2017 Women in Transportation RISS Intern

This summer, Stephanie Milani worked as Mobility21's Women in Transportation Robotics Institute Summer Scholars (RISS) intern. The RISS program is an eleven-week research program that allows undergraduate students to work on cutting-edge robotics projects, driving innovation with real-world impacts. RISS is one of the top robotics research programs for undergraduates offered in the world.

Stephanie is a student at the University of Maryland in Baltimore County. Studying Computer Science and Psychology, she plans to graduate in 2019. Over the summer, she worked along side T-SET UTC researcher Christoph Mertz, her mentor, to assemble all the hardware and software components of a deep learning system and investigate a robust way to model traffic sign invariances due to occlusion events.

At the end of the summer, Stephanie presented her research poster: "A-Faster R-CNN: Generating Hard Positive Examples via Adversary for Traffic Sign Detection," which investigated the solution to dealing with difficult occlusions- generating hard positive examples of occlusion using an adversary. Using a new network system, the goal of the adversary was to create examples of occluded signs that often get misclassified while the goal of the detector was to accurately identify the sign.

The network Stephanie designed combined Faster R-CNN architecture with the Adversarial Spatial Dropout Network to create A-Faster R-CNN. She tested this design on the Navlab's dataset.

Through a partnership between CMU's Robotics Institute and UBTech Education, Stephanie and her fellow scholars also participated in the Robot Build Challenge. The challenge used advanced UBTech Education robotics kits to give students a hands-on opportunity to build autonomous wheeled robots that could communicate with other robots, and work through human aspects of robotics technology.

For more information about the RISS Program, visit the RI Summer Scholars Program page. Applications for Summer 2018 will be accepted from December 1st, 2017 to January 31st, 2018.