PAWR Project Office

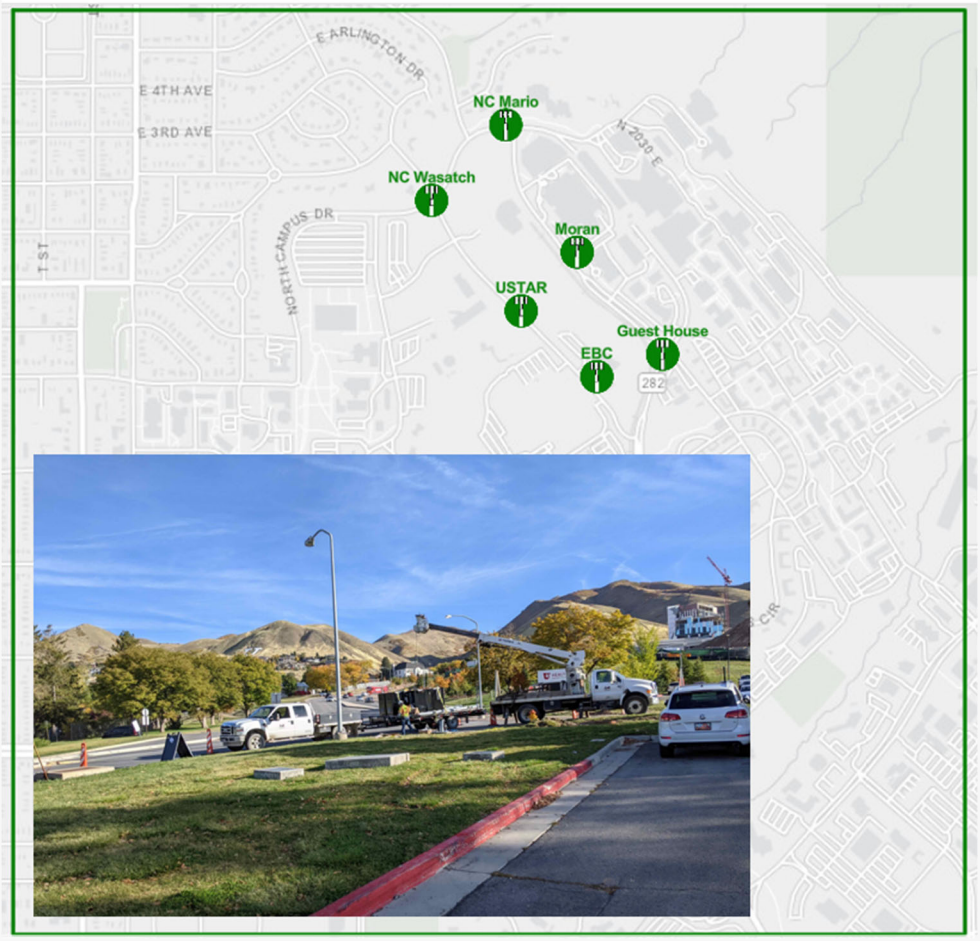
July 2022

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

POWDER-RENEW

The POWDER team completed its work with the latest O-RAN Alliance plugfest in June, supporting proof-of-concept efforts related to energy efficiency in the RAN. Partners in the project included Radisys, Intel, Vodafone, Wind River, and Keysight. The O-RAN Alliance plans to highlight some of the results of the event in an upcoming public virtual showcase.

POWDER also collaborated with Keysight on O-RAN test automation through the plugfest, demonstrating a way to automatically test and validate O-RAN near-real-time RICs and xApps on-demand across a customizable parameter space. The collaboration paired Keysight's RICtest O-RAN near-real-time RIC test software with POWDER's "lab as a service" automation framework (PLAF).



In other POWDER news, the team announced recently the completed construction and availability of five new node sites as part of a dense network deployment that is being optimized for CBRS operations. These new radio nodes are located on street poles and will interact with mobile endpoints traveling a nearby shuttle route. An additional sixth node will be deployed in the coming weeks on a nearby rooftop. The POWDER team will be installing medium-power frontends at these dense deployment sites in early fall.

