JOHANNA HANSEN

johanna.hansen@mail.mcgill.ca ⋄ http://johannah.github.io

EDUCATION

McGill University, Montreal, QC *2016 – 2021*
Ph.D. in Computer Science (expected), Mobile Robotics Lab
Thesis work on Model-Based Decision Making in Scientific Sampling Robots

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 Environmnetal Geography

TECHNICAL SKILLS

Expertise: Machine Learning, Reinforcement Learning, Planning and Localization, Sensors, Scientific Data Science, Signal Processing, Communication and Networking, Environmental Geography
Software: Scientific Python (numpy, pytorch, scikit-learn, pandas), ROS, C/C++, Matlab
Hardware: Sensors, Embedded Systems, Localization Systems, Marine Instrumentation
Data: Images, Geospatial, Time Series, Scientific Sensors, Robot Navigation

EXPERIENCE

McGill University Jan 2016–current
Graduate Researcher, Mobile Robotics Lab *Montreal, QC*

· Research on model-based planning and reinforcement learning with generative models for mobile agents.
· Spearheaded collaboration with ecologists to develop automatic classification and spatial modeling of zooplankton in Canadian lakes. Led research and design of strategic marine sampling with custom low-cost floating sensors and autonomous surface vehicles.
· Built system for portable underwater vehicle localization using low-cost USBL/GPS components

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 estimation uncertainty and computational performance. Developed a model which learns to contextually switch between different object localization methods.

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. Assisted in AUV deployments, hardware repair and maintenance, autonomous robot navigation, software development, networking and communications 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.

Lower Colorado River Authority (LCRA) Jan 2011 – Dec 2011
Engineering Coop, Telecommunications Department *Austin, TX*

· Configured SONET, fiber, ethernet, and microwave systems for critical communication infrastructure.