

# Fast & Furious Cybercrime-Stompers



**Stefan Savage**  
Professor , Computer Science and Engineering

## CURRENT RESEARCH

### Enlarging the scope of cybercrime prevention

Today, cyber threats are expanding to touch almost every aspect of our lives. Desktops, laptops, tablets and even smartphones are no longer the only personal-computing technologies that are at risk. Networked microprocessors are integral parts of televisions, telephones, medical devices, the power grid, and so on. Even the automobile is, at its core, controlled by an advanced computer network. While it sounds like a James Bond plot, Dr. Stefan Savage of University of California, San Diego, has demonstrated to the automotive industry how hackers can remotely "break" into a car and take full control without leaving a single fingerprint or trace of evidence.

Whether the car is parked or while it is in transit, Dr. Savage has proven that with a stroke of a button he can activate the most mundane of operations, such as switch on the pumps for windshield-wiper fluid, or ignite and accelerate the engine, as well as deploy the brake systems while the car is motion. Just how is this even possible? Since the Clean Air Act Amendments of 1990, a federal mandate has required the addition of computers to dynamically control the fuel-oxygen mixture and hence emissions. From this innovation, computers, or in automotive parlance - Electronic Control Units (ECUs) - became indispensable in a broad range of automotive features from anti-lock brakes, to stability control, to keyless entry and so on. Over time, automobiles also gained access to a broad range of wireless communications networks, including cellular networks to support telematics features like automated crash notification, Bluetooth for hands-free calling, short-range wireless networks for keyless entry and tire-pressure measurement and various...

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## AFFILIATION

 University of California, San Diego

## AWARDS

- SIGOPS Mark Weiser Award, 2013

## RESEARCH AREAS

Technology, Cybersecurity, IOT, Devices, Data

## FUNDING REQUEST

Dr. Savage's mission is to help ensure that all future vehicles will continue to benefit from computerized architecture with added assurances of safety, security, and privacy. These challenges require a concerted effort from all stakeholders, including the relevant industries (manufacturers, parts suppliers, technology vendors), government, insurance companies, public interest groups, and the public. Your support will further advance car computing securities in the interest of protecting human safety.

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