

Mohit Agarwal

About

PhD Student at Georgia Tech

✉ magarwal37@gatech.edu

🏠 agmohit.com

☎ 404.953.8538

🔗 [/meagmohit](#)

in [/meagmohit](#)

Research Interests

[Brain-Computer Interfaces](#)
[Machine Learning](#)
[Deep Learning](#)
[Signal Processing](#)
[Reinforcement Learning](#)
[Ubiquitous Computing](#)
[Wireless Communication](#)

Selected Coursework

Computer Science

Machine Learning
Deep Learning
Artificial Intelligence
Computation and Brain
Information Visualization
Applied Cryptography
Mobile Computing
Data Structure & Algorithms

Mathematics

Probability & Statistics
Linear Algebra
Convex Optimization

Signal Processing/Telecom

Information & Coding Theory
Random Processes
Digital Signal Processing
Statistical Signal Processing
Digital Communications
Communication Networks
Wireless Communications

Technical Skills

Programming Languages

• C/C++ • Java • Python

• MATLAB • R

Web: • HTML • CSS • d3 • JS

Deep Learning Frameworks

• Tensorflow • PyTorch

Network Simulation Tools

• ns2 • NetLogo • iPerf

Others

• Android App Development

Education

Georgia Institute of Technology

MS/PhD in Electrical and Computer Engineering | **GPA: 4.0/4.0**

Advisor: Prof. Raghupathy Sivakumar | Expected Graduation: Dec 2019

Aug'14 - Present (USA)

Indian Institute of Technology Kanpur

Bachelors in Electrical Engineering | **GPA: 8.7/10.0**

July'10 - May'14 (India)

Internships

Apple | [Wireless Technologies](#)

Summer'18 (USA)

RAT Simulator: Worked on the development of a system-level discrete event simulator (in C++) to characterize and optimize a radio-access technology (RAT) [undisclosed, and developed in-house]

Lawrence Livermore National Labs | [Machine Learning](#)

Summer'17 (USA)

High Dimensional Spectral Sampling Methods: Automated pair-correlation function estimation for arbitrary point clouds (traditionally requires manual tuning or multiple days of MD simulation)

Cisco | [Deep Learning](#)

Summer'16 (USA)

Video Action Classification using Deep Stateful Networks: Designed deep neural nets using LSTMs in Tensorflow for action recognition in videos | Evaluated on UCF-101 dataset against stateless models

Syracuse University | [Wireless Communication](#)

Summer'13 (USA)

Automatic Modulation Classification in WSNs: Developed algorithm for automatic identification of digital modulation in wireless communication in the presence of noisy environment using Bayesian model

Selected Research Projects

Multi-Human Assisted Learning for Machine Agents using EEG

Aug'18 - Present

[| Brain-Computer Interfaces \(BCIs\) and Reinforcement Learning](#) [Doctoral Research Work]

- Research, design and develop an interesting solution paradigm allowing humans to assist ML algorithms without burdening human-in-the-loop through EEG-based brain waves
- Demonstration of the impact of our approach (including multi-human and multi-agent) in improving state-of-the-art RL algorithms by evaluating on Atari 2600 benchmark
- Preliminary results: **26.19%** improvement in detection of error-potentials | Reduces average number of steps in a cursor-target game by **72.98%** as compared to baseline methods

Low-Power Command Detection for BCI Wearables

Aug'16 - Mar'18

[| BCIs, Ubiquitous Computing and Statistical Learning](#) [Doctoral Research Work]

- Proposed a wakeup command design and detection strategy enabling always-on BCI wearables to run on low-power mode achieving **2.7x** improvement in battery life
- Proposed algorithm to self-learn and detect eye-blinks in user brainwaves with 98% accuracy

Skin Lesion Analysis towards Melanoma Detection

Spring'16

[| Deep Learning](#)

- Automated skin cancer detection by proposing CNN based deep architectures for skin lesion classification | **81.3%** accuracy, 2nd position worldwide in ISBI Melanoma Detection Challenge

Selected Awards

- **Semi-Finalist** of Qualcomm Innovation Fellowship 2018, USA
- Recipient of **MCM Scholarship** for continued excellent academic performance (2010-2014)
- Ranked in the **Top 0.1%** (amongst 475,000 students) in IIT-JEE 2010

Selected Publications/Patents

Mohit Agarwal and **Mohit Agarwal** and Raghupathy Sivakumar. *Cogito Ergo Sum: Using Brain Waves to Perform Personalization based on What Users Think*. US Provisional Patent Application 62/565349. 2017

Mohit Agarwal and Raghupathy Sivakumar, "THINK: Toward Practical General-Purpose Brain-Computer Communication", HotWireless, ACM MobiCom, 2015