

# Charles Kotula

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**Mission-driven Biomedical Data Science MS student (Dec. 2025 graduation) with strong software development experience, specializing in machine learning and electronic health record (EHR) data. Passionate about building scalable systems that save lives. Seeking an AI/ML Developer role where I can implement innovative solutions for mission-driven teams.**

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## Education

**University of Wisconsin – Madison:** M.S. in Biomedical Data Science – Dec 2025 (expected) – 3.86 GPA

**University of Wisconsin – Madison:** B.S. in Computer Science and Neurobiology – May 2024 – 3.86 GPA

## Skills

- **Languages:** Python, JavaScript/TypeScript, Java, SQL, Bash
- **Frameworks & Libraries:** PyTorch, TensorFlow, Keras, NumPy, Pandas, React, FastAPI,
- **Tools:** Git/GitHub/GitLab, AWS, Wandb, Docker, Apache, Azure DevOps

## Experience

**Research Assistant – ICU Data Science Lab – University of Wisconsin – Madison** Spring 2024 – Fall 2025

- Designed and implemented multimodal deep learning pipelines to predict clinical deterioration
- Built with tools including PyTorch, TensorFlow, Keras, HuggingFace, and Docker
- First-author publication in JMIR on parameterization methods for unstructured EHR data
- Worked closely with a team of domain experts to devise and carry out cutting-edge research

**Information Technology Intern – West Bend Mutual Insurance** Summer 2023

- Implemented front-end and back-end solutions using tools including React TS, C#, SQL, and Azure
- Collaborated with a fast-paced Agile team to move software solutions to production

**Undergraduate Research Assistant – Suzuki Lab – University of Wisconsin – Madison** Fall 2023

- Photographed and analyzed cross sections of spinal cords to investigate motor neuron characteristics in ALS
- Collaborated on a paper published in Frontiers in Neuroscience

**Undergraduate Research Assistant – Plante Lab – University of Wisconsin – Madison** Spring 2023

- Clean and analyze actigraphy data to compare healthy controls to participants with reported hypersomnia
- Learned to conduct Pupillography and the Psychomotor Vigilance Test used to assess participant alertness

## Projects

**Pathology Foundation Model Fine-Tuning & Evaluation** Fall 2025 – Present

- Fine-tuning a pathology foundation model from Kaggle using PyTorch's distributed training with AWS GPUs
- Exploring model performance under various conditions to evaluate its strengths and weaknesses

**Muse ([muse.charliekotula.com](https://muse.charliekotula.com)) – AI Music Improvisation App** Summer 2025 – Present

- Developed a TypeScript/Python web app that offers AI-based music improvisation using FastAPI and React
- Integrated Spotify's Basic Pitch (audio-to-MIDI) and TensorFlow Magenta models for real-time interaction

## Leadership and Volunteering

**Co-Founder & President – The Alt Protein Project at UW-Madison** Fall 2023 – Spring 2024

- Organized and mobilized student resources on campus to host social events and build a local community
- Developed alternative protein curricula to engage students in related research and careers
- Collaborated with Alt Protein Project chapters worldwide to execute growth strategies

**Volunteer - Perfect Pair UW-Madison** Spring 2022 – Present

- Developed a meaningful relationship with a 96-year-old Danish man through weekly meetings
- Note: Formal association with Perfect Pair ceased in 2022, but meetings are ongoing

**Varsity Athlete and Team Captain (2020) – Orono Alpine Ski Team** Winters 2013 – 2020

- Led by example in sportsmanship, healthy mindset, and work ethic