Sathvik Divi — Curriculum Vitae

Contact Information

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Research Interests

bio-inspired robotics, insect-scale robotics, microrobots, actuation and sensing, design and control of novel mechanisms, fabrication, systems integration

Education

Carnegie Mellon University, Pittsburgh, PA

Ph.D., Mechanical Engineering, June 2021 (Expected)

Dissertation title: *Role of latches in latch-mediated spring actuation systems for high-acceleration movements in small-scale robots*
Advisor: Prof. Sarah Bergbreiter

NC State University, Raleigh, NC

M.S., Mechanical Engineering, Dec 2017

Thesis: *Design, Modeling, and Simulation of the Dynamics and Control, of an Autonomous Underwater Vehicle equipped with hydrokinetic turbines for harvesting energy from ocean currents*
Advisor: Prof. Andre Mazzoleni

BITS - Pilani, India

B.E. (Hons), Mechanical Engineering, June 2014

Skills

Programming Languages
MATLAB, Python, C, C++
Design/Analysis Tools
Simulink, Solidworks, Ansys APDL, Eagle
Rapid Prototyping Methods
3D Printing (FDM, SLA, PolyJet), Laser Cutting/Rastering

Research Experience

Research Assistant Aug 2018 to Current
Department of Mechanical Engineering,
Carnegie Mellon University
Supervisor: Prof. Sarah Bergbreiter

Research Assistant Jan to July 2018
Department of Mechanical Engineering,
University of Maryland, College Park
Supervisor: Prof. Sarah Bergbreiter

Research Assistant Aug 2016 to June 2017
Department of Mechanical and Aerospace Engineering,
NC State University
Supervisor: Prof. Andre Mazzoleni

Teaching Experience

Teaching Assistant Aug to Dec 2019
24-452 - Mechanical Systems Experimentation
Instructor: Prof. Burak Ozdoganlar
Carnegie Mellon University

Teaching Assistant Jan to May 2018
ENME350 - Electronics and Instrumentation I
Instructor: Prof. Jungho Kim
University of Maryland

Teaching Assistant Aug 2016 to May 2017
MAE 405 - Dynamics and Control Laboratory
Instructor: Prof. James Kribs
NC State University

Publications

Journal articles

J1 **Divi, S.**, Reynaga, C.M., Azizi E., and Bergbreiter, S., "Tuning of Latch-mediated spring actuation systems to their environments" [**in progress**]

J2 Divi, S., Foong, H.M., St. Pierre, R., and Bergbreiter, S., "Latch-based control of jump performance in small-scale jumping robots with fixed spring compression" [**submitted to IEEE Robotics and Automation Letters**]

J3 Olberding, J.P., Hyun, N.P., De, A., **Divi, S.**, Liang, X., Thomas, E., St. Pierre, R., Steinhardt, E., Jorge, J., Long S.J., Cox, S., Mendoza, E., Sutton, G.P., Azizi, E., Crosby, A.J., Bergbreiter, S., Wood., R.J., and Patek, S.N., "Tunable elastic materials and latch dynamics achieve control objectives in ultrafast systems" [**Submitted to Proceedings of National Academy of Sciences**]

J4 **Divi, S.**, Ma, X., Ilton, M., St. Pierre, R., Eslami, B., Patek, S.N., and Bergbreiter, S., "Latch-based control of energy output in spring actuated systems", *Journal of the Royal Society Interface* vol. 17, July 2020

J5 Tandon, S., **Divi, S.**, Muglia, M., Vermillion, C., Mazzoleni, A.,"Modeling and dynamics analysis of a mobile underwater turbine system for harvesting marine hydrokinetic energy", *Ocean Engineering* vol. 187, July 2019

Conference presentations and proceedings

C1 **Divi, S.**, Ma, X., Ilton, M., and Bergbreiter, S., "Tuning impulsive mechanisms to their environment" *Bulletin of the American Physical Society*, Boston, MA, March 4-8 2019

C2 Ilton, M., Cook, A., Heller, N., Patek, S., Crosby, A., Bergbreiter, S., Azizi, E., Sutton, G., Longo, S., **Divi, S.**, Reynaga, C., Olberding, J., St. Pierre, R., Cox, S., "Modeling the physical constraints of latch mediated, spring actuated systems" *Bulletin of the American Physical Society*, Boston, MA, March 4-8 2019

Workshop presentations

W1 **Divi, S.** and St. Pierre, R., "Practical approaches to studying latches" *Society of Integrative and Comparative Biology Workshop on Playing with power: mechanisms of energy flow in organismal movement*, Tampa, FL, January 3, 2019

Awards

Milton Shaw award for best poster (category: robotics) at the Mechanical Engineering Graduate Research Symposium (Carnegie Mellon University), March 2019

Leadership

Workshop leader - *Society of Integrative and Comparative Biology Workshop on Playing with Power: mechanisms of energy flow in organismal movement*, Tampa, FL, January 3, 2019

Vice president - Indian Graduate Student Association (MAITRI) at NC State University, Dec 2015-Dec 2016

Industry Experience

SKF India Ltd., *Territory Manager, Key Accounts Manager* July 2014 - July 2015