

**THE DEPARTMENT OF COMPUTER SCIENCE & THE COMPUTER SCIENCE
GRADUATE STUDENT ORGANIZATION (GSOCS) PRESENT**

INVITED SPEAKER SERIES

co-sponsored with GSO and partially paid for by student activity fees

**Professor Patrick Groeneveld
Stanford University**

Friday, April 5th at 12 noon, EB room 110

Engineering Efficient Electric Vehicles

Abstract: The advanced technology that drives the new generation of electric vehicles will be presented. Based on Newtonian physics and electrical engineering we will analyze motor efficiency, performance, battery parasitics and manufacturing cost. By comparing that to gasoline-powered cars we can present a unique science-based foundation for a sound economical and environmental transportation policy. The full well-to-wheel cost and emissions of all propulsion options will be thoroughly analyzed for a fact-based trade-off. We will show that the results are much more nuanced than the polarized information from either side of the political debate on climate change. For instance: most do not realize that battery-powered vehicles experience a 40% drop in range in cold weather. That makes an EV less suitable for Binghamton winters. Despite this we expect that battery-powered vehicles will quickly become very popular due to many other redeeming qualities.

Bio: Before working at Cadence and Synopsys, Patrick Groeneveld was Chief Technologist at a Magma Design Automation where he was part of the team that developed a groundbreaking physical synthesis product. From 2001 until 2005. He was Full Professor of Electrical Engineering at Eindhoven University. Patrick is currently teaching at Stanford University and is also the finance chair of the Design Automation Conference. He received his MSc and PhD degrees from Delft University of Technology in the Netherlands. In his spare time, Patrick enjoys flying airplanes, running, tinkering, and reading useless information.