

JOHANNA HANSEN

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EDUCATION

McGill University, Montreal, QC

2016 – 2022

Ph.D. in Computer Science (expected), Mobile Robotics Lab

Learning Robotic Policies with Physically Consistent World Models

University of Texas at San Antonio, San Antonio, TX

2012 – 2015

Graduate coursework (30 hours) in Electrical Engineering, Digital Signal Processing

Texas State University, San Marcos, TX

2007 – 2011

B.S. in Electrical Engineering and B.S. in Environmental Geography

TECHNICAL SKILLS

Expertise: Robotics, Machine Learning, Reinforcement Learning, Visuotactile Sensing, Oceanographic Sensing, Scientific Machine Learning, Earth and Environmental Science

Software: Scientific Python, Physics Simulators, ROS, C/C++, Matlab

Hardware: Custom Science Sensors, Sonar, Visuotactile Sensing, Marine Instrumentation

EXPERIENCE

McGill University

Jan 2016–current

Graduate Researcher, Mobile Robotics Lab

Montreal, QC

- Model-based planning and reinforcement learning with physics-grounded, learned world models.
- Developed sim2real environment for the Jaco manipulator, underwater localization system with USBL, and new autonomous boat with specialized sensors.
- Led research and design of marine sampling with learned trajectory modeling for unactuated floating sensors (including competitive submission to the DARPA Forecasting Floats in Turbulence challenge).

Samsung AI Center

2021–current

Part-Time Research Intern, Tactile Sensing Group

Montreal, QC

- Research on multitask learning with visuotactile-based grounding for complex manipulation tasks. Developed benchmark codebase for pixel-based reinforcement learning with visuotactile sensing.

NASA Jet Propulsion Lab (JPL)

Summer 2019

Research Intern and Remote Affiliate, Mobility and Robotics Section

Pasadena, CA

- Worked on machine vision aspects of the Mars Sample Return Project. Implemented state-of-the-art geometric and direct object localization methods for finding sample tubes on the Martian terrain with care given to uncertainty and computational performance.

Woods Hole Oceanographic Institution (WHOI)

Jan 2014 – Sept 2015

Autonomous Underwater Vehicle Engineer, National Deep Submergence Facility

Woods Hole, MA

- Software/Data/Electrical Engineer for deep-diving autonomous underwater vehicles (AUVs) working in research and ship-board operational environments. Core engineer for AUV deployment, hardware repair and maintenance, autonomous robot navigation, software development, networking for robots and staff, acoustic and visual mapping of the seafloor, and scientific data analysis.

Southwest Research Institute (SwRI)

Jan 2012 – Dec 2013

Engineer, Automation and Data Systems Division

San Antonio, TX

- Primary end-to-end software engineer building a mapping sensor consisting of acoustic transducers, DSP, camera, and embedded computer with remote control and interpretation. Developed sampling, filtering, visualization scheme and beamforming calibration routine for live acoustic data.