Raja Sengupta
Professor   (510) 717-0632 (cell)
Civil & Environmental Engineering   (510) 643-5264 (fax)
112 McLaughlin Hall   rajasengupta@berkeley.edu
University of California
Berkeley, CA 94720

Education

Ph.D., Systems Engineering, EECS Department, University of Michigan, February 1995
> *Dissertation area: An optimal control theory for discrete event systems*

M.S., Systems Engineering, EECS Department, University of Michigan, May 1991
> *Major area: Control Systems, Minor area: Artificial Intelligence.*

B.S., Electrical Engineering, Jadavpur University, Calcutta, India, May 1988
> *Concentration areas: Instrumentation, Power Systems, Drives*

Honors and Awards

- Best Paper IEEE International Systems Conference 2017, Montreal, Canada. An Energy Based Flight Planning System for Unmanned Traffic Management
- Berkeley Energy and Climate Lectures Curriculum Innovation Award, 2014, http://www.ce.berkeley.edu/news/801
- USDOT Connected Vehicle Technology Award 2011

Experience

- Professor, Systems Program, Civil and Environmental Engineering, University of California-Berkeley, July 2012 to present.
- CEO Responsible Robotics Inc, June 2017 to Present.
- Director, Cal Unmanned Aviation Lab, June 2015 to present (video)
- Advisor and Seed Technologist Connected Car startup automatic.com exit with Sirius XM, $100 million, 2011-17
- Director, X-Mobile Lab, UC Berkeley on Economics and Mobile Computing, 2015-17.
- Creator of Wireless Congestion Control for Connected Car standard SAE J2945, March 2016.
- Principal Investigator, NSF Cyber-Physical Cloud Computing Project, 2010-16.
- Deputy Director, Center for Collaborative Control of Unmanned Vehicles, 2001-10
- Associate Professor, Systems Program, Civil and Environmental Engineering, University of California-Berkeley, July 2007 to 2012.
- Assistant Professor, Systems Program, Civil and Environmental Engineering, University of California-Berkeley, July 2001 to June 2007.
- Senior Consultant, Mitretek Systems, June to November 1998:Technical advisor to the USDOT Intelligent Transportation Systems (ITS) Joint Programs Office.
- Lead Connected & Automated Cars, PATH Program, UC Berkeley, 1998-2001.
- Safety Engineering Lead, National Automated Highway System Consortium, 1995-97.

- Principal Researcher, Advanced Traveler Information Systems, PATH Program, UC Berkeley, 1995-96.
- Research Assistant, EECS Department, University of Michigan, traffic signal optimization, optimal control, DEC. VAX cluster protocols, failure diagnosis software. 1989-95
- Trainee Engineer, Calcutta Electric Supply Company, India, 1988.

Research: *Papers at https://scholar.google.com/citations?user=MLqZ0wkAAAAJ&hl=en. 8,500 citations, h-index 40.. Links with some of my first in the world stuff are:*
- *Fully Automated Driving, [I-15 San Diego, 65mph,1997, Inaugurated by VP Al Gore](#)*
- *Drones: [Oil Spills with NATO, EMSA, and Portugal Air Force](#), Cut Drone costs: [One operator multiple drones NASA Crows Landing](#), [California Aqueduct Inspection](#), [Drone Identification System](#)*
- *Connected Cars: [The 1st Connected Car Prototype](#), GM with UC Berkeley.*
- *Smartphone Apps for Behavioral Economics & Transportation: The top iOS App on https://sf.streetsblog.org/2010/04/12/whats-the-best-smartphone-app-for-checking-muni-arrival-times/ http://www.humanintellectlab.com/*

Teaching: *My teaching is in systems engineering at the graduate and undergraduate level. I also teach an introduction to programming for the College of Engineering.*
- *CE 186 Design of Cyber-Physical Systems. Systems design in the intersection of Energy and Transportation. Cloud to Embedded Programming.*
- *CE191 Systems Analysis: Linear Programming, Dynamic Programming, Gradient Descent, Mixed Integer Linear Programming taught in the context of case studies from infrastructure systems.*
- *CE 290I Control of Large-Scale Systems: Agile Systems Development over the Internet using Java, Formal language design syntax and semantics using ANTLR, Systems problems as L1, L2, L-infinity optimization, safety properties and liveness properties in LTL, State Space models using Simulink, State machines, TCP/IP and RPC, Synchronous Model of Computation.*
- *E7: Introduction to Programming for Engineers. 400+ students.*
- *Programming the Mobile Cloud, LEAD program for Under-represented Minority High-School Students, Summer 2011, Summer 2012.*

