

Ganesh Ajjanagadde

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US citizen

Education

Doctor of Philosophy (Ph.D.) in Electrical Engineering and Computer Science (EECS) at Massachusetts Institute of Technology (MIT) (2016-2020)
GPA: 5.0/5.0
Masters of Engineering (M.Eng.) in EECS at MIT (2015-2016)
GPA: 5.0/5.0
Undergraduate Bachelor of Science (SB) in EECS at MIT (2012-2015)
GPA: 5.0/5.0
Fellowship: Presidential Fellowship, NSF Graduate Fellowship, Claude E. Shannon Research Assistantship Award 2019
Lab: Signals, Information, and Algorithms Laboratory
Research Advisors: Professor Gregory Wornell, Professor Henry Cohn
Research Areas of Interest: Information Theory, Applied Mathematics, Inference/Estimation/ML, Signal Processing

Work And Research Experience

Graduate Student Jun 2015 - May 2020
Research Laboratory of Electronics, MIT, Cambridge, MA

Worked with Professor Henry Cohn on point configuration questions, primarily in Hamming space. These include packing and coding questions. Also worked under Professor Gregory Wornell on some computational imaging problems related to coded apertures, and with Professor Yury Polyanskiy on some classical questions of information theory, such as MAC (multiple access channel). Worked on statistical learning with a focus on classification problems for my Master's.

Research Intern Jun-Aug 2019
Microsoft Research New England, Cambridge, MA

Worked with Prof. Henry Cohn on new lower bounds for the mean squared error of vector quantizers in high dimensions. We obtained the first rigorous improvements since the classical work of Zador, 1968.

Research Intern Jun-Aug 2017
Analog Garage, Analog Devices

Worked on coming up with novel methods for anomaly detection in limited resource environments.

Draper Laboratory Undergraduate Research and Innovation Scholar Sep 2014-May 2015
Laboratory for Information And Decision Systems, MIT, Cambridge, MA

Worked under Professor Yury Polyanskiy on problems of information theory.

Software Engineer Intern Jun-Aug 2014

Kumu Networks, Santa Clara, CA

Wrote a hardware abstraction layer (HAL) for an RF circuit board. Code written in C and C++11 with some Python.

Software Engineer Intern
QuaSci Labs, Union City, CA

Jun-Aug 2013

Worked on ElectricVLab (www.electricVLab.com), which is an electronic circuit simulator with a 3D graphics interface. Code written in C++ with wxWidgets for the GUI.

Research Assistant

Jan-May 2013

Laboratory for Information And Decision Systems, MIT, Cambridge, MA

Worked as an undergraduate researcher under the supervision of Professor Alan Will-sky. The research was on using probabilistic graphical models to do analysis of seismic images.

Relevant Coursework

Information Theory, Algorithms for Inference, Theoretical Statistics, Theory of Computation, Applied Math for Pure Mathematicians, Optimization Methods.

Publications

- Ph.D. thesis, “Fourier analysis on the Hypercube, the Coefficient Problem, and Applications”.
- M.Eng. thesis, “A Learning Hierarchy for Classification and Regression”.
- G. Ajjanagadde and H. Cohn, “New Lower Bounds for the Mean Squared Error of Vector Quantizers”, in preparation.
- G. Ajjanagadde and H. Cohn, “Linear Programming Bounds and Anticodes in Hamming Space”, in preparation.
- G. Ajjanagadde, C. Thrampoulidis, A. Yedidia, and G. Wornell, “Near-Optimal Coded Apertures for Imaging via Nazarov’s Theorem”, in *2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Brighton, UK, May 12 - 17 2019.
- G. Ajjanagadde and Y. Polyanskiy, “Adder MAC and estimates for Renyi entropy”, in *Proceedings of the 53rd Annual Allerton Conference on Communications, Control, and Computing*, Allerton House, UIUC, Illinois, USA, Sep 29 - Oct 2 2015.
- G. Ajjanagadde, S. Jain, and J. Thomas, “Automatic Projector Tilt Compensation System”, final project for MIT’s “Introductory Digital Systems Laboratory” class (6.111). This project won the 2015 Northern Telecom/BNR project award for best project in 6.111.

Links and Skills

- GitHub: <https://github.com/gajjanag>
- Website: www.mit.edu/~gajjanag
- Publications: www.mit.edu/~gajjanag/pubs.html
- Languages: C99, Julia, C++11, Python (+numpy/scipy/matplotlib), shell (bash/zsh), L^AT_EX, MATLAB, x86 asm, Verilog.
- Platforms/Tools: FFmpeg hacker, Linux, git, make, vim, GLPK, Tensorflow/Keras.