

ASHIS G. BANERJEE

Curriculum Vitae

Industrial & Systems Engineering
Mechanical Engineering (joint appointment)
222 MEB
Box 352650
Seattle, WA 98195

Phone: (206) 543-5388
Fax: (206) 685-3072
E-mail: ashisb@u.washington.edu
Website: <http://faculty.washington.edu/ashisb/>

EDUCATIONAL HISTORY

University of Maryland, College Park, MD, USA
Ph.D. in Mechanical Engineering
August 2009
Dissertation: Real-Time Path Planning for Automating Optical Tweezers based Particle Transport Operations

University of Maryland, College Park, MD, USA
M.S. in Mechanical Engineering
December 2006
Thesis: Computer Aided Design of Side Actions for Injection Molding of Complex Parts

Indian Institute of Technology, Kharagpur, India
B.Tech. (equivalent to B.S.) in Manufacturing Science and Engineering
June 2004

EMPLOYMENT HISTORY

University of Washington (UW)
Seattle, WA, USA
Assistant Professor, Department of Industrial & Systems Engineering and Department of Mechanical Engineering, September 2015 - present
Affiliate Assistant Professor, Department of Industrial & Systems Engineering and Department of Mechanical Engineering, June 2015 - August 2015

GE Global Research
Niskayuna, NY, USA
Research Scientist, Complex Systems Engineering Laboratory, September 2012 - July 2015

Massachusetts Institute of Technology (MIT)
Cambridge, MA, USA
Research Scientist, Computer Science and Artificial Intelligence Laboratory, January 2012 - August 2012
Postdoctoral Associate, Computer Science and Artificial Intelligence Laboratory, September 2009 - December 2011

University of Maryland (UMD)
College Park, MD, USA
Graduate Research Assistant, Department of Mechanical Engineering & Institute for Systems Research, August 2004 - August 2009

Cadbury India Limited
Talegaon Dabhade, Maharashtra, India
Summer Intern, June 2003 - July 2003

AWARDS AND HONORS

Top Engineer of the Year	2018	International Association of Top Professionals
Top Engineer	2018	Marquis Who's Who
New Faculty Colloquium Participant	2016	Institute of Industrial & Systems Engineers
Above & Beyond Silver Award	2013	GE Global Research
Most Cited Paper Award	2012	Computer-Aided Design Journal
Best Session Presentation Award	2011	American Control Conference
Best Dissertation Award	2009	Dept. of Mechanical Engineering, UMD
Outstanding Graduate Student Award	2009	Institute for Systems Research, UMD
1st prize in Advances in Technology	2009	Graduate Research Interaction Day, UMD

PUBLICATIONS

Refereed archival journal publications

(Citation counts are taken from Google Scholar; total citations: 1311; h-index: 16; i10-index: 17; ^g indicates my graduate student and ^u refers to an undergraduate researcher in my group)

1. N. Rahimi^g, J. Liu^g, A. Shishkarev, I. Buzytsky, and A. G. Banerjee. Auction Bidding Methods for Multi-Agent Consensus Optimization in Supply-Demand Networks. *IEEE Robotics & Automation Letters*, 3(4): 4415-4422, 2018.
2. J. Liu^g, L. N. Boyle, and A. G. Banerjee. Predicting Interstate Motor Carrier Crash Rate Level using Classification Models. *Accident Analysis & Prevention*, 120: 211-218, 2018.
3. K. Manohar, T. Hogan, J. Buttrick, A. G. Banerjee, N. Kutz, and S. L. Brunton. Predicting Shim Gaps in Aircraft Assembly with Machine Learning and Sparse Sensing. *Journal of Manufacturing Systems*, Special Issue on *Smart Manufacturing*, 48: 87-95, 2018. (Citations: 2)
4. W. Guo^g, K. Manohar, S. Brunton, and A. G. Banerjee. Sparse-TDA: Sparse Realization of Topological Data Analysis for Multi-Way Classification. *IEEE Transactions on Knowledge and Data Engineering*, 30(7): 1403-1408, 2018. (Citations: 4)
5. K. Rajasekaran^g, E. Samani^u, M. Bollavaram^g, J. Stewart^u, and A. G. Banerjee. An Accurate Perception Method for Low Contrast Bright Field Microscopy in Heterogeneous Microenvironments. *Applied Sciences*, 7(12): 1327, 2017. (Citations: 1)

