

S. M. MIZANNOOR RAHMAN, Ph.D.

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PROFESSIONAL PREPARATION

Ph.D., Mechanical (Systems) Engineering, March 2011, Mie University, Tsu, Mie, Japan
M.Sc., Mechanical Engineering, March 2008, Mie University, Tsu, Mie, Japan
B.Sc., Industrial and Production Engineering, March 2003, Bangladesh University of Engineering and Technology, Bangladesh

APPOINTMENTS

- **Tuskegee University, AL, USA**, Assistant Professor, Mechanical Engineering, June 2018 – Present
- **New York University (NYU), NY, USA**, Postdoctoral Associate, Mechanical Engineering, May 2016-June 2018
- **Clemson University, SC, USA**, Postdoctoral Fellow, Mechanical Engineering, May 2014-April 2016
- **Vrije University of Brussels, Belgium**, Postdoctoral Fellow, Mechanical Engineering, May 2013-April 2014
- **Nanyang Technological University, Singapore**, Research Fellow, Media Innovation, April 2012-April 2013
- **National University of Singapore (NUS)**, Research Fellow, Biomedical Engineering, February 2011-February 2012

SELECTED RECENT PUBLICATIONS

- S. M. M. Rahman, R. Ikeura, "Cognition-based variable admittance control for improving human-robot interaction and performance in flexible manipulation of heavy objects with a power assist robotic system," *Robotics and Biomimetics*, 2018, To Appear
- S. M. M. Rahman, "Mixed-initiative collaboration between a humanoid robot and a virtual human through a common platform for a real-world common task: evaluation and benchmarking," *Journal of Ambient Intelligence and Smart Environments*, 2018, To Appear
- S. M. M. Rahman and Y. Wang, "Mutual trust-based subtask allocation for human-robot collaboration in flexible lightweight assembly in manufacturing," *Mechatronics*, Vol. 54, pp.94-109, October 2018.
- S. M. M. Rahman, R. Ikeura, "Calibrating intuitive and natural human-robot interaction and performance for power-assisted heavy object manipulation using cognition-based intelligent admittance control schemes," *International Journal of Advanced Robotic Systems*, Vol.15, No. 4, pp.1-18, July-August, 2018.
- S. M. M. Rahman, R. Ikeura, "Weight-perception-based fixed and variable admittance control algorithms for unimanual and bimanual lifting of objects with a power assist robotic system," *International Journal of Advanced Robotic Systems*, Vol.15, No. 4, pp.1-15, July-August, 2018.
- S. M. M. Rahman, V. J. Krishnan, V. Kapila, "Optimizing a teacher professional development program for teaching STEM with robotics through design-based research," in *Proc. of 2018 ASEE Annual Conference & Exposition*, June 24 - 27, 2018, Salt Lake City, Utah, USA, Paper ID #21572, pp.1-20.
- S. M. M. Rahman, S. M. Chako, S. B. Rajguru, V. Kapila, "Determining prerequisites for middle school students to participate in robotics-based STEM lessons: a computational thinking approach," in *Proc. of 2018 ASEE Annual Conference & Exposition*, June 24 - 27, 2018, Salt Lake City, Utah, USA, Paper ID #21615, pp.1-27.
- S. M. M. Rahman, "Cyber-physical-social system between a humanoid robot and a virtual human through a shared platform for adaptive agent ecology," *IEEE/CAA Journal of Automatica Sinica, SI on IoT-based Smart and Complex Systems*, Vol.5, No.1, pp.190-203, January 2018.
- S. M. M. Rahman, "Collaboration between a physical robot and a virtual human through a unified platform for personal assistance to humans," *Personal Assistants: Emerging Computational Technologies, Intel. Syst. Ref. Library Series*, A. Costa, V. Julian, P. Novais (Eds.), Springer, ISBN: 978-3-319-62529-4, Vol.132, Ch.9, pp. 149-177, September 2017.
- S. M. M. Rahman, R. Ikeura, "Model predictive control (MPC) to optimize performance in power-assisted manipulation of industrial objects," *IET Electric Power Applications*, Vol. 11, No.7, pp.1235-1244, August 2017.

