

MAXIMILIAN HUBER

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EDUCATION

Northeastern University, Khoury College of Computer Science

Boston, MA

M.S. in Artificial Intelligence · Current GPA: 3.83 / 4.00

Sep. 2024 – Present

B.S. in Computer Science, Concentration in Artificial Intelligence · GPA: 3.72 / 4.00

Sep. 2020 – Aug. 2024

- **University Honors Distinction:** Awarded to Northeastern University students who have completed six Honors courses or approved experiential learning experiences and maintained a cumulative 3.500 GPA.

SKILLS

Programming: Python, Java, SQL, JavaScript, React Native, TypeScript

Libraries/APIs: TensorFlow, PyTorch, OpenCV, LangChain, LangGraph, LlamaIndex, NLTK, NetworkX

Tools: GitHub, Conda, Poetry, Redis, GCP (Cloud Storage, BigQuery, Firebase), Apache Airflow, Metabase

WORK EXPERIENCE

Northeastern University, Movement Neuroscience Lab

Boston, MA, United States

AI/ML Research Assistant

Mar. 2025 – Present

- Led analysis of muscle synergies using network theoretic methods and graph analysis to inform the creation of digital twins for simulating pathologies and optimizing rehabilitation strategies for stroke patients.
- Constructed multiplex networks from EMG data using Gaussian Copula Mutual Information (GCMI) to quantify muscle activation patterns; applied Stochastic Block Models (SBM) for community detection.
- Applied Non-negative Matrix Factorization (NMF) and implemented constrained clustering algorithms to identify and compare muscle synergy patterns across patient cohorts, enabling detection of abnormal motor patterns.
- Developed Python pipelines for processing high-dimensional EMG signals, performing network analysis with NetworkX, and generating visualizations to support future clinical research and treatment optimization.

Blorm

Remote

AI/ML Engineer

Nov. 2024 – Mar. 2025

- Developed ZerePy, an open-source Python framework for autonomous LLM agents; grew project to 500+ GitHub stars and adoption in multiple hackathons (Sonic Labs DeFAI Hackathon, Solana AI Hackathon).
- Scaled ZerePy into Blormmy, an AI-powered crypto wallet enabling streamlined transfers and swaps.
- Built an autonomous decision graph with LangGraph, enabling AI agents to track decision context, decompose complex tasks, and execute multi-step workflows.

ColIX

Haddonfield, NJ, United States

Full Stack Engineer [Co-op]

Mar. 2023 – Dec. 2023

- Designed and implemented a Retrieval-Augmented Generation (RAG) AI chatbot that answers user queries about trading cards; achieved a 90% reduction in average query time enabling real-time responses in production.
- Created and scheduled Apache Airflow jobs for ETL pipelines, enhancing visual search accuracy and automating AI knowledge index updates to ensure chatbot responses used up-to-date context.
- Leveraged existing SQL data tables to create a KPI dashboard which was used to monitor app growth and marketplace activity in Metabase. Insights were used to identify marketplace trends, modify outreach strategy, and scout ambassador candidates.

PROJECTS

Text-Conditioned Audio Source Separation | PyTorch, CLAP, Multi-head Attention

- Designed and implemented a text-conditioned stem separation model that extends HT-Demucs architecture with cross-modal attention mechanisms, allowing natural language prompts to guide audio source separation.
- Integrated CLAP text encoder with multi-head cross-attention at the bottleneck, attending audio embeddings from time and frequency encoders to text embeddings before reconstruction through dual decoders.
- Achieved performance approaching HT-Demucs (within a few dB SDR) while outperforming CLAPSep baseline; produced qualitatively strong separation results. Led model architecture design and PyTorch implementation.