

Faculty: Albert M. K. Cheng

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Mars Rover
VxWorks RTOS



Prof. Cheng receiving the 2015 UH Lifetime Faculty Award for Mentoring Undergrad Research from UH President Khator.

- **Types of undergrad research project:** Real-time machine learning; data-based real-time risk assessment; fault-tolerant and secure real-time, embedded, cyber-physical systems and IoT; real-time virtualization and cloud computing.
- **Sample Topics:** Building an Experimental Scaled City with Autonomous Model Cars to Evaluate Real-Time Learning and Decision System for Traffic Routing (Lego sets and fast autonomous model cars!); Real-Time COVID-19 Infection Risk Assessment and Mitigation based on Public-Domain Data (a cool App!); Real-Time Machine Learning: Leveraging the Selfless Driving Model to Reduce Vehicular Network Congestion; Detecting Integrity Attacks in Cyber-Physical Systems, Fault-Tolerant Regularity-Based Real-Time Virtual Resources; Incorporating Deadline-Based Scheduling in Extreme-Scale Parallel Computing (HPC).
- **Time frame:** Curious students can email questions, CV and unofficial transcripts to me anytime. Projects can be completed in one month, two months, one or two semesters.
- **Student level:** Recommended GPA $\geq 3.5/4.0$; preferably Junior and Senior-level, but Sophomore-level will also be considered. Strong mathematics and programming background.
- **Courses accomplished:** Data structures and Computer Architecture.
- **Additional skills:** Highly motivated with good programming skills (Python, C, C++, and/or Unix/Linux).