Mahmud Hasan Saikot

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Education

Colorado State University *Aug 2026 – Present*
Doctor of Philosophy, Mechanical Engineering (Robotics) *GPA: 4.0/4.0 (ongoing)*

Colorado State University *Aug 2023 – Jul 2026*
Master of Science, Mechanical Engineering (Robotics) *GPA: 4.0/4.0*

Bangladesh University of Engineering and Technology (BUET) *Feb 2016 – Mar 2021*
Bachelor of Science, Mechanical Engineering

Publications

Journal Articles

[1] **MH Saikot**, S Spiegel, SA Kariyawasam, A Stefka, J Chrisler, and J Zhao. "Tensegrity Continuum Robots Enable Task-Adaptive Morphologies for Cooperative Behaviors," *Nature Machine Intelligence*, accepted for publication, 2026.

[2] SA Kariyawasam, **MH Saikot**, B Cheng, and J Zhao. "A Hybrid Perching Mechanism for Aerial Robots: Branch and Surface Perching Robust to Large Surface Orientation Misalignment," *IEEE Robotics and Automation Letters*, 2026. [DOI]

[3] **MH Saikot**, F Wu, E Lerner, B Cheng, and J Zhao. "Tunable Mechanism Enables Robust Surface Perching Under Different Landing Impacts and Orientation Misalignment," *Advanced Intelligent Systems*, 2025. [DOI]

[4] M Ahmed, A Habib, MM Nawal, **MMH Saikot**, MAH Chowdhury, A Hoque, AU Zaman, H Pálsson, and P Björnsson. "Deep Learning-based Approach to R-134a Bubble Detection and Analysis for Geothermal Applications," *Case Studies in Thermal Engineering*, 2023. [DOI]

[5] **MMH Saikot**, M Rahman, MA Hosen, W Ajwad, MF Jamil, and MQ Islam. "Savonius Wind Turbine Performance Comparison with One and Two Porous Deflectors: A CFD Study," *Flow, Turbulence and Combustion*, 2023. [DOI]

[6] LB Cross, RASI Subad, **MMH Saikot**, and K Park. "Waterproof Design of Soft Multi-Directional Force Sensor for Underwater Robotic Applications," *Applied Mechanics*, 2022. [DOI]

[7] **MMH Saikot** and KRI Sanim. "Refreshable Braille Display with Adjustable Cell Size for Learners with Different Tactile Sensitivity," *IEEE Transactions on Haptics*, 2022. [DOI]

[8] RASI Subad, **MMH Saikot**, and K Park. "Soft Multi-Directional Force Sensor for Underwater Robotic Application," *Sensors*, 2022. [DOI]

Conference Papers

[9] B Jones, **MH Saikot**, and J Zhao. "Bistable Spring Steel Grippers for Passive Grasping," in *Proc. IEEE 7th Int. Conf. on Soft Robotics (RoboSoft)*, San Diego, CA, USA, 2024, pp. 906–911. [DOI]

[10] **MMH Saikot**, RASI Subad, and K Park. "Machine Learning Based Characterization of a Waterproofed Soft Multi-directional Force Sensor," in *Proc. IEEE FLEPS*, Boston, MA, USA, 2023. [DOI]

Conference Presentations & Abstracts

[11] **MH Saikot**, A Leadbetter, B Cheng, and J Zhao. "Robophysics of a Tensegrity Robotic Fish: Effects of Stiffness, Control, and Elastic Recoil on Swimming Efficiency," *APS Global Physics Summit*, 2026.

Current Research

Robotic Fish *Supported by NSF, Grant #2334883*

- Design and development of a tensegrity-based robotic fish for efficient swimming.

Tensegrity Worm Robot

- Design and performance evaluation of a tensegrity-based modular self-reconfigurable robot.

Past Research Projects

Tunable Perching on Surfaces with Misalignment *Supported by NSF, Grant #2230321*

- Developed a tunable mechanism that can handle large misalignment and speed.

Soft Tactile Sensor for Directional Force Recognition in Underwater Environments *with Dr. Kihan Park*

- Numerically modeled and characterized the fabricated soft tactile sensor.
- Trained a machine learning algorithm using the sensor dataset for force-region prediction.

Assistive Haptic Display for Visually Impaired Braille Learners

- Devised and evaluated a novel mechanism to change the display size according to learner preference.

Professional Experience

Research Assistant, Adaptive Robotics Lab, Colorado State University *Aug 2024 – Present*

- Working on two federally funded projects on robotics.

Graduate Teaching Assistant, Mechanical Engineering, Colorado State University *Aug 2023 – Aug 2024*

- Taught lab classes, designed lab exams, held office hours, and graded student work.

Assistant Mechanical Engineer, Technovative Solutions (TVS), UK *Jan 2022 – Jul 2023*

- Created system models using Python for the EU-funded GeoSmart project KBDSS tool development.

Technical Writer, ByteXD *Mar 2021 – Nov 2021*

- Wrote articles on computer networking and system administration (Linux).

Awards & Honors

- Sam L. Clowney Research Scholarship, Colorado State University, 2026 – Fort Collins, USA (Awarded $3000)
- Raju Jairam Endowment, Colorado State University, 2023 – Fort Collins, USA (Awarded $1,765)
- Champion, Energy Innovation Challenge 2018, Singapore (Awarded $8,000)
- 1st Runner-Up, IEEE SS12 Innovation Challenge & Maker Fair 2018, Bangladesh Round
- Champion, Mechanical Festival Poster Presentation, 2018, BUET

Personal Projects

Haptic Display for Learning and Reading *Apr 2018 – May 2019*

Champion project, Energy Innovation Challenge 2018, Singapore

- Developed custom-made actuators (under $0.25) using relays for affordability.
- Introduced an interactive Braille learning method combining tactile sensing and text-to-speech.

Volunteer Experience

Sports Coordinator, Bangladeshi Students Association, Colorado State University *Mar 2026 – Dec 2026*

- Organized community-wide sporting events on multiple occasions.

Department Representative, Mechanical Engineering Department, BUET *Jan 2020 – Feb 2021*

- Helped students communicate with the department on academic and non-academic issues.

Co-founder, Tero Foundation, Bangladesh *Feb 2020 – May 2026*

- Fabricated 300 inexpensive face shields and distributed them among local health professionals.

Technical Skills

Programming: C, C++, Python, MATLAB, HTML, CSS. **Hard Skills:** Machine Learning, Image Processing (OpenCV/MATLAB), Networking & Cybersecurity, Cloud (Azure). **Simulation:** MuJoCo, ANSYS Workbench, ANSYS Fluent, ANSYS Mechanical, Pointwise, Abaqus CAE. **Data Visualization:** Tecplot, Excel, Python. **Design Software:** AutoCAD, SolidWorks, Inkscape, Figma. **Hardware:** Electronics & PCBs, Arduino, Raspberry Pi, ESP32.

References

Dr. Jianguo Zhao
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Colorado State University
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Dr. Bo Cheng
Professor, Mechanical Engineering
Pennsylvania State University
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