modeling for Complex System Optimization*, May 2015, Syracuse University, Syracuse, NY.

- Co-advisor to: Weiyang Tong, PhD: Doctoral Dissertation title: *Conceptual Design of Wind Farms through Novel Multi-Objective Swarm Optimization*, May 2015, Syracuse University, Syracuse, NY.

Professional & Synergistic Activities

Society Affiliations

- American Society of Mechanical Engineers (ASME) – Professional Member
- American Institute of Aeronautics and Astronautics (AIAA) – Senior Member
- Institute of Electrical and Electronics Engineers (IEEE) – Professional Member

Committee Memberships (by nomination & selection)

- Member of AIAA Multidisciplinary Design Optimization (MDO) Technical Committee
  https://info.aiaa.org/tac/adsg/MDOTC/default.aspx
  (*Core member of Education Sub-committee* – organizes student competitions and companion tech. materials)

- Affiliate Member of AIAA Non-Deterministic Approaches (NDA) Technical Committee
  https://info.aiaa.org/tac/adsg/NDATC/default.aspx

(*AIAA Technical Committees consist of worldwide experts in their fields who help develop, support, and administer AIAA products and services, including conferences, publications, awards, and student design contests*)

Federal Grant Review Panel

- Served as ad hoc Reviewer for National Science Foundation (NSF), for proposals submitted to the Software Infrastructure for Sustained Innovation (CISE) program
- Served on National Science Foundation (NSF) Review Panel for Grant Proposals in 2013 and 2014
- Served as ad hoc Reviewer for National Science Foundation (NSF) CAREER Proposals, 2013 and 2014

Journal Review

Reviewer for the following **20 International Journals**:

1. ASME Journal of Mechanical Design
2. Applied Soft Computing
3. Energies
4. Energy Conversion and Management
5. Engineering Optimization
6. IEEE Computational Intelligence Magazine
7. IEEE Transactions on Cybernetics
8. IEEE Robotics and Automation Letters
9. IEEE Transactions on Power Systems
10. IEEE Transactions on Sustainable Energy
11. Intl. Journal in Energy Sector Management
12. Inverse Problems in Science and Engineering
13. Materials and Manufacturing Processes
14. Optimization and Engineering
15. Plos One
16. Renewable Energy
17. Robotics and Autonomous Systems
18. Structural and Multidisciplinary Optimization
19. Sustainable Energy Technologies & Assessment
20. Swarm and Evolutionary Computation

Workshop / Competition Organization (at Intl. Technical Conferences)

- Organizer for the ***Student Paper Competition*** on Multidisciplinary Analysis and Optimization at AIAA AVIATION 2018 (Atlanta, GA) and AIAA AVIATION 2019 (Dallas, TX).
- Co-Organizer for the ***Multi-fidelity Modeling Workshop*** at AIAA AVIATION 2019 (Dallas, TX).

Session Organization and Chairing at Intl. Technical Conferences

- ASME 2019 International Design Engineering Technical Conference (IDETC), Anaheim, CA, August 2019
  - Symposium Coordinator: Artificial Intelligence and Computational Synthesis
  - Symposium Coordinator: Data-driven Design

- ASME 2018 International Design Engineering Technical Conference (IDETC), Quebec, Canada, August 2018
  - Symposium Coordinator (and Session Chair): Artificial Intelligence and Computational Synthesis
  - Symposium Coordinator: Data-driven Design
  - Session Chair: Mobile Robot: Design Modeling Estimation

- ASME 2017 International Design Engineering Technical Conference (IDETC), Cleveland, OH, August 2017
  - Symposium Coordinator (and Session Chair): Design & Optimization of Sustainable Energy Systems
  - Symposium Coordinator: Data-driven Design

- AIAA Aviation Forum and Exposition 2017, Denver, CO, June 2017
  - Session Chair: MDO: Aircraft Design Optimization I and II

- ASME 2016 International Design Engineering Technical Conference (IDETC), Charlotte, NC, August 2016
  - Symposium Coordinator: Design and Optimization of Sustainable Energy Systems
  - Symposium Coordinator: Data-driven Design

- AIAA Aviation Forum and Exposition 2016, Washington DC, June 2016
  - Session Chair: Shape and Topology Optimization II
  - Session Co-Chair: Surrogate Modeling and Non-Deterministic Design - Methods and Applications I

- ASME 2015 Power and Energy Conference, San Diego, CA, June-July 2015
  - Coordinator and Chair: Wind Energy – Grid Integration
  - Coordinator and Chair: Wind Energy – Systems Engineering and Optimization