- S. M. M. Rahman, Z. Liao, L. Jiang, Y. Wang, "Regret-based allocation of autonomy in shared visual detection for human-robot collaborative assembly in manufacturing," *Trends in Control and Decision-Making for Human-Robot Collaboration Systems*, Y. Wang and F. Zhang (Eds.), Springer, ISBN 978-3-319-40533-9/ 978-3-319-40532-2, Ch.9, pp.177-205, February 2017.
- S. M. M. Rahman, R. Ikeura, "Weight-prediction-based predictive optimal position and force controls of a power assist robotic system for object manipulation," *IEEE Transactions on Industrial Electronics*, Vol. 63, No. 9, pp.5964-5975, September 2016.
- S. M. M. Rahman, R. Ikeura, "Cognition-based control and optimization algorithms for optimizing human-robot interactions in power assisted object manipulation," *Journal of Information Science and Engineering*, Vol. 32, No. 5, pp. 1325-1344, September 2016.
- S. M. M. Rahman, Y. Wang, I. D. Walker, L. Mears, R. Pak, S. Remy, "Trust-based compliant robot-human handovers of payloads in collaborative assembly in flexible manufacturing," in *Proc. of the 12th IEEE Int. Conf. on Automation Science and Engineering (IEEE CASE 2016)*, Texas, USA, August 21-24, 2016, pp.355-360.
- S. M. M. Rahman, Z. Liao, L. Jiang, Y. Wang, "A regret-based autonomy allocation scheme for human-robot shared vision systems in collaborative assembly in manufacturing," in *Proc. of the 12th IEEE Int. Conf. on Automation Science and Engineering (IEEE CASE 2016)*, Texas, USA, August 21-24, 2016, pp.897-902.

RESEARCH CAPABILITY

Robotics, Control Systems, Artificial Intelligence, Machine Learning, Intelligent Autonomous Systems, Ergonomics, Biomechanics and Human Motion Analysis, Perception and Psychophysics, Human-Robot/Machine Interaction/Collaboration, Biomimetics, Multi-Agent Systems, System/Agent Performance/Behavior Modeling and Optimization, Advanced Sensing Technologies, Cyber-Physical System, Internet of (Robotic) Things (IoT), System Integration, etc. with applications to industrial manufacturing, healthcare and rehabilitation, elderly and social assistance/cooperation, space exploration, search and rescue operations, security, environmental protection, agriculture, field operations, business, and STEM education.

TEACHING CAPABILITY

Robotics, Mechatronics, Control Systems, Theory of Machines, Machine/Product/Mechanical/Capstone Design, Manufacturing Processes and Systems, Dynamics, Solid Mechanics (Strength of Materials), Measurement and Instrumentation, Ergonomics/Human Factors, Biomechanics, Engineering Psychology, Engineering/Industrial Operations Management, Entrepreneurship and Marketing Management, Engineering Project Management, etc.

HONORS AND AWARDS

- Editorial Board Member, *Smart Science Journal*, Taylor & Francis (May 2018-Present)
- Editorial Board Member, *The Open Automation and Control Systems Journal* (October 2017-Present)
- Postdoctoral Appreciation Award from the American National Postdoctoral Association (NPA) through the Clemson University Postdoctoral Association, Fall 2015
- Best paper finalist award, *IEEE Int. Conf. on Robotics and Biomimetics*, Dec. 14 -18, 2010, Tianjin, China.
- Best paper honor, *IEEE 2nd International Conference on Human System Interaction (IEEE HSI 2009)*, May 21-23, Catania, Italy.
- 'Prime Minister's Education Award' from the 'Prime Minister' of Bangladesh, 1995.

MEMBERSHIPS

- Member, The American Society of Mechanical Engineers (ASME), USA (Since 2015)
- Member, The Institute of Electrical and Electronics Engineers (IEEE), USA (Since 2010)
- Member, The New York Academy of Sciences, USA (Since 2016)
- Member, The American Society for Engineering Education (ASEE), USA (Since 2017)