Ian Yang

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EDUCATION

B.S. in Computer Science, Georgia Institute of Technology, *summa cum laude (GPA: 3.93)* **May 2024**
Threads: Intelligence and Theory

Thesis: Relationship Extraction via Language Models for Normativity Analysis *Advisor: Mark Riedl*

REFEREED CONFERENCE PAPERS

***** equal contribution

Ananya Balaji*, Lea Duesterwald*, **Ian Yang***, Aman Priyanshu, Costanza Alfieri, and Norman Sadeh. 2024. “Generating Effective Answers to People’s Everyday Cybersecurity Questions: An Initial Study”. *To appear at WISE 2024.*

Abhilasha Ravichander*, **Ian Yang***, Rex Chen, Shomir Wilson, Thomas Norton, and Norman Sadeh. 2024. “Incorporating Taxonomic Reasoning and Regulatory Knowledge into Automated Privacy Question Answering”. *To appear at WISE 2024.*

REFEREED JOURNAL PAPERS

David Rodríguez, **Ian Yang**, José M. Del Álamo, and Norman Sadeh. 2024. “Large Language Models: A New Approach for Privacy Policy Analysis at Scale”. *Springer Computing.*
Full Paper: https://doi.org/10.1007/s00607-024-01331-9

SUBMISSIONS UNDER REVIEW

Kaige Xie, **Ian Yang**, John Gunerli, and Mark Riedl. 2024. “Making Large Language Models into World Models with Precondition and Effect Knowledge”. *Under Review for COLING 2025.*
Full Paper: https://arxiv.org/abs/2409.12278

PREPRINTS

Louis Castricato, Alexander Havrilla, Shahbuland Matiana, Michael Pieler, Anbang Ye, **Ian Yang**, Spencer Frazier, and Mark Riedl. 2022. “Robust Preference Learning for Storytelling via Contrastive Reinforcement Learning”. *arXiv.*
Full Paper: https://arxiv.org/abs/2210.07792

POSTERS/PRESENTATIONS

Ian Yang and Norman Sadeh. 2023. “You Shouldn’t Know That! Natural Language Processing Towards Enhancing Android Privacy Label Disclosures”. *REU research symposium at Carnegie Mellon University*.

RESEARCH EXPERIENCE

Research Assistant | University of Minnesota **July 2024 - Present**
Research assistant in the MinnesotaNLP group working with Prof. Mingyi Hong and Prof. Dongyeop Kang.

Working on reinforcement learning with dense multidimensional data for LLM alignment.

- Developed training pipeline with PPO to refine naïve RLHF reward signals with SHAP interpretability scores.

Research Assistant | Carnegie Mellon University **August 2023 - Present**
Research assistant in the Usable Privacy Lab advised by Prof. Norman Sadeh.

Exploring applications of NLP with respect to privacy policies and regulations. Projects include:

- Building and training classifiers with machine learning models (logistic regression, multilayer perceptron, etc.) for predicting potential privacy disclosure compliance issues.
- Evaluating capabilities of LLMs and Generative AI tools (BERT, RoBERTa, ChatGPT, Llama2) to perform information extraction and classification of data collection practices based on the text of privacy policies.
- Processing data from human study involving annotating privacy policies for automatically answering questions about data collection practices using GenAI tools.
- Building and evaluating a question-answering agent for common cybersecurity questions using ChatGPT and Llama2.

Research Assistant | Georgia Tech **Jan 2022 – Present**
Research assistant in the Human-Centered AI Lab advised by Prof. Mark Riedl.

Projects include:

- Extension of the *Moral Stories* dataset with human authoring of datapoints given world states.
- Human evaluations via Qualtrics for storytelling with fine-tuned language model preference learning.
- Relational triple generation using large language models for knowledge graph creation, to be used for character action evaluation with respect to cultural norms (senior thesis).
- Generation of TextWorlds for navigation of reinforcement learning agents engaging in imaginative play.

REU Student | Carnegie Mellon University **May 2023 – August 2023**
Visiting researcher as part of the REUSE (Research Experience for Undergraduates in Software Engineering) program at CMU advised by Prof. Norman Sadeh.

