

# Ganesh Ajjanagadde

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US citizen

## Education

Doctor of Philosophy (Ph.D.) in Computer Science at Massachusetts Institute of Technology (MIT) (2016-2020)  
GPA: 5.0/5.0  
Masters of Engineering (M.Eng.) in Electrical Engineering and Computer Science (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  
Research Advisors: Professor Gregory Wornell, Professor Henry Cohn  
Research Areas of Interest: Coding Theory, Inference/Estimation/ML, Information Theory, Applied Mathematics, Signal Processing

## Work And Research Experience

*Security/Privacy Engineer* May 2020 -  
Snap, Inc: remote

Delivered end to end encryption for Snap's recently launched AR glasses at Snap Partner Summit. Working on privacy preserving ad measurement technologies, especially relevant in view of iOS 14 changes. Performance geek - delivered a novel app binary size reduction, performance optimizations for our privacy preserving ad measurement technologies, etc.

*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. Explored both classical learning as well as deep learning approaches.

*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.

*Software Engineer Intern*

Jun-Aug 2013

QuaSci Labs, Union City, CA

Worked on ElectricVLab ([www.electricVLab.com](http://www.electricVLab.com)), which is an electronic circuit simulator with a 3D graphics interface.

*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 Willsky. 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, Monticello, 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: <https://gajjanag.github.io>
- Publications: [www.mit.edu/~gajjanag/pubs.html](http://www.mit.edu/~gajjanag/pubs.html)
- Languages: C99, Julia, C++11, Python (+numpy/scipy/matplotlib), Java/Kotlin, shell (bash/zsh), L<sup>A</sup>T<sub>E</sub>X, MATLAB, x86 asm, Verilog.
- Platforms/Tools: FFmpeg hacker, Linux, Android dev, git, make, vim, Tensorflow/Keras, GLPK.