

# ANANT GUPTA

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## OBJECTIVE

Looking for opportunities in areas related to wireless sensing, SLAM, gesture recognition, and IoT based automation.

## EDUCATION

<b>University of California, Santa Barbara, USA</b>	G.P.A. 4.0/4.0	2014-Present
Department of Electrical and Computer Engineering (ECE)		
PhD in ECE, Research Focus: Wireless Sensing.		Dec 2019 (expected)
MS in ECE, Major: Communications and Signal Processing		Dec 2016
<b>IIT Kharagpur, India</b>	G.P.A. 8.45/10	2008-2013
Bachelor of Technology (Honors) in Electronics and Electrical Communication Engineering		
Master of Technology (Dual Degree) – Telecommunication Systems Engineering		

## RESEARCH PROJECTS

*Sensing and Inference using low cost mm-wave systems.*

Graduate Advisor: Prof. Upamanyu Madhow, UCSB 2015-Present

- Exploiting geometric structure to solve data association problem efficiently for multi-sensor localization.
- Designed a Multi-objective optimization to construct large-effective aperture antennas using sparse array of sub-array architecture.
- Investigated the localization accuracy achievable using Super-resolution algorithms for 2D FMCW radar model. Developed system level insights for array design strategies to optimize sensing coverage.

*Energy efficient MAC protocols for wireless sensor networks.*

Undergraduate Advisor: Prof. Raja Datta, IIT Kharagpur 2011-2013

- Designed contention resolution protocols (SMAC) for both centralized and ad-hoc sensor networks.
- Analyzed performance using a Discrete time Markov chain model and validated with NS2 simulations.

## INDUSTRY EXPERIENCE

**Qualcomm Inc., San Diego, USA:** Interim Engineering Intern Summer 2017

*Close range detection for RF exposure compliance in 5G mm-wave systems*

Algorithm design for object range detection & mutual coupling cancellation in 5G NR terminals. Supervisor: Roberto Rimini, Udara Fernando

**National Instruments R&D, India:** RF Algorithm Software Engineer 2013-2014

*Baseband signal processing algorithm design for OFDM-MIMO based 802.11n/ac WLAN.*

*Physical layer design for a NFC transmitter on FPGA.*

Summer 2012

Developed RF interface for testing NFC tags using NI RIO hardware and tested TX signals using Agilent MXA.

*FPGA-PC hybrid implementation of fractional re-sampler for NI GPS toolkit.*

Summer 2011

Reduced the latency of generating composite GPS signals by resampling using polyphase filter banks on FPGA.

## PUBLICATIONS & PATENTS

- R. Rimini, **A. Gupta**, “Proximity detection using adaptive mutual coupling cancellation”, U.S. Patent Application 15/984,233, filed May 2018. Patent Pending.
- **A. Gupta**, U. Madhow, A. Arbabian and A. Sadri, “Design of Large Effective Apertures for Millimeter Wave Systems using a Sparse Array of Subarrays”, IEEE Transactions on Signal Processing (submitted)
- **A. Gupta** and U. Madhow, “Efficient data association using joint Range-Doppler features for Multisensor-Multitarget State Estimation”, IEEE Transactions on Signal Processing (in preparation)
- **A. Gupta**, U. Madhow, A. Arbabian and A. Sadri, “On beam design for sparse arrays of subarrays using multi-objective optimization and estimation-theoretic criteria”, 51st Asilomar Conference on Signals, Systems and Computers, 2017, Pacific Grove, USA.
- **A. Gupta**, U. Madhow, and A. Arbabian, “Super-resolution in position and velocity estimation for short-range mm wave radar”, 50th Asilomar Conference on Signals, Systems and Computers, 2016, Pacific Grove, USA.

## TECHNICAL SKILLS

<i>Test and measurement:</i>	NI PXI-based vector signal transceiver, Signal generator, Oscilloscope
<i>Programming Languages:</i>	Python, C/C++
<i>Engineering Tools:</i>	MATLAB, LabVIEW, Network Simulator (NS)-2

## ACADEMIC DISTINCTIONS

Awarded Combined GSR (Graduate Student Researcher) +TA (Teaching Assistant) position by Department of ECE, University of California, Santa Barbara for the year 2014-15.  
Secured All India Rank of 962 ( $< 0.27\%$ ) in IIT-Joint Entrance Examination 2008.  
Secured All India Rank of 217 ( $< 0.1\%$ ) in Graduate Aptitude Test in Engineering 2013 ECE.

## POSITIONS OF RESPONSIBILITY

<b>Teaching Assistant</b>	Digital Communication course & lab, UCSB	Oct, 2014-March 2015
	Basic Electronics Lab, IIT Kharagpur	Jan-April, 2013
	Basic Network theory lab, IIT Kharagpur	July-Nov, 2012
<b>Technical Head, Anadigix</b>	Circuit design competition at IIT Kharagpur	January, 2011

## GRADUATE COURSEWORK

Matrix Analysis & Computations	Machine Learning
Data Structure & Object Representation	Pattern Recognition
Stochastic Processes in Engineering	Non-cooperative Game Theory
Adaptive Filter Theory	Error Correction Codes
Optimal Estimation & Filtering	Game-theoretic Mechanism Design