- Used *PoliPy*, a Python library for dynamically scraping privacy policies, to build large datasets (>700,000 rows) including privacy policies and data types collected.
- Built and trained machine learning classification models with privacy data to predict data labels for Android app privacy policies.

Research Assistant | The Ohio State University **Apr 2021 – May 2022**
Research assistant at The Ohio State University advised by Prof. Dong Xuan.

- Implemented software detecting voice biometrics using ASR (Automatic Speech Recognition) supporting 19+ languages.
- Used *Vosk*, a speech recognition API, for speaker ID via cosine distance of x-vectors.
- Literature reviews of 15 distinct facial recognition algorithms.

TEACHING/MENTORSHIP EXPERIENCE

CSE 6040 | Tutor | Georgia Tech **Aug 2022 – May 2024**
Tutor for 1000+ students enrolled in CSE6040 *Computing for Data Analytics*, in the Master of Analytics program. Tasked with holding daily sessions for topics including but not limited to: linear algebra, multivariate calculus, NumPy, pandas, machine learning algorithms (k-means, DBSCAN, PCA, logistic regression, image compression).

CS 1100 | Teaching Assistant | Georgia Tech **Aug 2021 – May 2024**
Teaching Assistant for CS1100 *Freshman Leap Seminar*. Graded assignments including career goals, 4/5-year schedules, and resumes. Worked directly with Director of Computing Engagement for planning activities and class assignments.

Peer Mentor | Georgia Tech **Aug 2021 – May 2024**
Mentored 55 freshmen in their transition to the College of Computing at Georgia Tech. Helped with adjusting to workloads, planning schedules, and minimizing stress when entering a rigorous and fast-paced academic environment.

AP Computer Science A | Tutor **May 2021 – Feb 2022**
Tutored 4 students in preparation for the AP Computer Science A exam. Focused on beginner to intermediate level Java concepts from basic object-oriented programming including but not limited to: polymorphism, simple data structures, recursion.

PROJECTS

Analysis of Sentiment and Lexical Diversity between Liberal Arts and STEM News | Georgia Tech **May 2024**
Final project for senior/graduate-level linguistics course; used LLM topic annotation, VADER sentiment analysis, and lexical analysis to examine the presence of implicit bias against the humanities in Georgia Tech news articles.

- Observed a statistically significant difference in sentiment between liberal arts and STEM news articles ($p = 0.041$).
- Lexical analysis revealed that liberal arts news more commonly discusses lower-sentiment topics (racism, protests, mental health).

Explainable Moral Alignment via Natural Language | Georgia Tech **May 2023**
Final project for senior-level natural language processing course; fine-tuned GPT-3 on text data scraped from the subreddit *r/AmITheAsshole* to build a generative language model that provides both a moral judgement given a scenario and natural language explanation for the judgement.

- Found that fine-tuned model outperforms base GPT-3 both in accuracy of judgement and reasonableness of explanation (using crowdsourced judgements as ground-truth in training).

INDUSTRY EXPERIENCE

Software Development Intern | FlightBridge, Inc. **Aug 2021 – May 2022**

FlightBridge is the technology platform connecting Private Aviation with their trusted network of trip service vendors and partners. One-stop online to book and manage FBO and handling requests, hotel reservations, rental car bookings with FBO delivery, catering, fuel, ground transportation, aircraft detailing, security, and much more.

- Crafted full-stack solutions for 300+ features/bugs combining C#, JavaScript, SQL, and front-end frameworks.
- Optimized and overhauled more than 100 different pages and APIs with ASP.NET MVC and Subversion QC.
- Designed UI/UX of webpages visited by over 200,000 clients annually.

TECHNICAL SKILLS

Programming:

- Proficient: Python (NumPy, SciKit, pandas), Java, C# (ASP.NET)
- Familiar: C, SQL, HTML, CSS, JavaScript

Software/Tools: Git, Subversion, TeX, Bootstrap (Dashkit), Qualtrics, Android, Unix