Joseph Ye

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Education

Massachusetts Institute of Technology (MIT) **Aug. 2021 – Present**
Bachelor of Science in Computer Science and Engineering *Cambridge, MA*

Relevant Coursework

- AI / Machine Learning
- Computer Vision
- Data Structures
- Software Methodology
- Algorithms Analysis
- Software Construction
- Systems Programming
- Computer Architecture

Experience

MIT Media Lab **Jan 2025 – Present**
Machine Learning Intern *Cambridge, MA*

- Developed and fine-tuned real-time cognitive state analysis models to process EEG (brain activity) and EOG (eye movement) data, enabling accurate detection of attention, fatigue, and cognitive load for real-world applications.
- Reconstructing Perceived Images w/ EEG: Developing a cost-effective and flexible brain decoding paradigm by leveraging portable EEG systems to classify image categories and reconstruct perceived images from visually evoked brain activity.

Eli Lilly and Company **May 2024 – August 2024**
Machine Learning Intern *Boston, MA*

- Built a scalable backend pipeline to migrate lipid nanoparticle data using LLaMA 3.0 for large-scale data migration.
- Automated JSON schema generation in Python, streamlining data migration and reducing manual intervention by 90%.
- Optimized SQL queries to process thousands of records efficiently, ensuring seamless integration into backend systems.

Eli Lilly and Company **May 2023 – August 2023**
Machine Learning Intern *Cambridge, MA*

- Developed Python scripts to process and classify 30,000+ hours of Polysomnography data using the YASA library.
- Developed EEG and Polysomnography signal selection algorithms for precise and efficient sleep stage classification.
- Achieved 87% classification accuracy by refining data pipelines, improving signal selection criteria, and validating results.

MIT Koch Institute **May 2022 – August 2022**
Undergraduate Researcher *Cambridge, MA*

- Automated heart rate analysis from voltage data using Python, improving accuracy by 10x and reducing manual effort.
- Designed and tested microcontroller boards and sensors for ingestible devices, ensuring precision in experiments.
- Visualized data for 1,000+ epochs using detailed graphs/summaries, enabling deeper performance analysis and insights.

Projects

Automatic Receipt Delivery Platform **Dec. 2024 – Present**
Expo, React Native *Startup Project*

- Developed a cross-platform mobile app for iOS and Android to automatically deliver digital receipts after transactions.
- Designed the frontend with React Native to ensure a seamless user experience and integration with payment systems.
- Building RESTful APIs to enable smooth integration with third-party payment systems and client applications

TuneTrainer App **Oct. 2023**
Vue.js, Node.js, MongoDB, GPT-4 *Personal Project*

- Built a full-stack app that generates personalized songs from user-provided notes to enhance studying and memorization.
- Developed a Node.js backend integrated with GPT-4, enabling the programmatic generation of personalized lyrics.
- Implemented a responsive Vue.js frontend for users to input notes, configure preferences, and view generated outputs.
- Leveraged MongoDB to efficiently store user data and generated songs, ensuring fast retrieval for large datasets.

Technical Skills

Programming Languages: Python, C++, Typescript, JavaScript, HTML/CSS
AI/ML Frameworks: TensorFlow, PyTorch, scikit-learn
Data Science Tools: Pandas, NumPy, Matplotlib, Jupyter Notebook
AI APIs: GPT-4 API, Llama-3 API, Hugging Face Transformers
Frontend Technologies: React, Vue.js, Expo
Backend Technologies: Node.js, Express, RESTful APIs
Databases: SQL, MongoDB
Version Control and Collaboration: Git, GitHub, JIRA
Other Tools: Figma, OpenCV, FastAPI