

# ALEXANDER GURUNG

703-835-1897 | [aag1234@gmail.com](mailto:aag1234@gmail.com) | [github.com/alex-gurung](https://github.com/alex-gurung) | US & UK Dual Citizen

## EDUCATION

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### Georgia Institute of Technology

Master of Science in Computer Science, Concentration in Machine Learning

GPA: 3.75/4.0

Relevant Coursework: Natural Language Processing, Deep Learning, Computational Social Science

Atlanta, GA  
Aug. 2020 – Dec 2022

### Georgia Institute of Technology

Bachelor of Science in Computer Science, Minor in Linguistics

GPA: 3.88/4.0, Highest Honors

Atlanta, GA  
Aug. 2018 – Dec. 2020

## RESEARCH INTERESTS

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I'm broadly interested in 1) leveraging NLP techniques to reduce disinformation and harmful behavior online, and 2) improving guarantees of knowledge and social norms in language models.

## RESEARCH EXPERIENCE

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### Social and Language Technologies (SALT) Group @ Georgia Tech

Researcher

Atlanta, GA  
Jan. 2020 – Present

- Investigating the processes and distribution of radicalization on insular social medias
- Working with the School of International Affairs to create a radical-online-content ontology
- Analysed prevalence of political frames using dependency-parsing system
- Finetuned and domain-adapted language models to detect radical content and assess its distribution across multiple alt-tech platforms
- Exploring causal relationships between extremist recruitment strategies and the prevalence of radical content
- Investigating dehumanization language as a gateway to further radicalization, and quantifying its spread amongst far-right recruiters
- Aiming to submit work in 2023 to a political science conference

### Meta AI

AI Resident - ParLAI Team

New York City, NY  
Aug. 2021 – Sep. 2022

- Worked with the *LIGHT* team to improve commonsense understanding in text-adventure games
- Overarching goal was to imbue language models with an understanding of world-state and reasonable changes to that state after an action
- Designed crowdsourcing tasks to collect a large dataset of game playthroughs, action-result pairs, and human evaluations
- Created novel grounding tasks to improve a model's ability to reason about its environment
- Fine-tuned language models and showed improvement over non-grounded baselines on human evaluations
- Submitting work to ARR in December 2022

### Electro-Optical Systems Laboratory @ Georgia Tech Research Institute

Machine Learning Graduate Research Assistant

Atlanta, GA  
Jan. 2021 – May 2021

- Developed ML, CV, and DSP solutions for the *Electronic Warfare Modeling and Analysis Division*
- Leveraged adversarial neural techniques for data augmentation to improve generalization performance
- Expanded Genetic Programming framework's CV capabilities with image feature extraction techniques

### Automated Algorithm Design Lab @ Georgia Tech

Undergraduate Researcher

Atlanta, GA  
Jan. 2019 – May 2020

- Optimized cache invalidation for lab's framework improving results by 213%
- Led new NLP team in adding core text embedding functionality to framework using Tensorflow and Word2Vec

## PUBLICATIONS

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### Infusing Common-Sense Reasoning Models with Graph Knowledge

Alexander Gurung, Jack Urbanek, Arthur Szlam, Jason Weston  
Manuscript in Progress, expected submission to ACL February 15

### Identification of Right-Wing Extremist Discourse and its Effects on Support for Political Violence

David Muchlinski, Alexander Gurung, Ishawn Gullapali, Nathan Zhu, Diyi Yang  
Manuscript in Progress

## WORK EXPERIENCE

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### **TikTok**

*Machine Learning Engineer Intern - Trust & Safety Team*

Mountain View, CA

*Jun. 2021 – Aug. 2021*

- Designed and evaluated neural architectures to improve region-specific auto-moderation performance
- Applied and built upon research into multi-task learning loss functions and architectures
- Demonstrated improvements in auto-moderation performance over existing models
- Deployed new models to production and set up pipeline to evaluate changes in performance over time

### **The Home Depot**

*Software Engineer Intern - Search Team*

Atlanta, GA

*Feb. 2020 – May 2021*

- Built new dynamic product recommendation system leveraging visual similarity embeddings
- Re-engineered emergency shipment tracking tool, cutting time-to-action by 66% for 2,290 stores
- Trained and deployed AutoML, BQML, and RNN models to GCP for predicting "at-risk" shipments during emergencies

## PERSONAL PROJECTS

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### **VitalEyes** | *VitalEyes - EGHI/GT Hack COVID-19 Winner*

*May 2020 – May 2021*

- Built product to anonymously track footpaths and transmission sites using CCTV camera feeds
- Led ML development using CNNs and Signal Processing techniques in Tensorflow and PyTorch
- Onboarded 5 research labs and 30+ researchers in Georgia Tech

### **Make A Face** | *Georgia Tech Deep Learning Hackathon 1st Place*

*Sep. 2018*

- Challenge was to create a game comparing facial expressions
- Detected faces, emotion, and facial reference points with CNNs and Haar Cascades
- Personally implemented facial-point-detection CNN and corresponding facial similarity algorithm

## TECHNICAL SKILLS

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**Programming Languages:** Python, Java, HTML/CSS/JS, Typescript, C, MySQL/SQL, GoLang, Matlab, R, Dart

**Frontend Frameworks:** React, Angular, React-Native, Flutter, Material-UI, Android

**Backend Frameworks:** NodeJS, Flask, LoopBack, SQL/PostgreSQL, GCP, AWS, Firebase, GraphQL

**Data Science/ML:** PyTorch, Tensorflow, Keras, NLTK, Gensim, SciPy, NumPy, Pandas

**Languages:** English (Native), French (Proficient)