COSMOS

Unveiling some of the team's smart city traffic monitoring experiments, COSMOS recently published anonymized videos taken at the intersection of 120th Street and Amsterdam Avenue in New York City in order to demonstrate technology that automatically blurs faces and license plates in a video stream. Faces and license plates are anonymized with Gaussian blurred areas defined by bounding box detection coordinates.

COSMOS node with camera as viewed from across Amsterdam Avenue

The videos are available on the COSMOS wiki (with requested permission) and have been used in a variety of demonstrations including a recent ACM MobiSys '22 demo, and with Kentyou, a European startup supported by NGI Atlantic.

Upcoming for COSMOS, the team will present a tutorial on the testbed at ACM SIGCOMM'22 (Aug. 22, 2022). Details on the Amsterdam conference are available online.

AERPAW

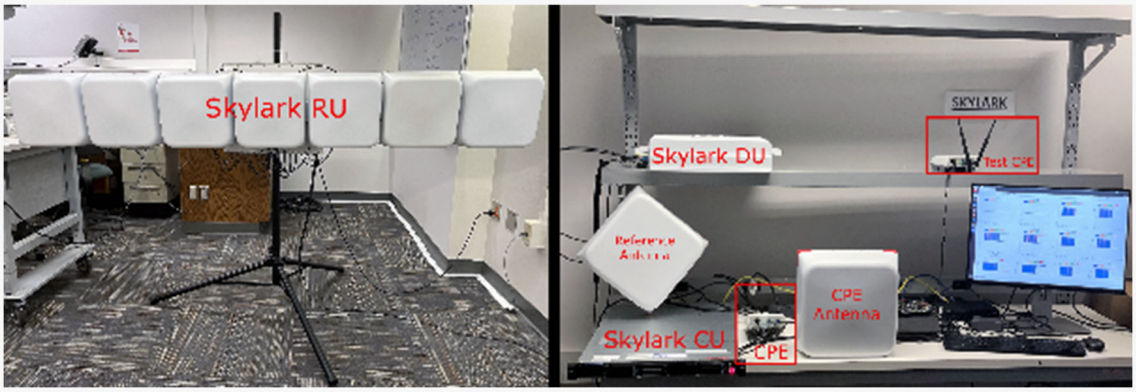
Construction of four new towers is now complete at the AERPAW Lake Wheeler site! Installation of enclosures and radio equipment will begin this month.

In partnership with Ericsson, AERPAW has also now installed a new 3.4 GHz radio at tower site number one. The 3.4 GHz radio accompanies the existing 3.7 GHz Ericsson radio, providing multi-sector 5G coverage.

In outreach news, AERPAW hosted a group of roughly 20 students in June as part of a four-day Radar and Electronic Warfare Workshop. Students from universities throughout the southeast attended the workshop, toured AERPAW facilities, and viewed a demo with AERPAW's unmanned ground rover on Centennial Campus.

ARA

The ARA team has started lab testing of its Skylark low-UHF massive MIMO platform. As part of the ARA testbed, the Skylark platform will be used with a commercial-grade network stack from Skylark, and it will also support experiments by treating the low-UHF massive MIMO platform as a fully-programmable SDR platform enabling whole-stack research, education, and innovation in low-UHF massive MIMO.



Colosseum

Open Radio Access Network (RAN) architectures will enable interoperability, openness, and programmatic data-driven control in next generation cellular networks. However, developing scalable and efficient data-driven algorithms that can generalize across diverse deployments and optimize RAN performance is a complex feat, largely unaddressed as of today. Specifically, the ability to design efficient data-driven algorithms for network control and inference requires at a minimum (i) access to large, rich, and heterogeneous datasets; (ii) testing at scale in controlled but realistic environments, and (iii) software pipelines to automate data collection and experimentation.

To facilitate these tasks, the Colosseum team recently integrated the OpenRAN Gym in Colosseum. OpenRAN Gym is a practical, open, experimental toolbox that provides end-to-end design, data collection, and testing workflows for intelligent control in next generation Open RAN systems. OpenRAN Gym builds on software frameworks for the collection of large datasets and RAN control, and on a lightweight O-RAN environment for experimental wireless platforms. OpenRAN Gym and its software components are open source and publicly-available to the research community. For more information visit https://openrangym.com.