6. W. Guo^g and A. G. Banerjee. Identification of Key Features Using Topological Data Analysis for Accurate Prediction of Manufacturing System Outputs. *Journal of Manufacturing Systems*, Special Issue on *High Performance Computing and Data Analytics for Cyber-Manufacturing*, 43: 225-234, 2017. (Citations: 4)
7. A. G. Banerjee, S. Chowdhury, and S. K. Gupta. Optical Tweezers: Autonomous Robots for the Manipulation of Biological Cells. *IEEE Robotics & Automation Magazine*, 21(3): 81-88, 2014. (Citations: 28)
8. J. C. Ryan, A. G. Banerjee, M. L. Cummings, and N. Roy. Comparing the Performance of Expert User Heuristics and an Integer Linear Program in Aircraft Carrier Deck Operations. *IEEE Transactions on Cybernetics*, 44(6): 761-773, 2014. (Citations: 32)
9. A. G. Banerjee and S. K. Gupta. Research in Automated Planning and Control for Micromanipulation. *IEEE Transactions on Automation Science and Engineering*, Special Section on *Micro-Assembly for Manufacturing at Small Scales*, 10(3): 485-495, 2013. (Citations: 48)
10. A. G. Banerjee, S. Chowdhury, W. Losert, and S. K. Gupta. Real-Time Path Planning for Coordinated Transport of Multiple Particles using Optical Tweezers. *IEEE Transactions on Automation Science and Engineering*, 9(4): 669-678, 2012. (Citations: 62)
11. A. G. Banerjee, S. Chowdhury, W. Losert, and S. K. Gupta. Survey on Indirect Optical Manipulation of Cells, Nucleic Acids, and Motor Proteins. *Journal of Biomedical Optics*, Special Section on *Photonics and Nanotechnology in Biophysics and Biomedical Research*, 16(5): 051302, 2011. (Citations: 58)
12. S. Tellex, T. Kollar, S. Dickerson, M. R. Walter, A. G. Banerjee, S. Teller, and N. Roy. Approaching the Symbol Grounding Problem with Probabilistic Graphical Models. *AI Magazine*, Special Issue on *Dialog with Robots*, 32(4): 64-76, 2011. (Citations: 116)
13. A. G. Banerjee, A. Pomerance, W. Losert, and S. K. Gupta. Developing a Stochastic Dynamic Programming Framework for Optical Tweezer based Automated Particle Transport Operations. *IEEE Transactions on Automation Science and Engineering*, 7(2): 218-227, 2010. (Citations: 81)
14. A. G. Banerjee, A. Balijepalli, S. K. Gupta, and T. W. LeBrun. Generating Simplified Trapping Probability Models from Simulation of Optical Tweezers System. *ASME Journal of Computing and Information Science in Engineering*, 9(2): 021003, 2009. (Citations: 30)
15. A. Thakur, A. G. Banerjee, and S. K. Gupta. A Survey of CAD Model Simplification Techniques for Physics-based Simulation Applications. *Computer-Aided Design*, 41(2): 65-80, 2009. (Citations: 182)
16. A. S. Deshmukh, A. G. Banerjee, S. K. Gupta, and R. D. Sriram. Content Based Assembly Search: A Step towards Assembly Reuse. *Computer-Aided Design*, 40(2): 244-261, 2008. (Citations: 50)
17. A. G. Banerjee and S. K. Gupta. Geometrical Algorithms for Automated Design of Side Actions in Injection Molding of Complex Parts. *Computer-Aided Design*, 39(10): 882-897, 2007. (Citations: 28)
18. A. G. Banerjee, X. Li, G. Fowler, and S. K. Gupta. Incorporating Manufacturability Considerations During Design of Injection Molded Multi-material Objects. *Research in Engineering Design*, 17(4): 207-231, 2007. (Citations: 43)

19. A. Kumar, A. G. Banerjee, S. Paul, and A. Roy Choudhury. Maximization of Slice Height with Uniformity of Surface Roughness in the Direct Slicing of Freeform Surfaces. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 217 (B14802): 765-777, 2003. (Citations: 4)
20. A. G. Banerjee, A. Kumar, S. Tejavath, and A. Roy Choudhury. Adaptive Slicing with Curvature Considerations. *International Journal of CAD/CAM*, 3: 41-58, 2003. (Citations: 6)

Conference proceedings and other non-journal articles

• *Fully refereed publications*

1. A. G. Banerjee, K. Rajasekaran^g, and B. Parsa^g. A Step Toward Learning to Control Tens of Optically Actuated Mobile Microrobots in Three Dimensions. In *Proceedings of IEEE International Conference on Automation Science and Engineering*, Munich, Germany, 1460-1465, 2018. (Citations: 1)
2. J. Liu^g, S. Hwang^g, W. Yund, L. Boyle, and A. G. Banerjee. Predicting Suppliers Parts Delivery Times Using Regression Models with Dimension Reduction. In *Proceedings of ASME Computers & Information in Engineering Conference*, Quebec City, QC, Canada, V01BT02A034, 2018.
3. K. Rajasekaran^g, E. U. Samani^u, J. Stewart^u, and A. G. Banerjee. Imaging-Guided Collision-Free Transport of Multiple Optically Trapped Beads. In *Proceedings of International Conference on Manipulation, Automation, and Robotics at Small Scales*, Montréal, QC, Canada, 1-6, 2017. (Citations: 3)
4. W. Guo^g and A. G. Banerjee. Toward Automated Prediction of Manufacturing Productivity Based on Feature Selection Using Topological Data Analysis. In *Proceedings of IEEE International Symposium on Assembly and Manufacturing*, Fort Worth, TX, 31-36, 2016. (Citations: 5)
5. M. Bollavaram^g, P. Sane, S. Chowdhury, S. K. Gupta, and A. G. Banerjee. Automated Detection of Live Cells and Microspheres in Low Contrast Bright Field Microscopy. In *Proceedings of International Conference on Manipulation, Automation, and Robotics at Small Scales*, Paris, France, 1-6, 2016. (Citations: 5)
6. A. G. Banerjee, B. Beckmann, J. Carbone, L. DeRose, A. Giani, P. Koudal, P. Mackenzie, J. Salvo, D. Yang, and W. Yund. Cloud Computing-based Marketplace for Collaborative Design and Manufacturing. In *Proceedings of EAI International Conference on Cloud, Networking for IoT systems*, Rome, Italy, 409-418, 2015. (Citations: 2)
7. A. G. Banerjee, M. Khan, J. Higgins, and A. K. Das. Discovering and Validating Breast Cancer Treatment Correlations using an Associative Memory Model and Statistical Methods. In *Proceedings of IEEE International Conference on Healthcare Informatics*, Dallas, TX, 390-397, 2015.
8. A. G. Banerjee, M. Khan, J. Higgins, A. Giani, and A. K. Das. An Associative Memory Model for Integration of Fragmented Research Data and Identification of Treatment Correlations in Breast Cancer Care. In *Proceedings of AMIA Annual Symposium*, San Francisco, CA, 306-313, 2015. (Citations: 1)

