Petras Swissler – Curriculum Vitae

McCormick School of Engineering   Phone: (608)-630-1970
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Research Interests

- Multi-robot systems
- Robotic self-assembly
- Swarm-human interaction
- Social insect behavior
- Mechatronics
- Educational robotics

Education

(Pursuing) Ph.D. Mechanical Engineering   2016 –
Northwestern University, Evanston, IL   June 2022 (expected)
Proposed Thesis: Large-Scale Robotic Self-Assembly Using Alignment-Agnostic Docking
Advisor: Michael Rubenstein

M.S. Mechanical Engineering   2018
Northwestern University, Evanston, IL
Thesis: FireAnt: A Modular Robot with Full-Body Continuous Docks
Advisor: Michael Rubenstein

B.S. Mechanical Engineering   2012
Rose-Hulman Institute of Technology, Terre Haute, IN
Minors: Robotics, Electrical Engineering, Spanish

Peer-Reviewed Publications

Petras Swissler and Michael Rubenstein. "ReactiveBuild: environment-adaptive self-assembly of amorphous structures." *2021 Int'l Symposium on Distributed Autonomous Robotic Systems (DARS).* **(Winner: Best student paper)**

Petras Swissler and Michael Rubenstein. "FireAnt3D: a 3D self-climbing robot towards non-latticed robotic self-assembly." *2020 IEEE Int'l Conference on Intelligent Robots and Systems (IROS).*

Petras Swissler and Michael Rubenstein "FireAnt: a modular robot with full-body continuous docks." *2018 IEEE International Conference on Robotics and Automation (ICRA).*

Awards and Notable Achievements

- Patent Application: "Method and system for joining robotic components"   2021
- McCormick School of Engineering Terminal Year Fellowship   2021
- Best Student Paper at DARS 2021: *ReactiveBuild*   2021
- Murphy Fellowship   2016
- 1st Place Overall, ASME Human Powered Vehicle Competition   2010, 2011, 2012

Teaching Experience

Teaching Assistant for ME 333: Introduction to Mechatronics   2021
Volunteer Teacher for Northwestern Splash outreach program   2016 – 2021

Employment

Graduate Research Assistant at Northwestern University. Evanston, IL.   2016 – Present

Teaching Assistant at Northwestern University. Evanston, IL.   2021
  "ME 333: Introduction to Mechatronics"

Mechanical Engineer at Parametric Solutions Incorporated. Jupiter, FL.   2012 – 2016

Talks

- "ReactiveBuild: environment-adaptive self-assembly of amorphous structures."   June 2021
  Virtual presentation and live Q&A session for DARS conference (Link)
- "FireAnt3D: a 3D self-climbing robot towards non-latticed robotic self-assembly."   Nov. 2020
  Virtual presentation and Q&A session for IROS conference (Link)
- "FireAnt3D: a 3D self-climbing robot towards non-latticed robotic self-assembly."   July 2020
  Invited by Chicago-area Robotics and Automation Society.
- "Climbing over the bodies of your peers: Sept. 2019
  The locomotive challenges of robotic self-assembly."
    Invited by the Northwestern Mechanical Engineering Graduate Student Society.
- "FireAnt: a modular robot with full-body continuous docks"   May 2018
  Presented at Swarm Robotics workshop at ICRA 2018.
- "ASME HPVC best practices: team history and advice to new teams."   June 2012
  Invited by ASME Human Powered Vehicle Challenge.

Professional and Community Service

Reviewer:
- IEEE Transactions on Robotics (T-Ro)
- International Symposium on Distributed Autonomous Robotic Systems (DARS)
- Robotics Science and Systems (RSS)
- IEEE International Conference on Intelligent Robots and Systems (IROS)
- Swarm Intelligence

Outreach:
- "Middle School Robotics Tournament" at U. Chicago Laboratory School (Judge)   2021
- "Day in the Life of a STEM-itist" (Presenter). Evanston, IL.   2020 – 2021
- "Northwestern Splash" (Teacher, Treasurer, Secretary). Evanston, IL.   2016 – 2021
- "Science in Your Community Center" (Volunteer Mentor). Evanston, IL.   2017 – 2020
- "National Robotics Week" (Volunteer). Chicago, IL.   2019

Proficiencies

Languages:	English (native), Spanish (limited working proficiency)
Programming:	C++, Matlab, Python
CAD Software:	Solidworks, NX, Eagle
Manufacturing:	Machining (mill/lathe), SMD soldering, 3D printing, routing, laser cutting