JIHYE LEE

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RESEARCH INTERESTS

Artificial Intelligence, Machine Learning, Explainable AI, Natural Language Processing, Large Language Model

EDUCATION

Boston University, Boston, MA *Expected May 2026*
B.A. in Computer Science
GPA: 3.93 / 4.00
Dean's List: Spring 2024
Relevant Coursework: Artificial Intelligence, Machine Learning, Deep Learning, Algorithms, Database Systems, Software Engineering, Calculus I–III, Linear Algebra, Probability and Statistics

Temple University, Philadelphia, PA *Fall 2022 – Spring 2024*
B.S in Computer Science (Transferred)
GPA: 3.90 / 4.00
Dean's List: Fall 2023, Spring 2024

EXPERIENCE

Temple University, Human–Computer Interaction Lab Oct 2023 – May 2025
Research Intern *Philadelphia, PA*

- Evaluated and compared the zero-shot Visual Question Answering (VQA) performance of trees
- Developed a dynamic image generator and trees using Python, NetworkX, and Matplotlib, enabling the creation of diverse, randomized data structure visuals
- Conducted a head-to-head comparison of GPT-4V and Gemini Pro Vision models, measuring their zero-shot accuracy in solving graph and tree data structure challenges, and visualized the competitive result with Matplotlib

Harvard Medical School, Lee Lab Jun 2021 – Sep 2021
Data Science Intern *Boston, MA*

- Engineered a robust computational workflow for scATAC-seq data analysis using R/R Studio, optimizing the process for efficiency and accuracy
- Proactively identified and resolved three critical dependency issues with R packages, ensuring seamless operation and stability of the workflow
- Visualized complex datasets from publicly available "Adult Mouse Brain" and "10X PBMC" studies, transforming raw data into insightful, interpretable visuals

PUBLICATIONS

Gutierrez, S., Hou, I., **Lee, J.**, Angelikas, K., Man, O., Mettile, S., Prather, J., Denny, P., and MacNeil, S.
"Visual Question Answering on Structured Data: Evaluating LMMs on Graph and Tree Reasoning."
ACM Digital Library, 2025. DOI: 10.1145/3716640.3716654.

TECHNICAL PROJECTS

Dog Breed Classifier December 2025 (Expected)

- Built the full preprocessing and augmentation pipeline (stratified splitting, normalization, RandomResizedCrop, flips) and trained baseline CNNs in PyTorch.
- Fine-tuned pretrained ResNet-34, MobileNetV2, and EfficientNet-B0 models, comparing validation accuracy and loss to evaluate performance.
- Implemented an open-set "Unknown breed" recognition mechanism using calibrated confidence thresholds (max-softmax / energy score).

Baymax Healthcare Companion December 2025 (Expected)

- Developed a multimodal healthcare dashboard inspired by *Big Hero 6*'s Baymax, integrating symptom logging, medication reminders, and prescription OCR.
- Built an AI-powered health chatbot using GPT-4o to analyze user inputs, provide personalized suggestions, and answer health-related questions.
- Designed a clean, intuitive interface enabling users to track symptoms, manage medication adherence, and visualize health trends through interactive charts.
- Implemented backend logic to parse, classify, and summarize user health data, generating personalized insights and automated alerts.

AI Bitcoin Trader November 2024

- Developed an automated cryptocurrency trading bot integrating the Alpaca API with GPT-4–based sentiment analysis.
- Incorporated the Fear & Greed Index and Korean YouTube transcripts to produce context-aware trading signals.
- Visualized trade data using Streamlit and Plotly; logged transactions in SQLite for performance evaluation and optimization.

COVID-19 2D Grid Spread Simulation May 2024

- Engineered a 2D grid-based agent model in MATLAB to simulate the spread of COVID-19, focusing on the effects of varying movement speeds on transmission dynamics.
- Strategically designed agents to move randomly with subtle directional changes, modeling infection transmission through interactions within grid cells.
- Conducted 1,000 simulations with different movement speeds, analyzing the impact on virus spread by collecting data on the statuses of susceptible, infected, quarantined, and immune agents.

TEACHING & MENTORSHIP EXPERIENCE

Temple University Jan 2023 – May 2024
STEM Tutor *Philadelphia, PA*

- Tutored 100+ undergraduates in Calculus I–III, Python, Java, Data Structures, and Discrete Math.
- Provided individualized support and guided problem-solving strategies for diverse learners.

Private Tutoring Spring 2024
AP Calculus Tutor *Remote*

- Guided several AP Calculus students, with over five earning a score of 5 on the AP exam.
- Created review sessions and mock exams to strengthen conceptual understanding and exam readiness.

Upchieve (Nonprofit) 2020 – 2023
Volunteer Tutor *Virtual*

- Tutored elementary, middle, and high-school students nationwide in math and introductory computer science.
- Delivered one-on-one virtual sessions in algebra, pre-calculus, and basic coding; over 50 volunteer hours supporting underrepresented students in STEM.

Calvary Baptist Schools 2021 – 2022
Classroom Teaching Assistant (Grade 3) *Lansdale, PA*

- Assisted lead teacher in math & science instruction for 3rd-grade students.
- Designed engaging activities to reinforce early STEM concepts and classroom participation.

TEACHING ASSISTANT & LEADERSHIP EXPERIENCE

Boston University 2024 – Present
Course Assistant, Web App Development *Boston, MA*

- Assisted the instructor in facilitating class discussions, organizing review sessions, and mentoring 100+ students in React-based full-stack web development.
- Provided individualized feedback and guidance to help students grasp complex topics and improve code quality.
- Created supplementary learning materials (sample code, documentation) to enhance student understanding and engagement.
- Contributed constructive suggestions to improve course assignments and introduce modern development tools and best practices.

Association for Computing Machinery, Temple University 2023 – 2024
Finance Chair *Philadelphia, PA*

- Collaborated with university departments and sponsors to raise over $1,000 for club initiatives.

Owl Hacks Hackathon, Temple University 2023
Logistics Lead *Philadelphia, PA*

- Delivered sponsor presentations and secured over $1,500 in event funding.

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, C/C++, OCaml, SQL, R, MATLAB, HTML/CSS
Frameworks & Tools: React, Streamlit, pandas, NumPy, Plotly, NetworkX, SciPy, MySQL, Jupyter Notebook, Git
Specialties: Machine Learning, Deep Learning, Data Visualization, AI-assisted Reasoning

AWARDS & RECOGNITION

Dean's List, Temple University — Spring 2023, Fall 2023
Dean's List, Boston University — Spring 2025
STARS Celebration (2024): Research paper submission, *Visual Question Answering on Structured Data*