- ASME 2015 International Design Engineering Technical Conference (IDETC), Boston, MA, August 2015
  - Coordinator and Chair for DAC 4: Design and Optimization of Sustainable Energy Systems
  - Coordinator and Chair for DAC 10: Data-driven Design

- ASME 2014 *International Design Engineering Technical Conference* (IDETC), Buffalo, NY, August 2014
  - Lead Coordinator and Chair: Design and Optimization of Sustainable Energy Systems
  - Coordinator and Chair: Data-driven Design

- ASME 2013 *International Design Engineering Technical Conference* (IDETC), Portland, OR, August 2013.
  - Coordinator and Chair for DAC 4: Design and Optimization of Sustainable Energy Systems

- Session organizer and chair for ISSMO 10th World Congress on *Structural and Multidisciplinary Optimization* 2013 Orlando, FL, May 2013

- Session Chair for the 14th AIAA *Multidisciplinary Analysis and Optimization* (MAO) Conference, Indianapolis, IN, 2012

- Session Organizer and Chair, for the ASME 2012 *International Design Engineering Technical Conference* (IDETC), Chicago, IL

- Session Organizer and Chair, and Reviewer for the 2011 ASME *International Design Engineering Technical Conference* (IDETC), Washington, DC.


Invited Lectures/Seminars

- Mechanical and Industrial Engineering Seminar, *Advances in Particle Swarm Optimization and Informed Metamodeling for Designing Complex Systems*, University of Illinois at Chicago, September 15, 2015.

- Aerospace Engineering Seminar Series, *Informed Design Automation: Designing Sustainable & Uncertainty-aware Energy Systems and Unmanned Aerospace Systems*, Iowa State University, March 3, 2014.

- NWRC Summer Lecture Series, *High-fidelity Modeling of Wind Resource Uncertainties and Integrative Planning of Optimal Wind Farm Layouts*, Texas Tech University, July 29, 2013.

- Mechanical Engineering Department Seminar, *Integrative Approaches to Wind Farm Modeling and Optimization*, University of Texas at San Antonio, Oct 24, 2013.

Patents & Copyrights

1. Johnson, K, Horstemeyer, M., **Chowdhury, S.**, Mao, Y., *Facemask*, US Design Patent, Patent No. 831,895, Granted October 23, 2018.

2. **Chowdhury, S.**, Chakraborty, T., Patel, R., Notaro, S., and Maldonado, V., *Unmanned Aerial Survey-based High Resolution Wind Mapping*, US Provisional Patent 61758391, *filed* January 30, 2013.

Publications

[Google Scholar Citations – Souma Chowdhury](#) (October, 2018)
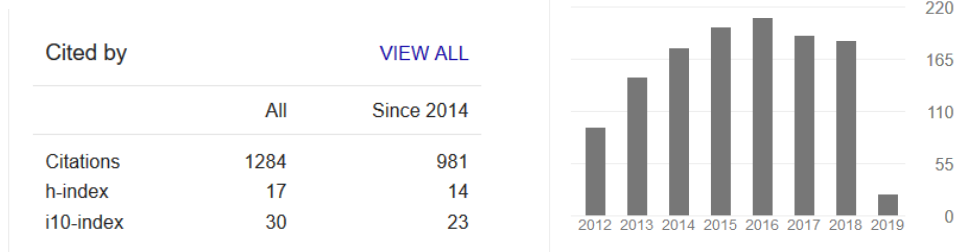
PUBLICATION SUMMARY

Type of Publication	Book Chapters	Journal Articles *Published / Accepted*	Journal Articles *Submitted/Under 1st Review*	Peer-reviewed Conference Articles
Total No. of Articles	2	28	4	75

➢ Publications are first divided by Book Chapter/Journal/Conference.
➢ Within these categories, publications are divided by whether they were "while at UB", or "prior to UB".

[Numbering – **JB**: journal article while at UB; **JP**: journal article prior to UB; **CB**: conference article while at UB; **CP**: conference article prior to UB; **BP**: book chapter prior to UB; **NB**: non-peer-reviewed articles/ presentations/ posters while at UB; **NP**: non-peer-reviewed articles/ presentations/ posters prior to UB.]

