SOHAM GADGIL

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EDUCATION

UNIVERSITY OF WASHINGTON **Seattle, WA**
- Ph.D. in Computer Science and Engineering Sept. 2022 - Present
- Focus on AI for healthcare

STANFORD **Stanford, CA**
- M.S. in Computer Science GPA: **4.056** *Expected Graduation: June 2021*
- Coursework: Deep Learning, Natural Language Processing, Computer Vision

GEORGIA INSTITUTE OF TECHNOLOGY **Atlanta, GA**
- B.S. in Computer Engineering, Minor in CS GPA: **4.0 (Faculty Honors)** *Graduated: May 2019*
- Selected in the China Summer Program (CSP) for study abroad in Summer 2016

RESEARCH EXPERIENCE

Lee Lab of AI for bioMedical Sciences (AIMS) at UW **Sept 2022 - Present**
Advised by Dr. Su-In Lee
- Concept Generation from Dermatology images
  - Developing GAN-based generative methods to isolate features for dermatology image generation
- Adaptive Feature Selection for Emergency Medicine (EM)
  - Formulating a deep learning based policy network to generate protocols with patient stratification
  - Network learns which features to collect in each protocol for efficient patient diagnosis

Stanford Computational Neuroscience Lab (CNS^{LAB}) – *Research Assistant* **Sept 2019 – March 2020**
Advised by Dr. Kilian Pohl, Sponsored by NIH (National Institutes of Health)
- Used deep learning techniques to perform gender classification from functional-MRI scans
- Formulated the non-stationary nature of functional connectivity within the context of spatio-temporal graphs
- The model beat previous approaches with an accuracy of **83.7%**, accepted into MICCAI 2020

Stanford Machine Learning Group (AI for Healthcare) – *Research Assistant* **Sep 2020 – June 2021**
Advised by Dr. Andrew Ng and Pranav Rajpurkar
- Developed CheXseg, a semi-supervised method for multi-pathology segmentation
- CheXseg leverages expert annotations and saliency maps generated by image classification models
- Compared to weak supervision, CheXseg reduces the mIoU gap with radiologists by **71.6%**

Georgia Tech Bionics Lab – *Research Assistant* **Aug 2017 – May 2018**
Advised by Dr. Maysam Ghovanloo, Sponsored by NIH and NSF
- Worked on developing an assistive technology for speech impaired people
- Used OpenCV to optimise video transfer from a raspberrypi zero
- Developed an algorithm to track lips in real time using the picamera

PUBLICATIONS

- Gadgil, Soham, et al. **CheXseg: Combining Expert Annotations with DNN-generated Saliency Maps for X-ray Segmentation.** MIDL 2021.
- Gadgil, Soham U. Zhao, Qingyu. **Spatio-Temporal Graph Convolution for Functional MRI Analysis.** *MICCAI,* October, 2020. https://doi.org/10.1007/978-3-030-59728-3_52
- Gadgil, Soham U. Xing, Yunfeng. Xu, Chengzhe. **Solving the Lunar Lander Problem under Uncertainty using Reinforcement Learning**. *IEEE SoutheastCon.* March, 2020. https://arxiv.org/pdf/2011.11850.pdf

WORK EXPERIENCE

Microsoft – *Software Engineering Intern* **Jun 2020 – Sep 2020**
- Worked in the Windows Toolkits team on an Azure hosted web portal to automate backporting bug fixes
- Developed a RESTful web API using .NET Core 3.1 with a Model-View-Controller (MVC) design pattern
- Automated web-app deployments using custom CI/CD pipelines and improved team productivity by 15%

Microsoft – *Program Manager Intern* **Jun 2020 – Sep 2020**
- Worked in the Windows Toolkits team on an Azure hosted web portal to automate backporting bug fixes
- Developed a RESTful web API using .NET Core 3.1 with a Model-View-Controller (MVC) design pattern
- Automated web-app deployments using custom CI/CD pipelines and improved team productivity by 15%

