# Alexander Gurung

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## Education

**University of Edinburgh** — Edinburgh, UK
*PhD in ILCC: Language Processing, Speech Technology, Information Retrieval, Cognition* — *Aug. 2023 – Present*
Supervised by Mirella Lapata, expected graduation September 2026

**Georgia Institute of Technology** — Atlanta, GA
*Master of Science in Computer Science, Concentration in Machine Learning* — *Aug. 2020 – Dec 2022*
GPA: 3.75/4.0
Relevant Coursework: Natural Language Processing, Deep Learning, Computational Social Science

**Georgia Institute of Technology** — Atlanta, GA
*Bachelor of Science in Computer Science, Minor in Linguistics* — *Aug. 2018 – Dec. 2020*
GPA: 3.88/4.0, Highest Honors

## Research Experience

**University of Edinburgh** — Atlanta, GA
*Phd Candidate* — *Aug. 2023 – Present*
- Working on long-narrative generation and modeling believable characters.
- Designed improved character-representation, CHIRON, to ensure character consistency

**Social and Language Technologies (SALT) Group @ Georgia Tech** — Atlanta, GA
*Researcher* — *Jan. 2020 – May 2023*
- Investigated the processes and distribution of radicalization on insular social medias
- Worked 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
- Identified dehumanization language as a gateway to further radicalization, and quantified its spread amongst far-right recruiters

**Meta AI** — New York City, NY
*AI Resident - ParlAI Team* — *Aug. 2021 – Sep. 2022*
- Worked with the *LIGHT* team to improve commonsense understanding in text-adventure games
- Imbued language models with an understanding of world-state and ability to predict state changes
- 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

**Electro-Optical Systems Laboratory @ Georgia Tech Research Institute** — Atlanta, GA
*Machine Learning Graduate Research Assistant* — *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** — Atlanta, GA
*Undergraduate Researcher* — *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

## Publications

**CHIRON: Rich Character Representations in Long-Form Narratives** — Jun. 2024
***Alexander Gurung**, Mirella Lapata*
We design an improved character representation, CHIRON, for downstream story tasks and analysis.

**Infusing Common-Sense Reasoning Models with Graph Knowledge** — Jan. 2023
***Alexander Gurung**, Jack Urbanek, Arthur Szlam, Jason Weston*
We improve LLM performance on text-adventure game tasks by training on auto-generated graph data.

## Work Experience

**TikTok** Mountain View, CA
*Machine Learning Engineer Intern - Trust & Safety Team* *Jun. 2021 – Aug. 2021*

- Designed MoE 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 evaluated changes in performance over time

**The Home Depot** Atlanta, GA
*Software Engineer Intern - Search Team* *Feb. 2020 – May 2021*

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

## Personal Projects

**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*

- 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

**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)