[All published articles are hyperlinked to the DOI webpage]

PEER-REVIEWED JOURNAL ARTICLES (PUBLISHED/ACCEPTED)

While at University at Buffalo →

[JB1] Asbach, J., **Ghassemi, P.**, Chowdhury, S., and Lewis, K., *Using an Intelligent UAV Swarm in Natural Disaster Environments*, ASME Journal of Mechanical Design. (*accepted, pending revision*). [IF: 2.8]

[JB2] Odonkor, P., Ball, Z., and Chowdhury, S., *Distributed Operation of Collaborating Unmanned Aerial Vehicles for Time-Sensitive Oil Spill Mapping*," Swarm and Evolutionary Computation. (*revision under review*). [IF: 3.8]

[JB3] Hernandez-R, E., Chowdhury, S., Coleman, S., **Ghassemi, P.**, and Tschopp, M.A., *Integrating Exploratory Data Analytics into ReaxFF Parameterization*, MRS Communications, 2018. [IF: 3.0]

[JB4] Mehmani, A., Chowdhury, S., Meinrenken, C. J., and Messac, A., *Concurrent Surrogate Model Selection (COSMOS): Optimizing Model Type, Kernel Function, and Hyper-parameters*, Structural and Multidisciplinary Optimization, Vol. 57, No. 3, pp. 1093-1114, 2018. [IF: 2.9]

[JB5] Johnson, K. L., Chowdhury, S., Lawrimore, W. B., Mao, Y., Mehmani, A., Prabhu, R., Rush, G. A., and Horstemeyer. M. F., *Constrained Topological Optimization of a Football Helmet Facemask Based on Brain Response*, Materials & Design, Vol. 111, pp. 108-118, 2016. [IF: 4.5]

[JB6] Chowdhury, S., Maldonado, V., Messac, A., and Tong, W., *A New Modular Product Platform Planning Approach to Design Macro-scale Reconfigurable Unmanned Aerial Vehicles (UAVs)*, AIAA Journal of Aircraft, Vol. 53, No. 2, pp. 309-322, 2016. [IF: 0.7]

[JB7] Chowdhury, S., Mehmani, A., Zhang, J., and Messac, A., *Market Suitability and Performance Trade-offs Offered by Commercial Wind Turbines across Differing Wind Regimes*, Energies, Vol. 9 No. 5, pp. 352, 2016. [IF: 2.7]

Prior to University at Buffalo →

[JP1] Tong, W., Chowdhury, S., and Messac, A., *A Multi-Objective Mixed-Discrete Particle Swarm Optimization with Multi-Domain Diversity Preservation*, Structural and Multidisciplinary Optimization, Vol 53, No. 3, pp. 471-488, 2016.

[JP2] Mehmani, A., Chowdhury, S., and Messac, A., "*Predictive Quantification of Surrogate Model Fidelity based on Modal Variations with Sample Density*," Structural and Multidisciplinary Optimization, Vol. 52, No. 2, pp. 353-373, 2015.

[JP3] Tong, W., Chowdhury, S., Mehmani, A., Messac, A., and Zhang, J., *Sensitivity of Wind Farm Output to Wind Conditions, Land Configuration, and Installed Capacity, Under Different Wake Models*, ASME Journal of Mechanical Design, Vol. 137, No. 6, pp. 061403, 2015.

[JP4] Zhang, J., Chowdhury, S., Messac, A., and Hodge, B-M., *A Hybrid Measure-Correlate-Predict Method for Long-term Wind Condition Assessment*, Energy Conversion and Management, Vol. 87, pp. 697-710, 2014.

[JP5] Zhang, J., Chowdhury, S., Messac, A., and Castillo, L., *A Comprehensive Measure of the Energy Resource: Wind Power Potential (WPP)*, Energy Conversion and Management, Vol. 86, pp. 388-398, 2014.

[JP6] Zhang, J. Q., Messac, A., Zhang, J., and Chowdhury, S., *Adaptive Optimal Design of Active Thermoelectric Windows Using Surrogate Modeling*, Optimization and Engineering, Vol. 15, No. 2, pp. 469-483, June 2014.

[JP7] Chowdhury, S., Zhang, J., Tong, W., and Messac, A., *Modeling the Influence of Land-Shape on the Energy Production Potential of a Wind Farm Site*, ASME Journal of Energy Resources Technology, Vol. 136, No. 1, pp. 011203, 2014.

[JP8] Zhang, J., Chowdhury, S., Mehmani, A., and Messac, A., *Characterizing Uncertainty Attributable to Surrogate Models*, ASME Journal of Mechanical Design, Vol. 133, No. 3, pp. 031004, 2014.

[JP9] Chowdhury, S., Messac, A., and Khire, R., *Investigating the Commonality Attributes for Scaling Product Families using Comprehensive Product Platform Planning (CP³)*, Structural and Multidisciplinary Optimization, Vol. 48, No. 6, pp. 1089-1107, 2013.

[JP10] Chowdhury, S., Zhang, J., Messac, A. and Castillo, L., *Optimizing the Arrangement and the Selection of Turbines for Wind Farms Subject to Varying Wind Conditions*, Renewable Energy, Vol. 52, pp. 273-282, 2013.

