

EEE 598: Mobile Systems Architectures

Course description

Over the past decade, smartphones, tablets, and wearable devices have dominated the personal computing market with portable interactive user experiences. However, behind the shiny interface, the mobile systems hardware and software must support sufficient computing power and energy efficiency to provide users with responsive devices with sustained battery life. This course will discuss the underlying mobile systems architectures in hardware and software to maintain this careful balance. By covering a mix of state-of-the-art industry trends and research papers, the course will provide a lens into the current and future state of mobile computing.

Course Topics

- Mobile Hardware Systems
 - System-on-Chip architecture
 - Embedded microarchitecture (e.g., RISC, ARM)
 - Sensor hardware
 - Mobile displays

- Mobile Operating Systems
 - Framework service architecture
 - Memory Management
 - Graphics and Media Services
 - Application support infrastructure

- Advanced Mobile Techniques
 - Cloud offload / Cyber foraging
 - Power modeling/optimization
 - Mobile security hardware/software

Prerequisites

- Object-oriented programming
- Working knowledge of C++ and/or Java language
- Familiarity with UNIX/Linux environment