Matthew Kersting

Machine Learning Engineer

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EXPERIENCE

Booz Allen Hamilton - Arlington, VA (Hybrid) **Jan 2024 - Present**

Machine Learning Engineer (Staff Engineer)

- Engineered a full-stack document management solution deployed via Kubernetes, including backend/frontend development, web server optimization, testing enhancements, and database architecture
- Served as a Data Engineer for a leading Enterprise data platform, leveraging web scraping tools to gather documents, extract metadata, and organize data within AWS. Additionally, managed data cleaning and job automation tasks, ensuring efficient and accurate data processing
- Implemented Security Technical Implementation Guidelines (STIGs) to ensure compliance and help facilitate the attainment of Authority to Operate (ATO)

Noblis - Reston, VA (Hybrid) **Jan 2021 - Dec 2023**

Software Engineer, Machine Learning

- Tech-lead for an R&D project providing computer-vision capabilities to aid child exploitation investigations
- Engineered a secure and scalable Spring Boot web application which productionizes a variety of speech technology and machine learning capabilities to aid in investigative triage
- Led a research initiative focused on developing a Data Lakehouse solution for Noblis, including management of data infrastructure, construction of ETL pipelines, and the deployment of a large language model internally
- Engaged directly with stakeholders, translated feedback into system requirements and helped lead the development of a microservice web application including system design, front-end development, back-end development, data modeling, database design, machine learning model integration and CI/CD integration

Department of Medical Engineering - University of South Florida, Tampa, FL **Jun 2019 – Dec 2020**

Graduate Research/Teaching Assistant

- Performed image segmentation and analysis on biological datasets leading to new principles of neural circuitry
- Mentored multiple undergraduate researchers in the lab and assisted in course delivery

Rockefeller Neuroscience Institute - West Virginia University, Morgantown, WV **Dec 2015 - Jan 2019**

Undergraduate Research Assistant

- Analyzed and quantified large biological image datasets and discovered novel properties of neuronal interactions

EDUCATION

Graduate Certificate in Applied and Computational Mathematics, Johns Hopkins University **May 2024 - Current**

Master of Science in Biomedical Engineering, University of South Florida, Tampa, FL **Aug 2019 - Dec 2020**

Bachelor of Science in Biology, West Virginia University, Morgantown, WV **Aug 2015 - May 2019**

- Emphasis in neuroscience

SKILLS

Functional Skills: Machine Learning, Computer Vision, Full-stack Development, Web Scraping, Data Engineering, ETL, Data Science, Research, Distributed Systems, Database Design, Microservices, REST APIs, Speech Technology, Software Security, AI Integration, Consulting, Mathematics

Programming Languages: Python, Java, Go, JavaScript, Typescript, SQL, C++

Applications: PyTorch, Kubernetes, Docker, Docker Compose, Github Actions, Jenkins, MLFlow, PostgreSQL, Git, Traefik, JUnit, Mockito, Elasticsearch, Kafka, Spark, Hadoop, AWS, Databricks, Apache HTTP server, FastAPI, Springboot, Express.js, React, Scrapy, BeautifulSoup, AWS

PUBLICATIONS

- Kersting, M., Patrikar, A., Schneider., E., Kusunoki-Martin, T., Drumm, A., O'Neil, C. Condition-based Maintenance using Unsupervised Time-series Anomaly Detection. Fleet Maintenance Modernization Symposium 2023 (https://noblis.org/wp-content/uploads/2023/09/CBM_UTSAD_Manuscript_3.pdf)
- George A Spirou, Matthew Kersting, Sean Carr, Bayan Razzaq, Carolyna Yamamoto Alves Pinto, Mariah Dawson, Mark H Ellisman, Paul B Manis (2023) High-Resolution Volumetric Imaging Constrains Compartmental Models to Explore Synaptic Integration and Temporal Processing by Cochlear Nucleus Globular Bushy Cells eLife 12:e83393 (https://doi.org/10.7554/eLife.83393)
- Ashley N. Brandebura, Douglas R. Kolson, Emily M. Amick, Jad Ramadan, Matthew C. Kersting, Robert H. Nichol, Paul S. Holcomb, Peter H. Mathers, Peter Stoilov, George A. Spirou, Transcriptional Profiling Reveals Roles of Intercellular Fgf9 Signaling in Astrocyte maturation and Synaptic Refinement during Brainstem Development, Journal of Biological Chemistry, 2022, 102176, ISSN 0021-9258, https://doi.org/10.1016/j.jbc.2022.102176. (https://www.sciencedirect.com/science/article/pii/S0021925822006184)
- Kersting, Matthew, "Convergence of Auditory Nerve Fibers onto Globular Bushy Cells" (2020). USF Tampa Graduate Theses and Dissertations. https://digitalcommons.usf.edu/etd/9543
- Spirou, G.A., Kersting, M., Ellisman, M., Manis, P.B., Convergence of Auditory Nerve Fibers onto Globular Bushy Cells. Society for Neuroscience Abstract, October 2019.
- Spirou, G.A., Kersting, M., Bayliss, T., Razzaq, B., Holcomb, P., Morehead, M., Spencer, N., Ellisman, M., Manis, P.B., New Principles for Cell and Circuit Function Revealed by Volume Nanoscale Imaging. Experimental Biology (FASEB) V33, No. 1_supplement April 2019