Goldman Sachs – *Technology Analyst Intern* **June 2018 – Aug 2018**
- Developed a backend application in Java to merge legal entities with metadata in over 100 tables
- Established a stream to collect, validate, and process data events by making REST compliant API calls

Bank of America – *Software Development Intern* **June 2017 – Aug 2017**

- Worked on full stack development for the migration of an internal application
- Established necessary DDL, DML trigger scripts using T-SQL and developed requisite data models
- Developed SSIS packages to transfer over 1,000,000 records from Oracle to SQL server

Wheego Technologies – *Engineering Intern* **Aug 2016 – Dec 2016**

- Worked with the image annotation engineering team on an autonomous/ADAS vehicle project
- Programmed a hall effect sensor using Python to sync the rotating LIDAR with the front camera
- Wrote Python code to obtain GPS data and convert it to a kml file to improve visualization

School of Computer Science at Stanford – *Teaching Assistant* **Jan 2021 – June 2021**

- Trustworthy ML (CS 329T): TA for a new course being offered for the first time with ~50 students
- Created and graded homework, developed materials for the lab sections, and managed course logistics

School of Mathematics and ECE at Georgia Tech – *Teaching Assistant* **Aug 2017 – May 2019**

- Math 1554 - Linear Algebra: Taught two 50-minute recitations each week (Aug 2017 – Dec 2017)
- ECE 3056 - Computer Architecture, Concurrency, and Energy in Computation (Jan 2018 – Dec 2018)
- ECE 2035 - Programming for hardware and software systems (Jan 2017 – May 2017)
- Collaborated with the lead instructor for grading and held weekly office hours

P R O J E C T S

Classification for Everyone – Building Geography Agnostic Models for Fairer Recognition **June 2020**

- Analysed different methods to mitigate inherent geographical biases in SOTA image classification models
- Quantitatively presented this bias in ImageNet by fine tuning two popular models, VGG16 and ResNet-18
- Used methods like focal loss and uniform sampling to reduce variation in model accuracy from 9% to 5%

Using Deep Learning for ICD-9 Code Classification of Medical Notes **Dec 2019**

- Fine-tuned different NLP models to classify unstructured clinical notes of type "discharge summary"
- The best model was based on BlueBERT, a BERT model pre-trained on PubMed abstracts
- Obtained an F1 score of 0.707, beating the current SOTA by ~5%

Home Depot Deep Learning Hackathon **April 2017**

- Developed a convolutional neural network in TensorFlow to categorically sort product images
- Used transfer learning to retrain Google's Inception-v3 model using the new dataset with 80% accuracy

HackGT - Project CustomerCare for Delta Flights **Sept 2016**

- Developed a Customer Relationship Management software using Python with real-time data collection
- Implemented IBM Watson's AlchemyAPI to calculate the sentiment score of the customer's experience
- Extracted keywords from the customer's speech and grouped them together with same flight numbers

Robojackets IGVC – Flag Team Lead **Aug 2015 – Dec 2016**

- Used openCV to program an intelligent vehicle to detect red and blue flags
- Wrote an algorithm in MATLAB that dynamically calculates the threshold for red colour in images
- Used the algorithm to detect the position of red flags of varying intensity with an accuracy of 90%

L E A D E R S H I P

Georgia Tech IEEE (Institute of Electrical and Electronic Engineers) – President **June 2017 – May 2019**

- Lead the largest IEEE student branch in the Western hemisphere with over 800 members
- Won the IEEE Regional Exemplary Student Branch Award

SAA (Student Alumni Association) – International Liaison **Jul 2016 – Jun 2017**

- Increased the international student involvement in SAA by 10%

Student Staff Member - Peer Leader **Aug 2016 – May 2018**

- Assisted around 50 ethnically diverse freshmen to adjust to Georgia Tech
- Oversaw administrative tasks such as crisis management and incident reports

S K I L L S

- **Programming:** Java**,** C++, C, Python, C#, MATLAB, T-SQL, PL/SQL, HTML, CSS, JavaScript
- **Tools/Tech:** PyTorch, TensorFlow, Keras, IntelliJ, GCC, Git, .NET, TFS, SSIS, Eclipse, VSCode