

# AKHIL GOEL

<https://github.com/agaction>  
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## EDUCATION

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**Georgia Institute of Technology, Atlanta, GA**  
Bachelors of Science in Mathematics & Computer Science

*Aug 2018 - May 2022 (Expected)*  
GPA: 3.84/4.0

**Thomas Jefferson HS for Science & Technology**

*July 2014 - June 2018*

## WORK EXPERIENCE

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**Facebook AI Applied Research**  
*Software Engineering Intern*

May 2021 - August 2021  
*Menlo Park, CA*

- Implemented model interpretability algorithms for Captum, an open-source PyTorch package.
- Designed and developed a library for influential instance methods for machine learning models.
- Created tutorials and applied algorithms to Facebook AI Multimodal models for platform integrity.

**Varian Medical Systems**  
*Software Engineering Intern*

May 2020 - August 2020  
*Atlanta, GA*

- Built automated data preprocessing pipeline for developing local deep learning segmentation models,
- Developed deep volumetric models for organ segmentation within Varian's oncology PACS: Velocity.
- Presented project & pitched call-to-action to panel of Varian executives, received a top score.

**MIT Lincoln Laboratory**  
*Summer Research Intern & Student Technical Researcher*

June 2019 - August 2020  
*Lexington, MA*

- Used Monte-Carlo simulations to develop a time-gating algorithm for a novel imaging technique.
- Poster presentation at SPIE Photonics West, San Francisco, February 2020. "Towards Automatic Time-Gating for Time-Domain Diffuse Correlation Spectroscopy." Paper available at [bit.ly/AGpaper1](https://bit.ly/AGpaper1).
- Implemented convolutional neural network architectures for nuclei segmentation and quantification of neurodegenerative disease biomarkers.
- 1<sup>st</sup> Place Team and Best Poster in Intern Innovative Idea Challenge for proposal on automatic American Sign Language translation. Received funding for continued project development.

**GoVivace Inc.**  
*Research Intern*

July 2018 - Aug 2018  
*McLean, VA*

- Researched on using deep learning to enhance speech recognition accuracy.
- Leveraged Kaldi toolkit to work on developing improved signal-to-noise ratio estimates, allowing for a better balance between the acoustic model and language model.

**George Mason University**  
*Intern - Aspiring Scientists Summer Internship Program*

July 2017 - Aug 2017  
*Fairfax, VA*

- Researched under Dr. Giorgio Ascoli on dendritic arborization by creating 3D reconstructions of neurons.
- Presented results to peers, work will be added to the NeuroMorpho database.

**eKare Inc.**  
*Intern*

July 2016 - Aug 2016  
*Fairfax, VA*

- Worked on a product for noninvasive wound measurement with novel iPad-based 3D imaging technology.

## PROJECTS

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### **3D Texture Generation at Georgia Tech Hays Lab**

*August 2020 - Current*

Research on using Generative Adversarial Nets and Neural Rendering to produce textured 3D images.

### **American Sign Language Translation at MIT Lincoln Laboratory**

*June 2019 - January 2020*

Developed project proposal for automatic American Sign Language translation through deep learning with a team of six other interns. Continued research development is funded by MIT Lincoln Laboratory

### **Autonomous Robot Navigation at Georgia Tech IVALab**

*Jan 2019 - May 2020*

Applying reinforcement learning algorithms to improve traditional local planning methods in robotics.

### **Coin Detection with OpenCV**

*Nov 2017 - Feb 2018*

Self-wrote fundamental computer vision algorithms such as Gaussian blur, Canny Edge Detection, and Hough transform. Utilized OpenCV Library to identify different coins in a picture.

### **Research on the Neuroscience of Long-Term Memory**

*Sep 2017 - June 2018*

Applied electrophysiology, self-written data analysis algorithms, and other interdisciplinary lab techniques to study the effect of a drug (zeta inhibitory peptide) on the learning of *Aplysia* (sea slugs).

## TECHNICAL SKILLS

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<b>Programming Languages</b>	Python, C/C++, Java, Bash, Matlab
<b>Software &amp; Tools</b>	Git, Numpy, PyTorch, TensorFlow, LaTeX, Mathematica
<b>Concepts &amp; Coursework</b>	Data Structures, Algorithms, AI, Computer Vision, Machine Learning, Deep Learning, Object-Oriented Programming, Prob/Stat Theory, Applied Combinatorics, Vector Calculus, Advanced Linear Algebra

## LEADERSHIP & EXTRACURRICULAR

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**Treasurer for “The Agency,”** the AI/ML club at Georgia Tech. Lead weekly beginner workshop series on theory and application of neural networks, preparing lectures, planning events.

**Teaching free chess lessons** to roughly 20 elementary school kids at local library in summer 2017.

**Camp Invention Leadership Intern** in summer 2016, learned leadership skills and worked with kids to promote effective teamwork.

**Volunteered at my Elementary School Chess Club** in 2013-2014. Acted as the assistant of the instructor and helped manage more than a hundred students, chess sets, and logistics.

## AWARDS & ACHIEVEMENTS

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**Qualifier** for the 2018 and 2015 American Invitational Mathematics Examination (AIME)

**Semifinalist (Top 500)** for the 2017 and 2016 USA Biology Olympiad (USABO)

**First place school team** in 2018 National High School Chess Championships. First team in 2015-2018 VA State Championships.

**National German Exam** Gold Award (2017), Silver Award (2016, 2015)