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

EXPERIENCE

McGill University Jan 2016–current
Graduate Researcher, Mobile Robotics Lab / Mila *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). Learned coverage policies for unactuated sensors over spatiotemporally varying fields.

Samsung AI Center (SAIC) 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 for inspecting conduits for damage. Sensor consists 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.