9. A. G. Banerjee, W. Yund, D. Yang, P. Koudal, J. Carbone, and J. Salvo. A Hybrid Statistical Method for Accurate Prediction of Supplier Delivery Times of Aircraft Engine Parts. In *Proceedings of ASME Computers and Information in Engineering Conference*, Boston, MA, V01BT02A037, 2015. (Citations: 5)
10. A. G. Banerjee, A. Barnes, K. N. Kaipa, J. Liu, S. Shriyam, N. Shah, and S. K. Gupta. An Ontology to Enable Optimized Task Partitioning for Human Robot Collaboration in Warehouse Kitting Operations. In *Proceedings of SPIE Sensing Technology + Applications Symposium, Sensors for Next-Generation Robotics Conference*, Baltimore, MD, 94940H, 2015. (Citations: 16)
11. A. G. Banerjee and S. Ray Majumder. Toward Controlling Perturbations in Robotic Sensor Networks. In *Proceedings of SPIE Sensing Technology + Applications Symposium, Next-Generation Robots and Systems Conference*, Baltimore, MD, 91160B, 2014.
12. A. G. Banerjee, M. Ono, N. Roy, and B. C. Williams. Regression-based LP Solver for Chance Constrained Finite Horizon Optimal Control with Nonconvex Constraints. In *Proceedings of American Control Conference*, San Francisco, CA, 131-138, 2011. (Citations: 10)
13. S. Tellex, T. Kollar, S. Dickerson*, M. R. Walter, A. G. Banerjee, S. Teller, and N. Roy. Understanding Natural Language Commands for Robotic Navigation and Mobile Manipulation. In *Proceedings of National Conference on Artificial Intelligence, Special Track on Physically Grounded AI*, San Francisco, CA, 1507-1514, 2011. (Citations: 394)
14. J. C. Ryan, M. L. Cummings, N. Roy, A. Banerjee, and A. Schulte. Designing an Interactive Local and Global Decision Support System for Aircraft Carrier Deck Scheduling. In *Proceedings of AIAA Infotech@Aerospace*, St. Louis, MO, 2011. (Citations: 40)
15. A. G. Banerjee, W. Losert, and S. K. Gupta. A Decoupled and Prioritized Stochastic Dynamic Programming Approach for Automated Transport of Multiple Particles using Optical Tweezers. In *Proceedings of ASME International Conference on Micro and Nanosystems*, San Diego, CA, 785-796, 2009. (Citations: 5)
16. A. G. Banerjee and S. K. Gupta. Use of Simulation in Developing and Characterizing Motion Planning Approaches for Automated Particle Transport using Optical Tweezers. In *Proceedings of International Virtual Manufacturing Workshop*, Turin, Italy, 2008.
17. A. G. Banerjee, A. Balijepalli, S. K. Gupta, and T. W. LeBrun. Radial Basis Function Based Simplified Trapping Probability Models for Optical Tweezers. In *Proceedings of ASME Computers and Information in Engineering Conference*, Brooklyn, NY, 99-109, 2008. (Citations: 2)
18. A. G. Banerjee and S. K. Gupta. A Step Towards Automated Design of Side Actions for Injection Molding of Complex Parts. In *Proceedings of Geometric Modeling and Processing Conference*, Pittsburgh, PA, 2006; *Lecture Notes in Computer Science*, 4077: 500-513. (Citations: 4)
19. A. K. Behera, A. G. Banerjee, P. S. Reddy, V. Patel, P. Saha, and P. K. Mishra. Development of a Compact Wire Feeding Mechanism for Micro Electro Discharge Grinding. In *Proceedings of All India Manufacturing Technology, Design and Research Conference*, Vellore, India, 2004.

• *Refereed by abstract only*

1. K. Rajasekaran^g, M. Bollavaram^g, and A. G. Banerjee. Toward Automated Formation of Microsphere Arrangements Using Multiplexed Optical Tweezers. In *Proceedings of SPIE Optical Trapping and Optical Micromanipulation XIII Conference*, San Diego, CA, 99222Y, 2016. (Citations: 3)

Papers submitted/to be submitted within the next three months

1. S. Hwang^g, L. N. Boyle, and A. G. Banerjee. Characteristics that Impact Motor Carrier Safety: Establishing Causal Relationships using Bayesian Networks. Under revision in *Accident Analysis & Prevention*.
2. B. Parsa^g, K. Rajasekaran^g, F. Meier, and A. G. Banerjee. A Hierarchical Bayesian Linear Regression Model with Local Features for Stochastic Dynamics Approximation. Planned submission to *Proceedings of the National Academy of Sciences*, Pre-print: arXiv:1807.03931. (Citations: 2)
3. B. Parsa^g, E. U. Samani, R. Hendrix, S. M. Singh^u, S. Devasia, and A. G. Banerjee. Predicting Ergonomic Risks During Indoor Object Manipulation Using Spatiotemporal Convolutional Networks. Invited submission to *Science Robotics*, Special Issue on *Computer Vision*.
4. K. Rajasekaran^g, E. Samani, J. Stewart^g, and A. G. Banerjee. GPU-Based Real-Time Motion Control of a Large Number of Optically Trapped Microspheres. Planned submission to *Journal of Micro/Bio Robotics*.
5. V. Tereshchuk^g, J. Stewart^g, N. Bykov^u, S. Pedigo, S. Devasia, and A. G. Banerjee. An Efficient Scheduling Algorithm for Multi-Robot Task Allocation in Assembling Aircraft Structures. Planned submission to *IEEE Robotics and Automation Letters*.
6. W. Guo^g, R. Chen, Y-C. Chen, and A. G. Banerjee. Effective Detection of Community Structures in Dynamic Networks using Topological Data Analysis. Planned submission to *Science*.
7. Z. Liu, A. G. Banerjee, and Y. Choe. Identifying the Influential Inputs for Network Output Variance Using Sparse Polynomial Chaos Expansion. Planned submission to *IEEE Transactions on Automation Science and Engineering*.

Technical reports

1. A. G. Banerjee and N. Roy. Efficiently Solving Repeated Integer Linear Programming Problems by Learning Solutions of Similar Linear Programming Problems using Boosting Trees. *MIT Computer Science and Artificial Intelligence Laboratory Technical Report*, MIT-CSAIL-TR-2015-001, 2015.
2. T. Kollar, S. Dickerson, S. Tellex, A. G. Banerjee, M. R. Walter, S. Teller, and N. Roy. Towards Understanding Hierarchical Natural Language Commands for Robotic Navigation and Manipulation. *MIT Computer Science and Artificial Intelligence Laboratory Technical Report*, MIT-CSAIL-TR-2011-007, 2011. (Citations: 1)
3. A. G. Banerjee and N. Roy. Learning Solutions of Similar Linear Programming Problems using Boosting Trees. *MIT Computer Science and Artificial Intelligence Laboratory Technical Report*, MIT-CSAIL-TR-2010-045, 2010. (Citations: 1)

Conference workshop articles

1. R. Chen, Y-C. Chen, W. Guo, and A. G. Banerjee. A Note on Community Trees in Networks. In *Advances in Neural Information Processing Systems Workshop on Synergies in Geometric Data Analysis*, Long Beach, CA, 2017. (Citations: 2)
2. S. Tellex, T. Kollar, S. Dickerson, M. R. Walter, A. G. Banerjee, S. Teller, and N. Roy. Interpreting Robotic Mobile Manipulation Commands Expressed in Natural Language. In *IEEE International Conference on Robotics and Automation Workshop on Manipulation Under Uncertainty*, Shanghai, China, 2011.

