MOLLIE BIANCHI

bianchi.mollie@gmail.com | (416) 705-7767 | molliebianchi.github.io

EDUCATION

Master of Applied Science, Emphasis in Robotics   **2019 - 2021**
University of Toronto, Autonomous Space Robotics Lab, GPA: 4.0/4.0
Vector Scholarship in Artificial Intelligence and NSERC Graduate Scholarship

Bachelor of Applied Science in Engineering Science with High Honours   **2015 - 2019**
University of Toronto, Robotics Major, GPA: 3.94/4.00
University of Toronto National Scholarship

SKILLS

- Python and C++ in Linux, ROS/ROS2, OpenCV, Eigen, PyTorch, TensorFlow, GTSAM, MATLAB
- State estimation incl. EKF, SLAM, computer vision, sensor fusion, perception, machine learning and neural networks, calibration, linear algebra, field robotics, control systems incl. PID controller, robotic manipulators

WORK EXPERIENCE

Robotics Perception Engineer   **2021 - present**
Trimble Applanix, Richmond Hill, Ontario
- Developing in C++ a visual inertial odometry pipeline to compute real time trajectories with use cases in GNSS denied environments
- Conducting field deployments to collect data and demonstrate map based localization system

Research Assistant   **2019 - 2021**
Visual Localization for Unmanned Aerial Vehicles (UAVs)
- Project goal was to develop a method to localize live images captured by a UAV to geo-referenced images pre-rendered from Google Earth when GPS is unavailable
- Authored "UAV Localization Using Autoencoded Satellite Images" appearing in *Robotics and Automation Letters 2021* presenting a new method using an auto-encoder to compress images and weighted kernel evaluations to compute a pose and covariance estimate
- Integrated this method with the existing, complex code base written in C++ using ROS onboard the UAV

IT and Controls Intern   **Summer 2018**
Innovative Automation Inc., Barrie, Ontario
- Programmed PLCs for the operation of automated robotic equipment and designed human-machine interfaces
- Troubleshot machine operations and reworked design during testing phase

PROJECT EXPERIENCE

Simulation Testing Lead   **2018 - 2020**
aUToronto, University of Toronto's Autonomous Vehicle Team
- Created a ROS bridge to interface between developed autonomy nodes and existing simulation solutions (eg. CARLA, Gazebo, MATLAB) to create specific dynamic evaluation scenarios
- 1st Place Team Overall Years 1, 2, and 3 in the AutoDrive Challenge hosted by SAE and General Motors

Electromechanical Team Member   **Jan - April 2017**
Undergraduate Engineering Design Course, University of Toronto
- Designed and constructed a fully autonomous can sorting machine that placed 1st in program wide competition
- Responsible for structural components, selecting and installing appropriate sensors, actuators, and motors, and integrating with my electrical and microcontroller team members