

***Supercharge Analytics Over Large IoT Data:
An OS Approach***

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This talk overviews our inquiry in systems software for taming large IoT data. I will describe two systems that target two complementary analytics paradigms: a data engine for processing large telemetry streams (hot data); a data store for querying large archival videos (cold data). The two systems exploit emerging hardware (e.g. 3D-stacked DRAM) as well as emerging workloads (e.g. neural networks). Both systems advance the state-of-the-art performance by orders of magnitude.

Our experiences highlight the significance of designing OSES for specific scenarios, where the OSES play key roles: mapping AI to new hardware, dynamically configuring AI, and trading off among competing objectives.



Felix Xiaozhu Lin is an assistant professor of Purdue ECE. He received PhD in CS from Rice and BS/MS from Tsinghua. At Purdue, he leads the Xroads systems exploration lab (XSEL) to accelerate and safeguard important computing scenarios. He and his students measure and build systems software with diverse techniques, including novel OS structures, kernel subsystem design, binary translation, and user-level runtimes. See <http://felixlin.org> for more information.

He is a recipient of ASPLOS best paper award (2014), NSF CRII award (2015), Google Faculty Award (2016), and NSF CAREER award (2019).