Other significant research dissemination (web sites, software, Wikis, etc.)

1. Lab website: <http://depts.washington.edu/uwsmarts/>

OTHER SCHOLARLY ACTIVITIES

Invited Lectures and Seminars

1. Amazon Robotics Awards Fall Symposium, Boston, MA, USA, *Vision-based Inference of Ergonomic Risks During Object Manipulation*, October 2018
2. Processes and Engineering in Mechanics and Materials Seminar, Arts et Métiers Paris-Tech, Paris, France, *Data-Driven Knowledge Discovery Methods*, August 2018
3. Nanoscience & Molecular Engineering Seminar, University of Washington, Seattle, WA, USA, *Precisely Controlled Patterning of Micro and Nanostructures Using Optical Tweezers*, May 2018
4. Decision Support & Machine Intelligence Seminar, United Technology Research Center, East Hartford, CT, USA, *Feature Extraction and Selection using Topological Data Analysis: Successful Applications and Myriad Possibilities*, July 2017
5. Track on Advanced Materials for Automotive, Robotics, Aerospace & Aviation, 6th Annual World Congress of Advanced Materials, Xi'an, China, *Toward Precise Patterning of Microstructures Using Optical Tweezers*, June 2017
6. Robotics Colloquium, Department of Computer Science & Engineering, University of Washington, Seattle, WA, USA, *Toward Real-Time Motion Planning and Control of Optically Actuated Micro-Robots*, December 2016
7. DARPA Models, Dynamics and Learning Program Kick-off Workshop, University of California at Santa Barbara, Santa Barbara, CA, USA, *Feature Extraction Using Topological Data Analysis*, November 2016
8. Department of Computer Science, Rutgers, The State University of New Jersey, Piscataway, NJ, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, March 2015
9. Department of Aerospace and Mechanical Engineering, University of Southern California, Los Angeles, CA, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, February, 2015

10. College of Engineering, University of Washington, Seattle, WA, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, February 2015
11. Department of Computer Science & Engineering, University of Nebraska-Lincoln, Lincoln, NE, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, February 2015
12. Department of Mechanical & Materials Engineering, University of Nebraska-Lincoln, Lincoln, NE, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, February 2015
13. Department of Computer Science and Engineering, University of Minnesota - Twin Cities, Minneapolis, MN, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, March 2014
14. Department of Mechanical and Aerospace Engineering, University at Buffalo, State University of New York, Buffalo, NY, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, March 2014
15. Department of Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, March 2014
16. Mechanical Engineering and Mechanics Department, Drexel University, Philadelphia, PA, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, March 2014
17. Department of Mechanical Engineering, San Diego State University, San Diego, CA, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, March 2014
18. Mechanical Engineering Department, University of Connecticut, Storrs, CT, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, March 2014
19. School of Mechanical, Industrial & Manufacturing Engineering, Oregon State University, Corvallis, OR, USA, *Integrated Modeling, Planning, and Control for Intelligent Automation*, March 2014
20. Department of Remote Handling & Robotics, Bhabha Atomic Research Centre, Mumbai, India, *Multi-Particle Path Planning using Optical Tweezers*, January 2012
21. University of Southern California Viterbi School of Engineering inaugural symposium on the “Futures of Robotics” in Los Angeles, CA, USA, *Multi-Particle Path Planning using Optical Tweezers*, December 2011
22. IEEE/RSJ International Conference on Intelligent Robots and Systems anniversary workshop on “20 years of Microrobotics: progress, challenges, and future directions” in San Francisco, CA, USA, *Multi-Particle Path Planning using Optical Tweezers*, October 2011
23. Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA, *Real-Time Planning and Control in Highly Dynamic and Uncertain Environments*, October 2011
24. Center for Automation Technologies and Systems, Rensselaer Polytechnic Institute, Troy, NY, USA, *Efficient Approximation Algorithms for Real-Time Path Planning under Uncertainty*, October 2010

25. IEEE Conference on Automation Science and Engineering workshop on “Automation at the Microscale and Beyond” in Toronto, ON, Canada, *Automated Planning for Micro and Nano Manipulation*, August 2010
26. Department of Mechanical Engineering, Boston University, Boston, MA, USA, *Real-Time Path Planning for Automating Optical Tweezers based Particle Transport Operations*, May 2009
27. Laboratory of Computational Sensing and Robotics, The Johns Hopkins University, Baltimore, MD, USA, *Real-Time Path Planning for Automating Optical Tweezers based Particle Transport Operations*, March 2009
28. Department of Mechanical Engineering, Indian Institute of Technology, Kharagpur, India, *Real-Time Path Planning for Automating Optical Tweezers based Particle Transport Operations*, January 2009
29. School of Technology and Computer Science, Tata Institute of Fundamental Research, Mumbai, India, *Real-Time Path Planning for Automating Optical Tweezers based Particle Transport Operations*, January 2009

Presentations at Conferences (presenter in bold)

