LANGLEY Colloquium SERIES

Since 1971

Adventures in Self Driving Car Safety

Self-driving cars might soon be coming to a road near you. But will they be safe? Setting aside the hype/disillusionment cycle, we take a step back and look at the big picture. We'll start by talking about how machine learning-based perception works and why it is the long pole in the tent for self-driving car deployment. We'll end by talking about just how big a job getting a robo-taxi safe really is. Along the way we'll discuss why the oft-quoted "94% of accidents are due to human error" is propaganda, why "safer than a human driver" might be the wrong goal, what really went wrong to cause the fatality in Tempe AZ, the unexpected way in which autonomy will dramatically change automotive safety, why your favorite clothing might make you invisible to self-driving cars, and what it's like to write a safety standard for an ambivalent industry. Several core lessons apply to other types of impending autonomous systems, including aviation applications.

Prof. Philip Koopman is an internationally recognized expert on Autonomous Vehicle (AV) safety who has worked in that area at Carnegie Mellon University for over 20 years. He is also actively involved with AV safety policy, regulation, implementation, and standards. His pioneering research work includes software robustness testing and run time monitoring of autonomous systems to identify how they break and how to fix them. He has extensive experience in software safety and software quality across numerous transportation, industrial, and defense application domains including conventional automotive software and hardware systems. He was the lead technical contributor to the UL 4600 standard for autonomous system safety. He is co-founder of Edge Case Research, which provides tools and services for autonomous vehicle testing and safety validation.

Prof. Philip Koopman

March 3, 2020
2:00 p.m.

Pearl Young Theater