Research Supervision

Doctoral Research Ongoing
- Smart Parking and Incentives with Apps, Dounan Tang.
- UTM – Algorithms for managing drone airspace – Vishwanath Bulusu

Doctoral Research Chaired
- Drone Flight Planning, Zhilong Liu
- Spatial Queuing Theory and Cyber-Physical Cloud Computing, Jiangchuan Huang
- Changing Traveler Behavior using Sentiment Analysis, Andre Carrel (with J. Walker)
- Robust Localization and Behavior Change, Venkatesan Ekambaram (with K. Ramachandran)

- Eloi Pereira, Logical Space Programming: The BigActor Approach, Summer 2015
- Jiangchuan Huang, From Real Vehicle to Virtual Vehicle, Summer 2014
- Jerald Jariyasunant: Spring 2012 BCT
- Ching-ling Huang: Fall 2011 C2C
- Christian Manasseh: Fall 2010 BCT, SCS
- Cooperative vehicle safety, Shahram Rezaei, 2008
- Network-Level Control of Collaborative UAVs, Joshua Love, 2011, (with J.K. Hedrick)
- A framework for the development of traffic control systems, Doctoral Research of Marco Zennaro, 2008
- Routing and monitoring algorithms for UAVs, Doctoral Research of Sivakumar Rathinam, Spring 2007
- Control, estimation, and communication design applied to active vehicle safety systems, Qing Xu, 2005 (with J.K. Hedrick)

Doctoral Research Co-Advised
- Traveler Satisfaction Surveys meet Mobile Phone and Vehicle Tracking: Linking Individual Experiences to Travel Habit Changes with Panel Data, Andre Carrel, 2015 (with J. Walker)
- Localization using multidimensional scaling (LMDS), Duke Lee, 2005 (With P. Varaiya)
- Coordinated control of unmanned aerial vehicles, Peter Seiler, 2001 (with J.K. Hedrick)

Post-doctoral Supervision

- Dr. Aislan Foina, Visiting Fellow, University of Sao Paolo, March 2015 to present
- Dr. Yaser Fallah, NSERC Fellow, University of British Columbia, Wireless Networking for Cars, 2009-2011. Current Assistant Professor West Virginia University.
- Dr. Eric Frew, Stanford University, Control of Unmanned Air Vehicles, 2005 – 2006. Currently Professor University of Colorado.
- Dr. ZuWhan Kim, University of Southern California, Image Processing in Unmanned Air Vehicles, 2002 – 2008. Currently at Google.

Academic Service

- Member CEE Curriculum Committee 2007-2011
- Member CEE Systems Program Committee 2007-2012
- Member CEE Executive Committee 2008
- Undergraduate Advisor, CEE 2007-2009
- Graduate Advisor, CEE:Systems Program, 2010-2011
- Member College E7 Committee 2008 - 2011
- Member of 1 College Promotion and Tenure Committee
- Member of 2 Campus Promotion and Tenure Committees

Professional Service

- Chair Technical Committee on Smart Cities, IEEE Control Systems Society.
- Steering Committee Member, for The 1st International Symposium on Wireless Sensor Networks for Developing Countries (WSN4DC), Jamhoro Pakistan, April 2013
- General Chair of IEEE WiVEC workshop on Vehicular Networks, September 2011.
- Keynote speaker at the 5th ACM SIGSPATIAL Workshop on Computational Transportation Science.2010
- Co-Program Chair of the 2nd International Symposium of Vehicular Computing Systems, 2008
- Keynote Speaker, IEEE WiVEC workshop on Vehicular Networks, 2008
- Theme Chair for Control in Transportation Systems, at the American Control Conference, October 2007

Professional Service

- Expert Witness, Wireless Communications & Spectrum issues
- Consultant to the Department of Transportation, Intelligent Transportation Systems, City Government of Shenzhen, China, June 2012.
- NATO RTA Consultant on Unmanned Air Vehicles
- Consultant to the Portugal Air Force
- Consultant, World Bank, 2018-2019, Smart Electric & Connected Transportation
- CEO Responsible Robotics LLCl, Advisor automatic.com
- Director Cal Unmanned Lab, Founder & Lead Smart Pandemic Management

Patents

- System and Method of Vehicular Wireless Communication Using an Integrated Coordinating Access Point, US Patent US 7,970,540 B2
- System and Method of Vehicular Wireless Communication Using a Group Manager, US Patent US 7,983,841 B2
- System and method of vehicular wireless communication, US Patent US 8,116,959