

Jacob Choi

(+1) (408) 828-3935

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RESEARCH INTERESTS

Conversational AI. Language model vulnerabilities and bias. Machine learning applications on healthcare.

EDUCATION

Department of Computer Science, Emory University, Atlanta, GA, US

Expected May 2024

Bachelor of Science in Computer Science, Honors Thesis Advisor: Dr. Jinho Choi

Major GPA: 3.700

- Progressed towards creating a nuanced language model to map biblical entities and their relationships, aiming to develop a chatbot capable of answering context-specific questions from religious texts.

EXPERIENCE

Language Information and Computation Lab (LINC) - Research Experience for Undergraduates (REU)

University of Colorado at Colorado Springs

May 2023 – Aug 2023

Visiting Researcher, Advisor: Dr. Jugal Kalita

Colorado Springs, CO, US

- Explored robustness and security of Masked Language Models, specifically backdoor attacks and their implications
- Investigated novel approaches to creating latently inseparable backdoor attacks, offering new insights into the latent separability assumption

Emory Graph Mining Group, Emory University

Feb 2021 – Apr 2022

Undergraduate Research Assistant, Advisor: Dr. Carl Yang

Atlanta, GA, US

- Investigated utilization of large language models to automatically build structured knowledge (taxonomies and knowledge graphs) in healthcare domain
- Performed evaluation and verification of structured knowledge (concept maps) derived from graph generative models

Emory Computing Center, Emory University

Aug 2023 – Present

Technology Consultant

Atlanta, GA, US

- Provide technological assistance to students, faculty, and staff by troubleshooting hardware and software problems, setting up devices, and offering guidance on academic projects
- Oversee usage and maintenance of computing resources, such as computers, printers, and other peripherals

PUBLICATIONS

Conference Papers

[1] Jeongrok Yu, Seong Ug Kim, **Jacob Choi**, Jinho Choi. "What is Your Favorite Gender, MLM? Gender Bias Evaluation in Multilingual Masked Language Models" *Under Submission*

RELEVANT COURSEWORK

Machine Learning, AI Research Practicum, Natural Language Processing, Deep Learning with Computer Vision, Computational Linguistics, Data Structures and Algorithms, Database Systems, Computer Architecture, Linear Algebra, Analysis of Algorithms

TECHNICAL SKILLS

Programming Languages: Python, Java, C, R, x86, JavaScript, SQL, NoSQL, MapReduce, PostgreSQL, MySQL

Tools: PyTorch, Docker, Git, Jira

PROJECTS

AI Research Practicum / Gender Bias in Machine Translation

- Resolved existing biases in previous methodologies and enhanced accuracy by removing confounding biases
- Produced gendered lexicon to detect gendered sentences of different languages without parallel corpora
- Compiled research report, delivered oral and poster presentation under guidance of Dr. Jinho Choi

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Personalized E-Sports Conversational Chatbot Agent

Jan 2023 - May 2023

- Developed AI-powered conversational chatbot for League of Legends esports, using Emora STDm for structured dialogue management and OpenAI's GPT-3.5 Turbo API for dynamic, context-aware response generation

Breast Cancer Detection

June 2022 - Aug 2022

- Implemented and fine-tuned a convolutional neural network-based object detection model to achieve a mean Average Precision (mAP) exceeding 90% for breast cancer detection in medical imaging

Course Calendar / Product Owner

Jan 2022 - May 2022

- Developed online calendar (CRUD application) on SQLite and Python, implemented user authentication with Auth0m, implemented front-end features such as search and auto-layout using Twitter Bootstrap
- Led 7-person scrum team using agile methodology – organized standups, sprints, and retrospectives

I Want Good Food – Finding Good Restaurants and Reviewers on Yelp Dataset

Oct 2022 – Dec 2022

- Utilized advanced statistical machine learning models to identify key attributes correlating with positive and negative Yelp restaurant reviews to find customer preferences.

AWARDS

HackEmory 2nd Place

Sep 2020

- Developed self-updating Spotify playlist with YouTube trending music using Spotify API

Congress Bundestag Youth Exchange Scholar (CBYX)

Jul 2019 – Mar 2020

- Year-long language immersion program in Aachen, Germany funded by US Department of State

LEADERSHIP AND COMMUNITY ENGAGEMENT

Undergraduate Student Conduct Peer Review Board

August 2023 – Present

Member/Panelist

Atlanta, GA

- Participated in hearing process of alleged violations of Undergraduate Code of Conduct by assessing incident reports, understanding perspectives of involved parties, and contributing to decisions regarding responsibilities and sanctions
- Assist in recommending appropriate educational sanctions for students found responsible for violations to promote understanding, accountability, and overall community welfare

Journey Church of Atlanta

August 2022 – Present

Small Group Leader

Atlanta, GA

- Facilitate weekly discussions exploring scripture as it applies to daily life and manifestation of faith
- Coordinate and direct engaging musical worship sessions to foster spiritual engagement among college students
- Engage in local outreach initiatives, providing tutoring and mentorship for children's educational development

Emory In Via

August 2022 – Present

Treasurer

Atlanta, GA

- Facilitate interactive faculty-student meetings, fostering dialogue on the intersection of faith with academia.
- Efficiently manage \$2,000+ annual budget, strategically allocating funds to support publication of student journals
- Led fundraising initiatives and authored successful grant proposals to secure funding from interdisciplinary offices

ADDITIONAL SKILLS AND INTERESTS

Languages: Fluent in English, Proficient Mandarin Speaking, CEFR-Level B1 German (intermediate)

Fine Arts: Guitar, Violin, Piano, Chinese Landscape Painting

Interests: Exercise and Fitness Training, Journaling, Song Writing