1. **Z. Liu**, A. G. Banerjee, and Y. Choe, “Sensitivity Analysis on a Network Using Polynomial Chaos Expansion”, *INFORMS Annual Meeting*, Phoenix, AZ, November 2018
2. **A. G. Banerjee**, K. Rajasekaran, and B. Parsa. “A Step Toward Learning to Control Tens of Optically Actuated Mobile Microrobots in Three Dimensions”, *IEEE International Conference on Automation Science and Engineering*, Munich, Germany, August 2018
3. **J. Liu**, S. Hwang, W. Yund, L. Boyle, and A. G. Banerjee. “Predicting Suppliers Parts Delivery Times Using Regression Models with Dimension Reduction”, *ASME Computers & Information in Engineering Conference*, Quebec City, QC, Canada, August 2018
4. **J. Liu**, S. Hwang, W. Yund, L. Boyle, and A. G. Banerjee. “A Step Toward Predictive Modeling of Supply Chain Systems”, *IISE Annual Conference & Expo*, Orlando, FL, May 2018
5. **S. Hwang**, J. Liu, L. Boyle, W. Yund, D. Cai, Y. Zhang, and A. Banerjee. “Enabling Real-Time Supply Chain Visibility Through Accurate Predictions of Parts Deliveries”, *NCSA Industry Conference*, Urbana, IL, October 2017
6. K. Rajasekaran, E. U. Samani, J. Stewart, and **A. G. Banerjee**. “Imaging-Guided Collision-Free Transport of Multiple Optically Trapped Beads”, *International Conference on Manipulation, Automation, and Robotics at Small Scales*, Montréal, QC, Canada, July 2017
7. **W. Guo** and A. G. Banerjee. “Methods and Applications of Feature Extraction Using Topological Data Analysis”, *IEEE Conference on Automation Science and Engineering Doctoral Symposium*, Fort Worth, TX, August 2016 (NSF travel award)
8. **W. Guo** and A. G. Banerjee. “Toward Automated Prediction of Manufacturing Productivity Based on Feature Selection Using Topological Data Analysis”, *IEEE International Symposium on Assembly and Manufacturing*, Fort Worth, TX, August 2016

9. **K. Rajasekaran**, M. Bollavaram, and A. G. Banerjee. “Toward Automated Formation of Microsphere Arrangements Using Multiplexed Optical Tweezers”, *SPIE Optical Trapping and Optical Micromanipulation XIII Conference*, San Diego, CA, August 2016
10. M. Bollavaram, P. Sane, S. Chowdhury, S. K. Gupta, and **A. G. Banerjee**. “Automated Detection of Live Cells and Microspheres in Low Contrast Bright Field Microscopy”, *International Conference on Manipulation, Automation, and Robotics at Small Scales*, Paris, France, July 2016 (Plenary talk)
11. A. G. Banerjee, M. Khan, J. Higgins, A. Giani, and **A. K. Das**. “An Associative Memory Model for Integration of Fragmented Research Data and Identification of Treatment Correlations in Breast Cancer Care”, *AMIA Annual Symposium*, San Francisco, CA, November 2015
12. A. G. Banerjee, **B. Beckmann**, J. Carbone, L. DeRose, A. Giani, P. Koudal, P. Mackenzie, J. Salvo, D. Yang, and W. Yund. “Cloud Computing-based Marketplace for Collaborative Design and Manufacturing”, *EAI International Conference on Cloud, Networking for IoT systems*, Rome, Italy, September 2015
13. **A. G. Banerjee**, M. Khan, J. Higgins, and A. K. Das. “Discovering and Validating Breast Cancer Treatment Correlations using an Associative Memory Model and Statistical Methods”, *IEEE International Conference on Healthcare Informatics*, Dallas, TX, October 2015
14. **A. G. Banerjee**, W. Yund, D. Yang, P. Koudal, J. Carbone, and J. Salvo. “A Hybrid Statistical Method for Accurate Prediction of Supplier Delivery Times of Aircraft Engine Parts”, In *ASME Computers and Information in Engineering Conference*, Boston, MA, August 2015
15. **A. G. Banerjee**, A. Barnes, K. N. Kaipa, J. Liu, S. Shriyam, N. Shah, and S. K. Gupta. “An Ontology to Enable Optimized Task Partitioning for Human Robot Collaboration in Warehouse Kitting Operations”, *SPIE Sensing Technology + Applications Symposium*, Baltimore, MD, April 2015
16. **A. G. Banerjee** and S. Ray Majumder. “Toward Controlling Perturbations in Robotic Sensor Networks”, *SPIE Sensing Technology + Applications Symposium*, Baltimore, MD, April 2014
17. **S. Tellex**, T. Kollar, S. Dickerson, M. R. Walter, A. G. Banerjee, S. Teller, and N. Roy. “Understanding Natural Language Commands for Robotic Navigation and Mobile Manipulation”, *National Conference on Artificial Intelligence*, San Francisco, CA, August 2011
18. **A. G. Banerjee**, **M. Ono**, N. Roy, and B. C. Williams. “Regression-based LP Solver for Chance Constrained Finite Horizon Optimal Control with Nonconvex Constraints”, *American Control Conference*, San Francisco, CA, July 2011
19. **J. C. Ryan**, M. L. Cummings, N. Roy, A. Banerjee, and A. Schulte. “Designing an Interactive Local and Global Decision Support System for Aircraft Carrier Deck Scheduling”, In *AIAA Infotech@Aerospace*, St. Louis, MO, March 2011
20. A. G. Banerjee, W. Losert, and **S. K. Gupta**. “A Decoupled and Prioritized Stochastic Dynamic Programming Approach for Automated Transport of Multiple Particles using Optical Tweezers”, *ASME International Conference on Micro and Nanosystems*, San Diego, CA, August 2009

21. A. G. Banerjee and **S. K. Gupta**. “Use of Simulation in Developing and Characterizing Motion Planning Approaches for Automated Particle Transport using Optical Tweezers”, *International Virtual Manufacturing Workshop*, Turin, Italy, October 2008
22. **A. G. Banerjee**, A. Balijepalli, S. K. Gupta, and T. W. LeBrun. “Radial Basis Function Based Simplified Trapping Probability Models for Optical Tweezers”, *ASME Computers and Information in Engineering Conference*, Brooklyn, NY, August 2008
23. **A. G. Banerjee** and S. K. Gupta. “A Step Towards Automated Design of Side Actions for Injection Molding of Complex Parts”, *Geometric Modeling and Processing Conference*, Pittsburgh, PA, July 2006
24. A. K. Behera, A. G. Banerjee, P. S. Reddy, V. Patel, P. Saha, and **P. K. Mishra**. “Development of a Compact Wire Feeding Mechanism for Micro Electro Discharge Grinding”, *All India Manufacturing Technology, Design and Research Conference*, Vellore, India, December, 2004

