

# AMY K SNIFFEN

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## EDUCATION

**Dartmouth College**, Hanover, NH

Doctor of Philosophy in Computer Science, Reality and Robotics Lab, Expected June of 2024

**Manhattan College**, Riverdale, NY

Bachelor of Science in Electrical Engineering, Math and CS minor, Magna Cum Laude, May 2018

GPA: 3.84

## HONORS & AWARDS

**Electrical Engineering Medal, Next in Merit:** Awarded to highest ranking graduate in Electrical Eng. 2018

**Tau Beta Pi:** Vice President of New York Xi Chapter 2017 – 2018

**Eta Kappa Nu:** Vice President of Gamma Alpha Chapter 2017 – 2018

**Women's Rowing, Captain:** Captain of the Manhattan College Div. I Women's Rowing team 2017 – 2018

## PROJECT EXPERIENCE

**Graduate Research Assistant, Dartmouth College**, Hanover, NH

Nov. 2018 – Present

### **Design and Drop-Based Assembly of Interlocking Rigid Bodies (Thesis Research)**

- Pioneered mathematical models for interlocking blocks; used 3D printing to fabricate model-driven designs
- Introduced the concept of “drop-based assembly”, making assembly more efficient and cost-effective
- Assembled structures with a robotic arm using drop-based assembly, as a proof-of-concept
- Designed a 2D simulator, providing a time-saving solution for testing blocks prior to fabrication.
- Developed a design optimization method, balancing between assembly efficiency and interlocking tightness
- Demonstrated effectiveness of optimization framework and simulator through real-world experiments.
- Positioned to explore drone-based assembly of interlocking blocks

### **Modular Assembly of Underwater Structures:**

- Designed interlocking structural components for use with underwater ROV (BlueROV2)
- Tested fabrication methods/materials: 3D printing (FFF), concrete casting, and lightweight concrete

### **Teaching American Sign Language in Mixed Reality:**

- Aided in design of custom-built sensing glove to measure hand position/finger angles
- Designed clustering algorithm using data from glove and VIVE Pro headset to generate user-feedback

## ACADEMIC EXPERIENCE

**Graduate Research Assistant**, Dartmouth College, Hanover, NH

Nov. 2018 – Present

- Working in the Robotics Lab under the guidance of Devin Balkcom

**Graduate Teaching Assistant**, Dartmouth College, Hanover, NH

Sept. 2018 – Nov. 2018

- Held office hours; graded homework/tests for undergraduates in Discrete Math

**Undergraduate Research Assistant**, Manhattan College, Riverdale, NY

Jun. 2018 – Aug. 2018

- Developed algorithms for AUV bridge scour monitoring using MOOS-IvP

## PUBLICATIONS

**Graduate Research Assistant**, Dartmouth College, Hanover, NH

- Sniffen, Amy and Balkcom, Devin “Wedgelock: Design, Optimization, and Assembly of Interlocking Blocks with Tolerance”, *International Conference on Robotics and Automation (ICRA) 2024*, under review
- Sniffen, Amy and Sun, Zezhou, and et al “Falling Into Place: Drop Based Assembly of Interlocking Puzzles”, *Robotics: Science and Systems (RSS) 2021*
- Lensgraf, Samuel and Sniffen, Amy and et al “Droplet: Towards Autonomous Underwater Assembly of Modular Structures”, *Robotics: Science and Systems (RSS) 2021*
- Carver, Charles and Shao, Qijia and Lensgraf, Samuel and Sniffen, Amy and et al “Sunflower: Sensing Underwater Robots from the Air” *MobiSys 2022*
- Lensgraf, Samuel and Sniffen, Amy and et al “Towards the Autonomous Underwater Construction of Cement Block Structures with Free-Floating Robots”, *Future of Construction ICRA 2022 Workshop* (best paper award, third place)
- Shao, Qijia and Sniffen, Amy and et al “Teaching American Sign Language in Mixed Reality”, *Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT) 2020*

## SOFTWARE

C++, Python, ROS, SolidWorks, Autodesk Fusion, MATLAB, PyTorch, Bullet Physics, Taichi

## RELEVANT COURSES

Machine Learning for Robots, Artificial Intelligence, Applied Machine Learning, Multirobot Systems, Operating Systems, Robotic Perception Systems, Concurrent Algorithms, Neural Networks