[JP11] Chowdhury, S., Tong, W., Messac, A., and Zhang, J., *A Mixed-Discrete Particle Swarm Optimization Algorithm with Explicit Diversity Preservation*, Structural and Multidisciplinary Optimization, 2012, Vol. 47, No. 3, pp. 367-388, 2013.

[JP12] Zhang, J., Chowdhury, S., Zhang, J., Messac, A., and Castillo, L., *Adaptive hybrid surrogate modeling for complex systems*, AIAA Journal, Vol. 51, No. 3, pp. 643-656, 2013.

[JP13] Zhang, J., Chowdhury, S., Messac, A., and Castillo, L., *A Multivariate and Multimodal Wind Distribution Model*, Renewable Energy, Vol. 51, pp. 436-447, 2013.

[JP14] Messac, A., Chowdhury, S., and Zhang, J., *Characterizing and Mitigating the Wind Resource-based Uncertainty in Farm Performance*, Journal of Turbulence, Special Issue on Turbulence and Wind Energy Vol. 13, No. 13, pp. 1–26, 2012.

[JP15] Zhang, J., Chowdhury, S., Messac, A., and Castillo, L., *A Response Surface-based Cost Model for Wind Farm Design*, Energy Policy, Vol. 42, pp. 538-550, 2012.

[JP16] Chowdhury, S., Zhang, J., Messac, A. and Castillo, L., *Unrestricted Wind Farm Layout Optimization (UWFLO): Investigating Key Factors Influencing the Maximum Power Generation*, Renewable Energy, Vol. 38, No. 1, pp. 16-30, 2012 (*Best Paper Award, Renewable Energy, Elsevier*).

[JP17] Zhang, J., Chowdhury, S., and Messac, A., *An Adaptive Hybrid Surrogate Model*, Structural and Multidisciplinary Optimization, Vol. 46, No. 2, pp. 223-238, 2012.

[JP18] Chowdhury, S., Messac, A., and Khire, R., *Comprehensive Product Platform Planning (CP^3) Framework*, ASME Journal of Mechanical Design, Special Issue on Designing Complex Engineered Systems, Vol. 133, No. 10, pp. 101004, 2011.

[JP19] Chowdhury, S. and Dulikravich, G. S., *Improvements to Single-Objective Constrained Predator-Prey Evolutionary Optimization Algorithm*, Structural and Multidisciplinary Optimization Journal, Vol. 41, No. 4, pp. 541-554, 2010.

[JP20] Chowdhury, S., Dulikravich, G. S. and Moral, R. J., *Modified Predator-Prey Algorithm for Constrained and Unconstrained Multi-Objective Optimization*, Intl. J. of Mathematical Modeling and Numerical Optimization, Vol. 1, No. 1-2, pp. 1-38, 2009.

[JP21] Chakraborti, N., Shekhar, A., Singhal, A., Chakraborty, S., Chowdhury, S., and Sripriya, R., *Fluid Flow in Hydrocyclones Optimized through Multi-objective Genetic Algorithms*, Inverse Problems in Science & Engineering, Vol. 16, No. 8, pp. 1023–1046, 2008.

[JP22] Bansal, K., Chowdhury, S. and Gopal, M. R., *Development of CLTD Values for Buildings located in Kolkata, India*, Applied Thermal Engineering, Vol. 28, No. 10, pp. 1127-1137, 2008.

[JP23] Basu, S., Chowdhury, S. and Chakraborty, S., *Influences of Pressure Gradients on Freezing Poiseuille–Couette Flows*, Intl. Journal of Heat and Mass Transfer, Vol. 50, No. 21-22, pp. 4493-4498, 2007.

PEER-REVIEWED JOURNAL ARTICLES (SUBMITTED / UNDER 1ST REVIEW)

While at University at Buffalo →

[JB1*] Zeng, C., Abnous, R., Chowdhury, S. and Maldonado, V*., A New Tilt-Arm Transitioning Unmanned Aerial Vehicle: Introduction and Conceptual Design*, AIAA Journal, 2018. (*under review*)

[JB2*] Mu, D., Ge, Y., Sha, M., **Paul, S., Ravichandra, N.**, and Chowdhury, S., *Adaptive Radio and Transmission Power Selection for Internet of Things*, ACM Transactions on Sensor Networks, 2018. (*under review*)

BOOK CHAPTERS (PUBLISHED)

Prior to University at Buffalo →

[BP1] Mehmani, A., Chowdhury, S., Tong, W., and Messac, A., *Adaptive Switching of Variable-Fidelity Models in Population-based Optimization*, Engineering and Applied Sciences Optimization, Computational

Methods in Applied Sciences, Vol. 38 (Ch. 22), pp. 175-205, 2015, ISBN 978-3-319-18320-6, Springer Intl. Publishing.

