

# Ian Yang

+1 (###) ###-#### | xxx@gmail.com | ianyng.com

## EDUCATION

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**B.S. in Computer Science**, Georgia Institute of Technology, *summa cum laude* (GPA: 3.93)

May 2024

Threads: Intelligence and Theory

Awards: Zell Miller Scholarship (Full Tuition Scholarship)

Thesis: *Relationship Extraction via Language Models for Normativity Analysis*

Advisor: Mark Riedl

## REFEREED CONFERENCE PAPERS

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\* equal contribution

Kaige Xie, **Ian Yang**, John Gunerli, and Mark Riedl. 2024. "Making Large Language Models into World Models with Precondition and Effect Knowledge". *To appear at the 31st International Conference on Computational Linguistics (COLING 2025)*.

Full Paper: <https://arxiv.org/abs/2409.12278>

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". *Twenty-Fifth International Web Information Systems Engineering Conference (WISE 2024)*.

Full Paper: [https://usableprivacy.org/static/files/balaji\\_wise\\_2024.pdf](https://usableprivacy.org/static/files/balaji_wise_2024.pdf)

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". *Twenty-Fifth International Web Information Systems Engineering Conference (WISE 2024)*.

Full Paper: [https://usableprivacy.org/static/files/ravichander\\_wise\\_2024.pdf](https://usableprivacy.org/static/files/ravichander_wise_2024.pdf)

## REFEREED JOURNAL PAPERS

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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*, 1-25.

Full Paper: <https://doi.org/10.1007/s00607-024-01331-9>

## SUBMISSIONS UNDER REVIEW

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Lea Duesterwald, **Ian Yang**, and Norman Sadeh. 2024. "Can a Cybersecurity Question Answering Assistant Help Change User Behavior? An In Situ Study". *Under Review for USEC 2025*.

## PREPRINTS

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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

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

## RESEARCH EXPERIENCE

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### 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.

- Developing reward shaping pipeline with SHAP and integrated gradients interpretability scores to refine naïve RLHF reward signals for dense alignment with complex human preference data.

### 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.
- Leveraging contrastive preference learning to build reward models for RLHF.
- 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.
- Fine-tuning LLMs with precondition and effect knowledge to act as world models for downstream RL tasks.

### 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 38 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

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### 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

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### 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**

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### **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**

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### **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

## **VOLUNTEER EXPERIENCE**

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### **VOICE Peer Educator | Georgia Institute of Technology**

**Aug 2022 – May 2024**

VOICE is Georgia Tech's sexual and relationship violence prevention and survivor support initiative, and the peer education program exists to spread domestic violence awareness and prevention resources.

- Attended biweekly seminars discussing issues related to sexual violence.
- Developed outreach strategies and presentation ideas to educate others on prevention strategies and techniques.

### **Judge and Coach | Atlanta Urban Debate League**

**Aug 2019 – May 2022**

The Atlanta Urban Debate League (AUDL) is committed to providing quality debate education programs, services, and opportunities to students, educators, and community members.

- Led seminars teaching the fundamentals of debate, identity politics, and postmodern philosophy theory.
- Judged practice and tournament debates for middle and high school students.