Brandon Gomes

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EDUCATION

University of Missouri GPA: **3.86** Columbia, MO
BS in **Computer Science** & BS in **Mathematics** Expected Graduation: ***Fall 2026***
MS in **Computer Science** (Accelerated) Expected Graduation: ***Fall 2027***

St. Louis Community College GPA: **3.95** Ferguson, MO
AS in General STEM Graduation: *Spring 2024*

SKILLS & ACTIVITIES

Skills: **AI/ML** (PyTorch, Tensorflow, Scikit, Hugging Face | NLP (SpaCy, NLTK) | LLMs, AI theory), **programming** (Python, C, Java, Assembly, R), **data science** (SQL, Pandas, Numpy, Matplotlib), **infrastructure** (Docker, Azure, Azure ML, AWS, Cloudlab, Fabric, SLURM, OpenStack), **advanced math** (calculus, differential equations, matrix theory, proof, probability)

University Activities: Independent **research** under a faculty mentor: Developing a **theoretical and technical** framework for a **decoupled moral latent space** to achieve **coherent moral reasoning** independent of performance optimization in **LLMs**, addressing the **limitations** in State-of-the-Art alignment methods.

Clubs: Society of Hispanic Professional Engineers (**SHPE**: **VP** & **treasurer**), Mizzou **Computing** Association (**MCA**: **AI/ML**).

WORK EXPERIENCE

TREKK Design Group LLC — St Louis, MO

Intern — *May 2025 – August 2025*

- Developed an **end-to-end CV MVP** for subsurface utility detection using non-invasive geophysical survey data
- Designed **data transformation**, **model architecture**, training pipeline, **logging**, and **tuned hyperparameters**.
- Leveraged **CUDA**-enabled frameworks and NVIDIA **GPUs** for training and inference
- Conducted inquisitive **research**, on-the-job **learning**, **data exploration**, and collected **local STL data**.
- **Collaborated** across disciplines, management, offices, and companies.
- Managed the **version control**, goals, **timeline**, thorough **documentation**, and project description.
- Presented a **technical knowledge transfer** and **stakeholder proposal** for project continuation.
- Acted as a **consultant** for adjacent AI projects both ongoing and inquiries.
- Utilized **Docker containerization** for **Azure ML cloud computing** and **UI** deployment.

Remcam Search Engines (Remcam LLC) — St Louis, MO

Intern — *Sept 2023 – May 2024*

- Collaborated on research and development projects involving Large Language Models (**LLMs**) and Natural Language Processing (**NLP**) using **NLTK**, **SpaCy**, and **Hugging Face**.
- Contributed to **improving medical coding** via applying **vector search** on the ICD-10
- Learned to use **Jupyter Notebook**, **Ubuntu** and Open Search (**Semantic Search** and **Indexing**)
- Taught NLP and **ML libraries** via **project examples** in an **educational series** accessible through **GitHub**.

PROJECT EXPERIENCE

- Understanding Deep Learning by Prof. Simon J.D. Prince: Studied the **math**, **concepts**, and **best practices** behind **deep learning architectures**. (loss, fitting, gradients, initialization, evaluation, regularization, MLP, DNN, CNN, RNN, **Transformers**, GNN, GAN, Normalizing flows, VAE, **Diffusion**, **RL**, ethics)
- Build A Large Language Model by Sebastian Raschka: Reimplemented **ChatGPT II** using **PyTorch** and loaded **OpenAI**'s open-sourced weights.
- AGI Mizzou Hackathon: (Current) Developing custom **LLM** architecture with **vision transformer** embeddings and **adversarial training** for **ARC-AGI-2** benchmark using **AWS HPC** infrastructure.
- MUIDSI Generative AI Hackathon: **Led** developing a **proof-of-concept** multi-objective deep-Q-network (**RL** model) for **improving infrastructure**.
- DataFest Mizzou: Developed an **EM** model in **R** to identify influential factors toward behavioral **trends** in **real-world data**.