[BP2] Messac, A., Chowdhury, S., and Khire, R., *One-Step Continuous Product Platform Planning: Methods and Applications*, in: Advances in Product Family and Product Platform Design, pp. 295-321, 2014, 978-1-4614-7936-9, Springer New York.

FULL-LENGTH PEER-REVIEWED CONFERENCE ARTICLES (PUBLISHED/ACCEPTED)

While at University at Buffalo →

[CB1] **Ghassemi, P.** and Chowdhury, S., Decentralized Task Allocation in Multi-robot Systems Via Bipartite Graph Matching Augmented With Fuzzy Clustering, *The ASME 2018 International Design Engineering Technical Conferences* (IDETC 2018), (DETC2018-86161), Quebec City, Canada, August 26-29, 2018.

[CB2] **Dhameliya, M., Sher, S.** and Chowdhury, S., Prototyping and Simulated Analysis of Autonomous Swarm-bots, *The ASME 2018 International Design Engineering Technical Conferences* (IDETC 2018), (DETC2018-86226), Quebec City, Canada, August 26-29, 2018.

[CB3] **Chidambaran, S., Behjat, A.** and Chowdhury, S., Multi-criteria Evolution of Neural Network Topologies: Balancing Experience and Performance in Autonomous Systems, *The ASME 2018 International Design Engineering Technical Conferences* (IDETC 2018), (DETC2018-86104), Quebec City, Canada, August 26-29, 2018.

[CB4] Liu, Y., **Ghassemi, P.**, Chowdhury, S., and Zhang, J., Surrogate Based Multi-objective Optimization of J-type Battery Thermal Management System, *The ASME 2018 International Design Engineering Technical Conferences* (IDETC 2018), (DETC2018-85620), Quebec City, Canada, August 26-29, 2018.

[CB5] Asbach, J., Chowdhury, S. and Lewis, K., Using an Intelligent UAV Swarm in Natural Disaster Environments, *The ASME 2018 International Design Engineering Technical Conferences* (IDETC 2018), (DETC2018-86112), Quebec City, Canada, August 26-29, 2018.

[CB6] **Lulekar, S., Ghassemi, P.**, and Chowdhury S., CFD-based Analysis and Surrogate-based Optimization of Bio-inspired Surface Riblets for Aerodynamic Efficiency, *2018 Multidisciplinary Analysis & Optimization Conference, AIAA AVIATION Forum*, (AIAA 2018-3107), Atlanta, Georgia, June 25-29, 2018.

[CB7] **Zeng, C., Behjat, A.**, and Chowdhury S., Uncertainty-aware Optimal Flight State Selection for a Transitioning UAV via Simulation-based Learning, *2018 Multidisciplinary Analysis & Optimization Conference, AIAA AVIATION Forum,*, Atlanta, Georgia, June 25-29, 2018.

[CB8] **Zhu, K.**, Chowdhury, S., Sun, M., and Zhang, J., Grid Optimization of Shared Energy Storage Among Wind Farms Based on Wind Forecasting, *2018 IEEE/PES Transmission and Distribution Conference and Exposition* (T&D), Denver, CO, April 16-19, 2018.

[CB9] **Ghassemi, P., Zhu, K.**, and Chowdhury, S., Optimal Surrogate and Neural Network Modeling for Day-Ahead Forecasting of the Hourly Energy Consumption of University Buildings, *ASME 2017 International Design Engineering Technical Conferences* (IDETC 2017), (DETC2017-68350), Cleveland, OH, August 6-9, 2017.

[CB10] Mehmani, A., **Ghassemi, P.**, and Chowdhury, S., Optimal Metamodeling to Interpret Activity Based Health Sensor Data, *ASME 2017 International Design Engineering Technical Conferences* (IDETC 2017), (DETC2017-68385), Cleveland, OH, August 6-9, 2017.

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FULL-LENGTH PEER-REVIEWED CONFERENCE ARTICLES (SUBMITTED / UNDER REVIEW)

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[CB2*] **Behjat, A., Chidambaram, S.**, and Chowdhury, S., Adaptive Genomic Evolution of Neural Network Topologies (AGENT) for State-to-Action Mapping in Autonomous Agents, *2019 IEEE International Conference on Robotics and Automation* (ICRA 2019), Montreal, Canada, May 20-24, 2018. (*under review*)

ABSTRACTS, WORKSHOPS, PRESENTATIONS, AND POSTERS (NON-PEER REVIEWED)

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