JIAMING QU

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SUMMARY

My research lies at the intersection between explainable AI (XAI), information retrieval, and human-computer interaction. I am proficient in combining cutting-edge techniques with human-centered design to develop novel AI systems. I am also broadly interested in machine learning, natural language processing, and LLM research.

EDUCATION

- Ph.D., Information Science, University of North Carolina at Chapel Hill, 08/2019 — 05/2025
  Dissertation committee: Yue Wang (chair), Jaime Arguello (co-chair), Rob Capra, David Gotz, Chenhao Tan.
- M.S., Information Science, University of North Carolina at Chapel Hill, 08/2017 — 05/2019
- B.S., Information Management and Information Systems, Nanjing Forestry University, 09/2013 — 06/2017

TECHNICAL SKILLS

- **Languages & DevOps**: Python, JavaScript, PHP, R, SQL, Java, Shell script, Docker, Kubernetes, Git, AWS.
- **ML/NLP Tools**: Scikit-learn, SciPy, NLTK, Hugging Face, PyTorch, RankLib, spaCy, Lucene, Solr, Spark.
- **User Research**: System Prototyping, Crowd-sourcing, A/B Testing, Usability Testing, Survey Design, Quantitative Methods (Statistical Analysis, Regression Analysis, ANOVA), Qualitative Methods (Interviews, Contextual Inquiries, Thematic Analysis).

INDUSTRY EXPERIENCE

Amazon Seattle, WA

Applied Scientist at Customer Behavior Analytics *05/2025 — present*

- Develop a regression model to estimate Amazon's ads revenue across channels to support marketing decision-making.

Amazon Sunnyvale, CA

Applied Scientist Intern at Alexa AI *05/2023 — 08/2023*

- Trained a LambdaMART model to **improve search performance** for Alexa's local business queries in the Japanese market, achieving a **10% increase in NDCG@1** on benchmark datasets.
- **Developed semantic-based ranking features** using embeddings from fine-tuned BERT to boost ranking performance.
- Conducted **A/B testing**, demonstrating a 4% significant improvement in customer satisfaction of search results in one week.
- Collaborated cross-functionally with engineers to **deploy the ranking model to production**, enhancing **1M+ queries annually**.

Amazon Sunnyvale, CA

Applied Scientist Intern at Alexa AI *05/2022 — 08/2022*

- **Led data annotation efforts** to create reusable evaluation datasets for assessing Alexa's local business search in the US market.
- **Developed a BERT-based classification model** for predicting user intentions in search queries, achieving a **14% improvement in Precision@1** and a **51% increase in Recall@1** on benchmark datasets.
- **Integrated** the model into the team's working pipeline, providing model predictions as features for downstream ranking tasks.

RESEARCH PROJECTS HIGHLIGHTS

Explaining Unintuitive AI Explanations Ph.D. Dissertation

- Leveraged **GPT-4o to explain predictive yet unintuitive words** in text classification by uncovering psycholinguistic phenomena.
- Designed **LLM-based algorithmic evaluation approaches** to ensure generated explanations were accurate and meaningful.
- Conducted two crowd-sourced studies and one lab study to assess the effects of LLM-generated explanations on users' decision-making, learning outcomes, and perceptions of AI.

LLM-Assisted Transcript Annotation NSA-funded Project

- Utilized **GPT-4o for named entity recognition** in audio transcripts, applying advanced prompt engineering techniques (e.g., Chain-of-Thought, in-context learning) and fine-tuning to improve predictive accuracy to support language analysts.
- Developed **uncertainty quantification algorithms** and data visualizations to communicate confidence in LLM predictions.
- Contributed to **contextual inquiries** and **iterative system prototyping** with users to align system development with real needs.

Ontology-Based Search System NIH-funded Project

- **Fine-tuned BioBERT** for named entity recognition in Neuroscience literature and developed an entity linking algorithm to map named entities to a Neuroscience ontology using embeddings.
- Collaborated with engineers to **develop a web-based search system** that enables searching literature with ontology terms.
- Implemented **an automated pipeline** to regularly download, process, and index the latest articles from PubMed.

Human-XAI Interaction Ph.D. Research Project

- Trained ML models for text classification and developed explanation tools—highlighting keywords and prediction confidence.
- Conducted a **200-participant crowdsourced study** to collect quantitative behavioral and survey data, and a **30-participant lab study** using think-aloud protocols and interviews for qualitative data.
- Analyzed quantitative data using **multilevel modeling, ANOVA**, and qualitative data through **thematic analysis**.

Explainable Ranking Model Ph.D. Research Project

- Leveraged domain knowledge in biomedical literature search to develop a **decision tree-based ranking model** that can explain search result relevance.
- Conducted empirical analysis showing that the ranking model achieved performance on par with deep learning models.

PUBLICATIONS

My publications can be grouped into three research themes.

1) Explaining syntactically simple yet counterintuitive AI explanations:

- **Jiaming Qu**. *Explaining Unintuitive Feature Importance Explanations.* **Ph.D. Dissertation**.
- **Jiaming Qu**, Jaime Arguello, Yue Wang. *Understanding the Effects of Explaining Unintuitive Text Features in XAI-Assisted Decision-Making*. **In FAccT 2025**.
- **Jiaming Qu**, Mengtian Guo, Yue Wang. *Why is "Chicago" Predictive of Deceptive Reviews? Using LLMs to Explain Predictive but Unintuitive Words.* **Under review at CIKM 2025**.
- **Jiaming Qu**, Jaime Arguello, Yue Wang. *Why is "Problems" Predictive of Positive Sentiment? A Case Study of Explaining Unintuitive Features in Sentiment Classification.* **In FAccT 2024**.

2) Investigating user behaviors when interacting with XAI systems:

- **Jiaming Qu**, Jaime Arguello, Yue Wang. *Understanding the Cognitive Influences of Interpretability Features on How Users Scrutinize Machine-Predicted Categories.* **In CHIIR 2023**.
- **Jiaming Qu**, Jaime Arguello, Yue Wang. *A Study of Explainability Features to Scrutinize Faceted Filtering Results.* **In CIKM 2021**.

3) Developing explainable ranking model and search system:

- **Jiaming Qu**, Jaime Arguello, Yue Wang. *A Deep Analysis of an Explainable Retrieval Model for Precision Medicine Literature Search.* **In ECIR 2021**.
- **Jiaming Qu**, Jaime Arguello, Yue Wang. *Towards Explainable Retrieval Models for Precision Medicine Literature Search.* **In SIGIR 2020**.
- **Jiaming Qu**. *A medical literature search system for identifying effective treatments in precision medicine.* **Master's Thesis**.
- **Jiaming Qu**, Yue Wang. *UNC SILS at TREC 2019 Precision Medicine Track.* **In TREC 2019**.

SERVICES & AWARDS

- PC Member & Reviewer: WSDM 2026, SIGIR 2025, SIGIR 2024, CHI 2024, WWW 2023, ICTIR 2023, Neurocomputing.
- Conference Presentation: FAccT 2025, FAccT 2024, CHIIR 2023, CIKM 2021, ECIR 2021, SIGIR 2020, TREC 2019.
- Student Volunteer: WWW 2023, CHIIR 2023.
- SIGIR Student Travel Grant: 2020, 2021, 2023.
- Dean's Award for the best Master's Thesis (2 out of 95, **first Chinese recipient in the award's history**), UNC Chapel Hill, 2019.