Professional Society Memberships

- Member, American Society of Mechanical Engineers (ASME), 2006 - present
- Member, ASME Design Engineering Division Micro/Nano Systems Technical Committee, 2012 - present
- Member, ASME Computers & Information in Engineering Division Systems Engineering, Information and Knowledge Management Technical Committee, 2014 - present
- Member, Institute of Electrical and Electronics Engineers (IEEE), 2009 - present
- Member, IEEE Robotics & Automation Society Technical Committees on Algorithms for Planning and Control of Robot Motion and Micro/Nano Robotics and Automation, 2009 - present
- Member, IEEE Life Sciences Community, 2013 - present
- Member, IEEE Computer Society, 2009 - 2012
- Member, Institute of Industrial & Systems Engineers (IISE), 2016 - present

Reviewing Activities

Source	2018	2017	2016	2015 - earlier
Book chapters				
Oxford University Press		1		
Book proposal				
CRC Press - Taylor & Francis Group		1		
Springer U.S.			1	
Wiley U.S.		1		
Journal				
IEEE Transactions on Robotics		2	2	4
Journal of Computing and Information Science in Engineering		4		1

Journal of Guidance, Control, and Dynamics			1	4
Journal of Manufacturing Systems	1	2	1	
IEEE Transactions on Automation Science and Engineering			1	3
IEEE Robotics & Automation Letters	2	2		
IEEE Transactions on Control Systems Technology			1	3
Journal of Mechanisms and Robotics				3
IEEE/ASME Transactions on Mechatronics		2	1	
IEEE Transactions on Systems, Man, and Cybernetics: Systems			1	2
Journal of Manufacturing Processes				3
Robotics and Computer-Integrated Manufacturing			1	1
Micromachines	1	1		
Sensors			1	
Annals of Operations Research				1
Automatica			1	
Autonomous Robots				1
Computer-Aided Design			1	
Design Science			1	
IEEE Transactions on Cybernetics				1
IIESE Transactions	1			
International Journal of Materials and Product Technology				1
International Journal of Advanced Robotic Systems				1
Journal of Heuristics	1			
Journal of Machine Learning Research				1
Journal of Micro-Bio Robots				1
Robotics and Autonomous Systems			1	1
The International Journal of Robotics Research				1
Conference				
ASME Computers & Information in Engineering Conference			8	2
IEEE International Conference on Robotics and Automation	1			4
Robotics: Science & Systems	3	2		3
Manipulation, Automation and Robotics at Small Scales	2	4	4	
IEEE Conference on Automation Science and Engineering	1	1	2	3
AMIA Annual Symposium			3	3
IEEE/RSJ International Conference on Intelligent Robots & Systems	1	2	2	1
SPIE Sensors for Next-Generation Robotics Conference				3
World-Multi-Conference on Systemics, Cybernetics, and Informatics				2
IEEE Conference on Decision and Control				1
IEEE International Conference on Multisensor Fusion and Integration				1

MENTORING ACTIVITIES

Current Doctoral Students

Name	Department	Dissertation Title	Current Status
Wei Guo	Industrial &	Feature Extraction Using	Ph.D. Candidate

	Systems Engineering	Topological Data Analysis for Machine Learning and Network Science Applications	
Behnoosh Parsa	Mechanical Engineering	Computational Models and Methods for Learning Sequential Actions in Robotic Systems	Scheduled Ph.D. General Exam
Steven Hwang (Primary Chair: Linda N. Boyle)	Industrial & Systems Engineering	TBD	Passed Qualifying Exam
Jundi Liu (Co-Chair: Linda N. Boyle)	Industrial & Systems Engineering	TBD	Passed Qualifying Exam
Ben Tereshchuk (Primary Chair: Santosh Devasia)	Mechanical Engineering	TBD	Passed Qualifying Exam
Austin Powell	Industrial & Systems Engineering	TBD	Joined in Autumn 2018
Abhay Gupta (Co-Chair: Steve Brunton)	Mechanical Engineering	TBD	Joined in Autumn 2018

Chaired Masters Degrees

Name	Department	Supervision Level	Thesis/Project Title	Graduation Date	First Employer
Niyousha Rahimi	Mechanical Engineering	Thesis-based	Multi-Agent Consensus Optimization in Large-Scale Networks	July 2018	University of Washington (Ph.D. student)
Keshav Rajasekaran	Mechanical Engineering	Thesis-based	Stochastic Dynamics Modeling and Motion Control of Optically	July 2017	University of Maryland (Ph.D. student)

			Trapped Microspheres		
Manasa Bollavaram	Mechanical Engineering	Project- based	Optical Patterning of Live Cells	June 2017	Xilinx
Rohit Rajagopal	Mechanical Engineering	Project- based	Multivariate Regression of Time- Series Data	March 2017	Vulcan Global Manufacturing Solutions

Current Masters Students

Name	Department	Supervision Level	Thesis/Project Title	Current Status
John Stewart	Mechanical Engineering	Thesis- based	TBD	Started Autumn 2018

Undergraduate Researchers

Name	Department	Institution	Project	Dates
Jordan Nelson	Materials Science and Engineering	University of Washington	Visual Inspection of Composite Structures	10/2018 - 12/2018
Quinlan Ferguson	Applied Physics	University of Washington	Optical Tweezers Experimentation	7/2018 - 12/2018
Shashi Singh	Mechanical Engineering	Indian Institute of Technology, Gandhinagar	Ergonomic Risk Assessment	05/2018 - 07/2018
Nikolay Bykov	Pre-Engineering	University of Washington	Multi-Robot Scheduling	03/2018 - Present
Prasanna Raut	Mechanical Engineering	Indian Institute of Technology, Gandhinagar	Optical Tweezers Force Modeling	05/2017 - 07/2017
John Stewart	Industrial & Systems Engineering	University of Washington	Optical Tweezers Experimentation	09/2016 - 08/2018
Ekta Samani	Electrical	Indian Institute of	Optical Tweezers	05/2016 -

