Direct Sensing Reduces Uncertainty, Raises Performance

Kartik Ariyur
Assistant Professor, School of Mechanical Engineering

CURRENT RESEARCH

Algorithms make systems plug and play, slash costs

Dr. Kartik Ariyur, of Purdue University, works to extend the benefits of decreasing costs and increasing performance available in digital electronics to a variety of systems through distributing automated data collection and decision making in these systems. In order to do so, he and his students collaboratively integrate information from multiple disciplines with mathematical rigor to avoid replacing knowledge gaps with speculation. Recent results that impact our everyday lives include means to reduce the cost of monitoring aircraft health and performance, increasing the energy efficiency of hydraulic machines, and a sun sensor for navigation that could complement GPS.

Current research includes:

- Navigation for Cell Phones: Dr. Ariyur is working to crowdsource magnetic navigation for cell phones to enable inexpensive indoor geolocation without GPS. He and his team have already obtained 20cm positioning accuracy for indoor geolocation of cell users.
- Detecting Traffic: Dr. Ariyur hopes to detect and track traffic precisely with real-time LiDAR data in order to make precise safety evaluations possible for various types of locations without long term accident data.
- Water Policy: Dr. Ariyur's team is using big data to inform and drive equitable water policy. Through using quantitative hydrological and social data, and the feedback between policies and data, this research promises to bring strategic consistency to policy making, and lay the foundations for quantitative prediction in the social sciences.
- Navigation for Space Vehicles: Dr. Ariyur is involved in constructing a navigation system for space vehicles that requires inexpensive cameras and uses only the...

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AFFILIATION

Purdue University

EDUCATION

- Ph.D., in Mechanical and Aerospace Engineering, 2002 , University of California, San Diego
- M.S., in Mechanical and Aerospace Engineering, 1999 , University of California, San Diego
- BTech, in Mechanical Engineering, 1996 , Indian Institute of Technology, Madras, India

AWARDS

- Honeywell Technical Achievement Award, 2003
- SAE Power Systems Conference Outstanding Paper Award, 2004
- Marquis' Who's Who in America
- Marquis' Who's Who in the World
- Marquis' Who's Who in Science

RESEARCH AREAS

Technology, Computational Sciences / Mathematics, IOT, Devices, Data, Global Policy

FUNDING REQUEST

Your contributions will support Dr. Kartik Ariyur as he uses measurements to beat uncertainties in the components of engineered systems or operating environments. Funds will support the $300K required for personnel and equipment. Your support will contribute to innovative research that will improve accessibility and efficiency and decreasing cost of engineering systems. These include reducing aircraft costs over 90% and automobile costs over 60%.