PAWR Project Office

June 2022

Welcome to the monthly PAWR update. Each month we deliver technical updates on: POWDER, COSMOS, AERPAW, ARA, and Colosseum.

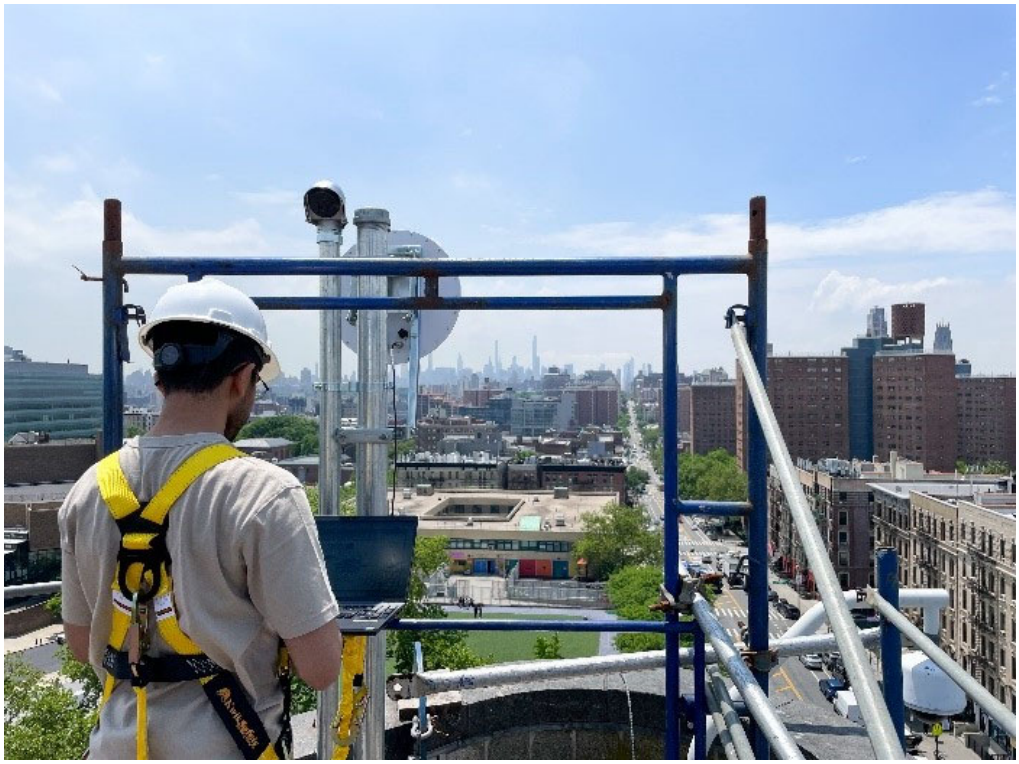
POWDER-RENEW

In a major milestone for the POWDER platform, the PAWR Project Office announced this month the successful development and demonstration by Zylinium Research of a dynamic spectrum allocation system, Spectrum Exchange, tested and proven on both the Colosseum network emulator and the POWDER over-the-air wireless testbed. The demonstration at POWDER showed how 5G network users could be prioritized for spectrum allocations over less-critical Internet of Things (IoT) clients. Spectrum Exchange is highly granular and able to assign spectrum in slices as small as several kilohertz, and for time periods as short as tens of milliseconds.

Zylinium's research was funded by the U.S. Department of Defense (DoD) Office of the Under Secretary of Defense for Research and Engineering (OUSD R&E) in the interest of advancing spectrum sharing techniques and machine-driven spectrum intelligence capabilities. Spectrum Exchange was demonstrated at POWDER using a custom version of the OpenAirInterface (OAI) 5G standalone software stack.

COSMOS

Construction continues at COSMOS to deploy new large and medium nodes at the testbed's City College of New York (CCNY) site. (See time lapse video here.) These nodes will complement those already deployed at Columbia University, with additional medium nodes planned for deployment in the corridor between the two sites over the course of this year. There is already a dark fiber link between Columbia and CCNY thanks to a contribution by PAWR industry consortium partner Crown Castle.



In research news, COSMOS has a new paper available for researchers interested in using the platform to study optical x-haul. The paper was published this spring in IEEE Network Magazine. It presents the COSMOS design of a unique, remotely accessible, disaggregated, and programmable network. It also discusses the design and implementation of an SDN controller for wavelength channel assignment and topology reconfiguration.

Finally, researchers recently completed a three-month Aurora Viewer project funded by NGI Atlantic and conducted at COSMOS. The project included adaptation of a reference implementation developed in Europe of an Open Spatial Computing Platform (OSCP). The research team also created a reference client application and two representative demo applications showing how the OSCP could be used to enable immersive, augmented reality experiences.

AERPAW

Toward the end of May, the AERPAW team launched a helikite to train operators on flight controls and collect spectrum data at higher altitudes than typically allowed for drone experiments. The team collected spectrum occupancy data in frequency bands up to 6 GHz, and at altitudes up to 500 feet, at increments of 10 meters. This data will be processed and released to the public at a future date.

ARA

As they prepare for launch later in the year, the ARA team is engaging regularly with industry partners and agency groups on the potential for rural connectivity research on the platform. This past month, ARA PI Hongwei Zhang and Ericsson Chief Solutions Architect Christopher Yaw jointly presented to the FCC Task Force on Precision Agriculture and Connectivity, sharing their insights on rural wireless opportunities.

Colosseum

The Colosseum team successfully graduated its second group of Young Gladiators from a three-day Colosseum Summer School in June. More information is available online, and the program will return in 2023.

Also now available from the Colosseum team is OpenRAN Gym, an open source project fostering collaborative, AI-driven and experimental research in the Open RAN ecosystem. Contributions are welcome from the community. More information: https://openrangym.com