Other Significant Student Supervision

Name	Department	Supervision Level	Thesis/Dissertation	Status
Nilanjana Laha	Statistics	Ph.D. Committee Graduate School Representative	Estimation under Convexity Constraints: Location Models and Beyond s -Concave	Completed General Exam in Winter 2018
Chung Ho	Construction Management	Ph.D. Committee Graduate School Representative	Reducing Costs and Improving the Reliability in Prefabrication Supply Chains under Demand Uncertainties	Completed General Exam in Winter 2018
Nishita Anandan	Mechanical Engineering	Ph.D. Committee Member	Study of Machinability of Metal Matrix Composites and its Effects on Mechanical Properties	Completed General Exam in Spring 2017
Parker Owan	Mechanical Engineering	Ph.D. Committee Member	Robotic Assistance for Confined-Space Aerospace Manufacturing	Scheduled Final Exam in Autumn 2018
Zhe Bai	Mechanical Engineering	Ph.D. Reading Committee Member	Sparse Sampling and Modal Decomposition for Fluid Flows	Graduated in Autumn 2018
Rahul Warriar	Mechanical Engineering	Ph.D. Committee Member	Inferring Intent in Novice Human-in-the-Loop Control Tasks	Graduated in Summer 2018
Anusha Mangal	Mechanical Engineering	M.S. Committee Member	A Comprehensive and Robust Mathematical Model for Vehicle Dynamics and Subsequent Control Strategy to Improve Performance During Cornering	Graduated in Spring 2018
Avinash Singh	Mechanical Engineering	M.S. Committee Member	Planar Aerial Inertial Reorientation of an Insect Scale Robot using a	Graduated in Winter 2018

RESEARCH ACTIVITIES

Funded Research

Funding agency	<i>Project title</i>	Role	Amounts	Dates
Amazon Robotics	<i>Vision-based Inference of Ergonomic Risks During Object Manipulation</i>	PI (Co-PI: S. Devasia, UW)	Total: \$80,000 ¹ My: \$50,000	04/2018 - 03/2019
Boeing Company	<i>Machine Learning for Automated Fiber Placement Optimization</i>	PI (Co-PI: S. Brunton, UW)	Total: \$450,000 My: \$390,000	02/2018 - 12/2020
Boeing Company	<i>Multi-Robot Control for Human Collaboration in Drilling Holes</i>	Co-PI (PI: S. Devasia, Co-PI: S. Brunton, UW)	Total: \$700,000 My: \$225,000	03/2018 - 12/2019
Boeing Company	<i>Data Science Research Center</i>	Co-PI (PI: S. Brunton, Co-PIs: N. Kutz, A. Aravkin, B. Brunton, S. Devasia, E. Lazowska, K. Morgansen, UW)	Total: \$2,000,000 My: \$200,000	01/2019 - 12/2020
Boeing Company	<i>Sparse Sensing for Bracket Standardization Opportunities</i>	Co-PI (PI: S. Brunton, UW)	Total: \$430,000 My: \$70,000	01/2018 - 12/2019
Boeing Company	<i>Experimental Study of Powder Bed Additive Manufacturing Process</i>	Co-PI (PI: R. Mamidala, Co-PIs: D. Arola, J. Wang, C. Cobb, UW)	Total: \$430,000 My: \$40,000	01/2018 - 12/2019

¹Unrestricted gift

Bias Intelligence	<i>Development of Multi-Agent Consensus Methods for Supply-Demand Networks</i>	PI	Total: \$57,000 ²	09/2017 - 09/2018
DMDII (DoD)	<i>Enabling Real-Time Supply Chain Visibility Through Predictive Analytics</i>	PI (Co-PIs: L. Boyle, UW; W. Yund, GE; A. Taha, NCSA; J. Neidig, ITAMCO)	Total: \$1,659,375 UW match: \$330,311 My: \$309,590	10/2016 - 09/2018
Boeing Company	<i>Data Analytics for Predicting Shim Shapes</i>	Co-PI (PI: S. Brunton, UW)	Total: \$439,225 My: \$165,000	09/2015 - 12/2017
DARPA	<i>Context-Aware Data Analysis for Cyber-Physical Systems</i>	Co-PI (GE) (PI: S. Neema; Co-PIs: T. Bapty, J. Sztipanovits, Vanderbilt U.)	Total: \$1,000,000 My: \$250,000	06/2015 - 07/2015 ³

Pending Proposals

Funding agency	Project title	Role	Amounts	Dates
NSF	<i>CAREER: Real-Time Manipulation of Optically Actuated Microrobots for Multicellular Studies</i>	PI	Total: \$699,807 My: \$699,807	03/2019 - 03/2024
Amazon Robotics	<i>Ergonomically Safe Human-Robot Collaboration Through Intent Prediction and Optimized Task Allocation</i>	PI	Total: \$80,000 ⁴ My: \$80,000	04/2019 - 03/2020
Naval Surface Warfare Center	<i>Development of Collaborative Human-Robot Systems for Inspection and Repair Tasks</i>	PI (Co-PI: S. Devasia, UW)	Total: \$155,447 My: \$140,000	02/2019 - 01/2021

²Unrestricted gift

³Left project on joining UW

⁴Unrestricted gift

*in Tightly Constrained
 Spaces*

WA State Dept. of Labor and Industries	<i>An App for Monitoring Worker Activity Ergonomics and Providing Risk Reduction Recommendations</i>	PI (Co-PIs: S. Devasia, UW P. Johnson, UW R. Means, WRA)	Total: \$174,757 My: \$150,000	03/2019 - 09/2020
WA State and Boeing Company	<i>Manufacturability of Lightweight Energy-Efficient Advanced Thermoplastic Parts (M-LEAP)</i>	Co-PI (PI: S. Devasia, Co-PIs: D. Arola, C. Cobb R. Mamidala, J. Wang, UW)	Total: \$5,200,000 UW match: \$500,000 My: \$250,000	03/2019 - 03/2022

