



Thesis Defense

Computer Science Master's Program

“BRUNET: Disruption-Tolerant TCP and Decentralized Wi-Fi for Small Systems of Autonomous Vehicles”

By Nicholas Brunet

Abstract:

Reliable wireless communication is essential for small systems of vehicles. However, for small-scale projects where communication is not the primary goal, programmers frequently choose to use TCP with Wi-Fi because of their familiarity with the sockets API and the widespread availability of Wi-Fi hardware. However, neither of these technologies are suitable in their default configurations for highly mobile vehicles that experience frequent, extended disruptions. BRUNET (BRUNET Really Useful NETWORK) provides a two-tier software solution that enhances the communication capabilities for Linux-based systems. An ad-hoc Wi-Fi network permits decentralized peer-to-peer and multi-hop connectivity without the need for dedicated network infrastructure. A background process adds disruption tolerance to specified TCP endpoints without any changes to existing software. This allows TCP connections to persist indefinitely over possibly multiple long network outages. Data sent by applications is automatically buffered and transmitted when network connectivity resumes.

Date: Tuesday, December 12th, 2023

Time: 8:30 AM – 10:00 AM

Location: 14-232b

Committee: Dr. Bellardo, Rich Murray, and Dr. Hummel

Zoom: <https://calpoly.zoom.us/j/5443424446>

Meeting ID: 544 342 4446

