

# Jinwoo Baik

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## EDUCATION

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### University of California, Los Angeles

Aug 2024

Master of Engineering - Artificial Intelligence

### University of California, Los Angeles

Jun 2023

B.S. Computer Science | B.A. Physics

## EXPERIENCE

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### Software Development Engineer Intern, Amazon

Jun 2022 - Sep 2022

- Accelerated the debugging process of Alexa devices by up to 2 weeks by developing an Android middleware diagnostic application in Java
- Designed native C++ software to monitor audio corruption by detecting frame drops

### Undergraduate Researcher, UCLA Artificial General Intelligence Lab

May 2022 - Jan 2024

- Demonstrated an 18% decrease in RMS error of our GNN-based ML model compared to other baselines by preparing and processing COVID-19 and simulated tumor growth datasets for evaluation
- (Published) Huang, Z., Hwang, J., Zhang, J., **Baik, J.**, Zhang, W., Wodarz, D., ... & Wang, W. (2024). Causal Graph ODE: Continuous Treatment Effect Modeling in Multi-agent Dynamical Systems. In *Proceedings of the ACM on Web Conference 2024* (pp. 4607-4617). <https://arxiv.org/abs/2403.00178>

### Education Statistics Intern, American Institutes for Research

Jul 2021 - Sep 2021

- Investigated learning patterns for all demographic groups by analyzing data using the Pandas library for over 630,000 students that took the National Assessment of Educational Progress
- Developed an implementation of the XES standard in R to aid integration of R software with other internal databases

### Undergraduate Researcher, Elegant Mind Collaboration @ UCLA

May 2020 - Sep 2021

- Coordinated a student group and developed experiments to search evidence of the new concept of Neural Holography Tomography

### Research Intern, MIT Research Laboratory of Electronics

Jun 2018 - Aug 2018

- Developed a program to generate phoneme and acoustic cue labels to augment speech data for research in automated speech recognition

## PUBLICATIONS

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1. Huang, Z., Hwang, J., Zhang, J., **Baik, J.**, Zhang, W., Wodarz, D., ... & Wang, W. (2024). Causal Graph ODE: Continuous Treatment Effect Modeling in Multi-agent Dynamical Systems. In *Proceedings of the ACM on Web Conference 2024* (pp. 4607-4617). <https://doi.org/10.48550/arXiv.2403.00178>
2. (Preprint) Alfifa U., ..., **Baik J.**, ... et al. Visual Perception of 3D Space and Shape in Time - Part 1: 2D Space Perception by 2D Linear Translation. *bioRxiv*, 2022-03. <https://doi.org/10.1101/2022.03.01.482161>

3. Huilgol, S., **Baik, J.**, & Shattuck-Hufnagel, S. (2019). A framework for labeling speech with acoustic cues to linguistic distinctive features. *The Journal of the Acoustical Society of America*, 146(2), EL184-EL190. <https://doi.org/10.1121/1.5121717>

## PROJECTS

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### AI Enhanced DSAR Solution (Capstone Project)

Collaboration with Foxit Software

- Developed a full-stack web application as a team to process Data Subject Access Requests related to data privacy laws in the European Union
- Used SQLite for mock data, and file storage was supported using Firebase and OpenAI vector stores
- Upon user request to access their personal data, used OpenAI's GPT-4 to generate the SQL query or the file retrieval instructions to efficiently process the requests while maintaining high accuracy

### Music Language Model

[github.com/jbaik1/Music-LM](https://github.com/jbaik1/Music-LM)

- Created a music-based language model by developing a custom BPE tokenizer for a large dataset of classical music to generate training data for a GPT model
- Produced high quality music samples after training in a Google Cloud VM server for 48 hour

### N-Body Navigation

[github.com/jbaik1/n-body-navigation](https://github.com/jbaik1/n-body-navigation)

- Created an RL agent to navigate complex n-body environments

### Evaluating Capabilities of LLMs in Playing Wordle

[github.com/jbaik1/CS-263-Wordle](https://github.com/jbaik1/CS-263-Wordle)

- Final project for CS 263: *Natural Language Processing*
- Tested effectiveness of few-shot learning with extensive prompt engineering with automated feedback
- Designed automatic evaluation metrics to assess the ability of models to learn and adapt from previous guesses

## AWARDS

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UCLA Master of Engineering Fellowship 2023

## SERVICE

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ACM TeachLA

Oct 2019 - Apr 2021

- Taught free programming classes for schools in underserved communities