

# Aparna Dhinakaran

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GitHub: AparnaDhinakaran

## EDUCATION

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2012-2016 BSc in ELECTRICAL ENGINEERING AND COMPUTER SCIENCE  
University of California, Berkeley

## AWARDS & HONOURS

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LAWLER EECS Department Award for service to disadvantaged students  
PATTERSON 1 of 4 UC Berkeley Hutto Patterson Fellows for STEM leadership  
CREU 1 out of 15 team finalists nationwide for CRA-W research funding  
REGENTS Merit-based scholarship awarded to top 1.5% of UC Berkeley applicants  
LEADERSHIP CAL Alumni Association's Most Prestigious Merit-Based Scholarship  
AP National AP Scholar awarded to high-achieving high school students

## RELEVANT COURSEWORK

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CS 294	Fine Grained Complexity	EE 126	Probability and Random Processes
CS 189	Machine Learning	CS 188	Artificial Intelligence
CS 170	Algorithms	CS 194	Internet of Things

## RESEARCH EXPERIENCE

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SEPT 2015 - CURRENT Research Assistant with Prof. Claire Tomlin, UC Berkeley  
*Multi-Vehicle Unstructured Collision Avoidance*  
Developing safety guarantees for  $n$ -vehicles in unstructured flight. We employ Hamilton-Jacobi (HJ) reachability to detect potential conflicts among vehicles, provide control to cooperatively resolve multi-vehicle conflicts, and allow vehicles not in potential conflicts to move in an unrestricted manner.  
*Unmanned Aerial Vehicle Traffic Management*  
Working on hardware implementation of platooning, a structural design to model groups of UAVs in a single-file formation. The proposed implementation has several liveness controllers and a safety controller, based on HJ reachability. Employing Crazyflie 2.0 Testbed for proof of concept.  
*Regression-based Inverter Control for Optimal Power Flow & Voltage Regulation*  
Working on systematic and data-driven approach to determine reactive power inverter output as a function of local measurements for 3-Phase decentralized systems.  
*Cal Renewable and Adaptive Energy Micro-Grid Analysis*  
Working on spatial analytics of distributed energy generation, micro-grid economic analysis, and energy disaggregation to address the energy challenges facing communities in the developing world.

AUG 2014 - MAY 2015 Research Assistant with Prof. Tapan Parikh, UC Berkeley  
*Information Technologies for Agriculture*  
Designed smart rainfall measurement system to increase Kenyan smallholder farmers' access to markets. Analyzed data for Avaaj Otalo, a voice-based social media for Gujarat farmers.

FEB 2013 - MAY 2014 Research Assistant with Prof. Alice Agogino, UC Berkeley  
*Smart Lighting on the Smart Grid*  
Developed a new lighting system, that builds a predictive model of a room to effectively allow lights to adapt to occupant demands. Developed indoor lighting inverse model, linear regression models and user-friendly installation program.

## PUBLICATIONS

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Chandrayee Basu, Julien J Caubel, Kyunam Kim, Elizabeth Cheng, Aparna Dhinakaran, Alice Agogino, and Rodney Martin. **Sensor-based predictive modeling for smart lighting in grid-integrated buildings.** *IEEE Sensors Journal*, 2014.

Chandrayee Basu, Benjamin Chen, Jacob Richards, Aparna Dhinakaran, Alice Agogino, and Rodney Martin. **Affordable and personalized lighting using inverse modeling and virtual sensors.** In *SPIE*, 2014.

Aparna Dhinakaran, Glen Chou, Mo Chen, and Claire Tomlin. **Multi-Vehicle Collision Avoidance via Hamilton-Jacobi Reachability**. In Preparation for Submission to CDC'17.

Journal Paper In Preparation. **Hardware Implementation of Safe Platooning for Unmanned Aerial Vehicles via Reachability**.

Journal Paper In Preparation. **Regression Based Inverter Control for Optimal Power Flow and Voltage Regulation**.

## TEACHING EXPERIENCE

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FALL '13 Teaching Assistant for **Math 53 — Multivariable Calculus**.  
SPRING '14 Teaching Assistant for **Math 54 — Linear Algebra & Differential Equations**.

## INDUSTRY EXPERIENCE

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UBER  
CURRENT Software Engineer in Marketplace Health Team.

NOTE  
WINTER '15 SF-Based Mobile App Startup revolutionizing shopping. Worked on backend team.

APPLE  
SUMMER '15 Emerging Technologies Team. Confidential project. Selected as a top intern to present my summer project to Niall O'Connor, Apple CIO.

TUBEMOGUL  
SUMMER '14 Developed clickbot detection algorithm for differentiating between humans and bots for advertising campaigns.

## TECHNICAL SKILLS

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FLUENCY Python, Java, C, C++, Matlab, Ruby, Scheme,  $\text{\LaTeX}$ .  
SOFTWARE Unix/Linux, Robot Operating System (ROS), MongoDB, Hadoop  
MapReduce, Apache Hive, Numpy, Scipy.

## OUTREACH

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A.W.E Mentored younger women in Association of Women in EECS  
NERDS Mentored & lead sections for STEM students from diverse backgrounds.  
GIRLS WHO  
CODE Lead weekly computer science lessons for Oakland high school girls