TEACHING

Courses Taught

Course Number	Title	Quarter	Credit Hours
ME 599 L K IND E 599 A	Fundamentals of Autonomous Robotic Systems ⁵	Aut 2018	3
ME 599 L N IND E 599 C	Fundamentals of Robotic Systems	Aut 2017	3
IND E 535	Engineering Simulation	Spr 2017	3
ME 355	Introduction to Manufacturing Processes	Wtr 2016	4
ME 599 L N IND E 599 C	Advanced Robotics	Aut 2016	3
IND E 535	Engineering Simulation	Spr 2016	3
ME 355	Introduction to Manufacturing Processes	Wtr 2016	4

⁵Newly developed course

Supervision of Design Projects

- Comparative cost analysis of aircraft tie rod designs by Rungpatch Nethnapat, Greg Peterson, and Owin Ell, Winter 2018 and Spring 2018
- Development of valuable possession safety box by Celine Yahya, Zexia Ding, Daoyuan Guo, Jong Hyun Kim, and Yu Ho Tang, Winter 2016

Independent Study

Course	Title	Names	Quarters	Total Credit Hours
IND E 499	Multi-robot scheduling	John Stewart	Spr 2018	3
IND E 599	Heterogeneous data modeling	Amanda Dalstam	Wtr Spr 2017	6
IND E 599	Uncertainty quantification	Zhanlin Liu	Wtr 2017	2
IND E 499	Optical tweezers experimentation	John Stewart	Aut-Wtr 2016-18	15
ME 499	Stirling engine fan manufacture	Philip Barlas	Spr 2016	4
ME 499	Safety box design	Jong Hyun Kim Yu Ho Tang	Spr 2016	4
IND E 499	Supplier performance prediction	Siripong Somboon	Wtr 2016	5

SERVICE

Departmental service

Graduate Seminar Coordinator, Industrial & Systems Engineering, Spring 2018
 Faculty Council Representative, Industrial & Systems Engineering, Winter 2016, Winter & Spring 2017
 Ph.D. Qualifying Examiner, Mechanical Engineering, Spring 2017
 Departmental Seminar Speaker Host, Mechanical Engineering, Spring 2017
 Admissions Committee Member, Master of Industrial & Systems Engineering, 2016 - present

University service

Faculty Host, Waseda Faculty Development program, 2016 & 2017
 Reviewer, Royalty Research Fund, Autumn 2015, Spring 2017

Professional society service

Organizer, Proposed Workshop on Progress Toward Automated Micro-Bio-Nano Factories Through Robotic Manipulation, IEEE International Conference on Robotics and Automation, 2019
 Associate Editor, Conference Editorial Board, IEEE Conference on Automation Science and Engineering and IEEE International Symposium on Assembly and Manufacturing, 2016 - present

Program Committee Member, International Conference on Manipulation, Automation and Robotics at Small Scales, 2016 - present

Program Committee Member, Robotics: Science and Systems Conference, 2011, 2017 & 2018

Program Committee Member, Sensors for Next-Generation Robotics Conference at SPIE Sensing Technology + Applications Symposium, 2015 - 2017

Special Session Organizer, Imaging-Guided Micromanipulation at International Conference on Manipulation, Automation and Robotics at Small Scales, 2017

Guest Editor, Special Issue on Design, Fabrication, Control, and Planning of Multiple Mobile Microrobots for IJARS, 2014

Editorial Board Member, International Journal of Advanced Robotic Systems (IJARS), 2012 - present

Program Committee Member, IEEE International Workshop on Safety, Security, and Rescue Robotics, 2010

Chair, ASME Computers & Information in Engineering Division Systems Engineering, Information and Knowledge Management Technical Committee, 2016 - 2017

Vice-Chair, ASME Computers & Information in Engineering Division Systems Engineering, Information and Knowledge Management Technical Committee, 2015 - 2016

Secretary, ASME Computers & Information in Engineering Division Systems Engineering, Information and Knowledge Management Technical Committee, 2014 - 2015

Panel Co-Organizer, Smart and Connected Vehicles - Coming Soon to a Place Near You! at Computers and Information in Engineering Conference, 2017

Symposium Organizer, Human Factors and Cognitive Systems at Computers and Information in Engineering Conference, 2017

Symposium Organizer, Smart Manufacturing Informatics at Computers and Information in Engineering Conference, 2015 - present

Symposium Co-Organizer, Design, Simulation and Optimization for Additive Manufacturing at Computers and Information in Engineering Conference, 2017

Symposium Co-Organizer, Systems Engineering Information Knowledge Management at Computers and Information in Engineering Conference, 2015 - present

Symposium Co-Organizer, Micro/Nano Mechanisms and Robotics at International Conference on Micro- and Nanosystems, 2014 - 2017

Session Chair, Smart Manufacturing Informatics at Computers and Information in Engineering Conference, 2015

Session Co-Chair, Symposium on Micro/Nano Mechanisms and Robotics at International Conference on Micro- and Nanosystems, 2014 - 2015

Review Co-Coordinator, Systems Engineering Track at Computers and Information in Engineering Conference, 2014

International, national or governmental service

Panel Reviewer, Industrial Innovation and Partnerships Division, National Science Foundation, 2016 & 2018

Dr. Ashis G. Banerjee
Curriculum Vitae
As of December 15, 2018

Panel Reviewer, Division of Information and Intelligent Systems, National Science Foundation, 2014

External ad hoc Reviewer, Division of Information and Intelligent Systems, National Science Foundation, 2013 & 2018

External Reviewer, Hong Kong Research Grants Council, 2014

Project Proposal Reviewer, Czech Science Foundation, 2011

Community service

Group Leader, District 7620 Rotary Youth Leadership Awards, 2008

Volunteer, Kids Enjoy Exercises Now Greater DC, 2009

Outreach activities

Project judge, FIRST WA Lego League Tournament, 2018

Mentor, UW Washington State Academic RedShirt (STARS) Program, 2017

Project mentor, Tesla STEM High School Robotics Group for Central Sound Regional Science and Engineering Fair, 2016