Konnor McDowell

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EDUCATION

PhD in Biomedical Data Science and Informatics — In Progress
Clemson University & The Medical University of South Carolina, SC, USA

Masters in Computer Science — 2024
Clemson University, SC, USA

Bachelor of Science in Biological Sciences — 2020
Clemson University, SC, USA

- *Cum Laude*, General & Departmental Honors

EXPERIENCE

Senior Software Engineer & Data Scientist — Aug 2018 – Present
Performance Depot Inc. d/b/a Headlights.com, Ft. Lauderdale, FL, USA

- Acted as a central technical decision-maker for company-wide requests, directly advising executive leadership.
- Accountable for the design and ongoing operation of Apex-based systems supporting core financial and B2B transaction workflows.
- Supervised versioning and maintenance of 43 enterprise-class software packages and ensured comprehensive unit testing.
- Designed a five-camera three-axis product identification system using Streamlit, AWS-hosted CNN models, and McMaster structural components.
- Built time-series demand models directly informing procurement and cash-flow decisions.

Software Engineer — May 2011 - Aug 2018
Performance Depot Inc. d/b/a Headlights.com, Ft. Lauderdale, FL, USA

- Developed an automated returns-classification and routing pipeline that promoted product recycling and generated incremental revenue.
- Developed RESTful services for abstracting mail communication (Stannp), shipment management and labeling (EasyPost, FedEx), price monitoring and repricing (AWS) and legacy applications (Heroku).
- Developed full-stack internal decision-support tools within Salesforce CRM, including automated billing workflows, cost comparison systems, and logistics optimization utilities.

Research Assistant — May 2017 - Oct 2019
Seattle Children's Research Institute, Seattle, WA, USA
Medical University of South Carolina, Charleston, SC, USA

- Authored and published scripts to streamline routine neuroimaging analyses, significantly reducing measurement biases in common methodologies.
- Assisted in identifying a novel neural mural cell type and its implication in neurovascular pathologies by utilizing longitudinal two-photon microscopy data.

Residential Assistant — Aug 2016 - May 2017
Clemson University, Clemson, SC, USA

- Directly supported ≈40 first-year college students in adjusting to campus life and addressing complex social and personal challenges.
- Managed security and access for four residential buildings, overseeing lock and key systems.
- Initiated and led development of JavaScript/SQLite-based software for tracking and reserving campus leisure items.

PUBLICATIONS

- Wilmskoetter, J., Roth, R., **McDowell, K.**, Munsell, B., Fontenot, S., Andrews, K., Chang, A., Johnson, L., Sangtian, S., Behroozmand, R., & others (2023). Semantic Categorization of Naming Responses Based on Prearticulatory Electrical Brain Activity. *Journal of Clinical Neurophysiology*, 40(7), 608–615.
- **McDowell, K.**, Berthiaume, A.A., Tieu, T., Hartmann, D., & Shih, A. (2021). VasoMetrics: unbiased spatiotemporal analysis of microvascular diameter in multi-photon imaging applications. *Quantitative Imaging in Medicine and Surgery*, 11(3), 969.
- Hartmann, D., Berthiaume, A.A., Grant, R., Harrill, S., Koski, T., Tieu, T., **McDowell, K.**, Faino, A., Kelly, A., & Shih, A. (2021). Brain capillary pericytes exert a substantial but slow influence on blood flow. *Nature neuroscience*, 24(5), 633–645.
- Watson, A., Berthiaume, A.A., Faino, A., **McDowell, K.**, Bhat, N., Hartmann, D., & Shih, A. (2020). Mild pericyte deficiency is associated with aberrant brain microvascular flow in aged PDGFRβ+/- mice. *Journal of Cerebral Blood Flow & Metabolism*, 40(12), 2387–2400.
- Berthiaume, A.A., Grant, R., **McDowell, K.**, Underly, R., Hartmann, D., Levy, M., Bhat, N., & Shih, A. (2018). Dynamic remodeling of pericytes in vivo maintains capillary coverage in the adult mouse brain. *Cell reports*, 22(1), 8–16.

AWARDS & CERTIFICATIONS

Awards

- Medical University of South Carolina Physician's Scholarship, Executive Committee of MUSC Physicians, 2020
- Dean's List, Clemson University, 2016-2020

Certifications

- Computer Hardware and Operating Systems, New York University, 2022
- Data Structures and Algorithms, University of California San Diego, 2022
- Discrete Mathematics, University of California San Diego, 2022
- Object Oriented Programming in Java, Duke University, 2022
- Procedural Programming, Princeton University, 2021
- Linux Commands and Shell Scripting, IBM, 2021

RESEARCH EXPERIENCE

Clemson University, Clemson, SC, USA

- *Dr. Brian Dean* (2022-Present): Programmed and compared multiple modeling approaches (SVM, LSTM, etc) for correlation analysis of Alzheimer's and Traumatic Brain Injury connectomics in U.S. Veterans using rsfMRI graph theory metrics. Satisfied study aims for a Department of Defense grant.
- *Dr. Hudson Smith* (2022-2023): Designed deep convolution video classification models using parallel high-performance computing on the Palmetto Cluster Supercomputer with Jupyter.
- *Dr. Sharron Bewick* (2018-2019): Assisted in the development of regression models for predicting periodical southeastern cicada blooms with respect to climate change.
- *Dr. Richard Blob* (2017-2018): Developed research presentations on comparative vertebrate morphology and assisted in the categorization and MRI imaging of Hawaiian guppy fish.

The Medical University of South Carolina, Charleston, SC, USA

- *Dr. Leonardo Bonilha* (2020-2021): Wrote, prepared, trained, and published MATLAB models to predict phonetic data from electroencephalographic recordings of speech-aphasia patients.
- *Dr. Nathan Rowland* (2020): Contributed towards the engineering of a neural implant for the treatment of abnormal movements associated with Parkinson's, via the prototype programming of a microcontroller.
- *Dr. Arthur Riegel* (2015): Developed project to determine changes in synaptic brain circuitry (specific GPCR changes) involved in reinforcing neuroplasticity responsible for neurological illnesses and addictive behaviors. Performed craniotomies on rodents. Winning presentation of results at the South Carolina Junior Academy of Science.

Seattle Children's Research Institute, Seattle, WA

- *Dr. Andy Shih* (2016-2021): Wrote extensive applications in multiple languages for use to ease rote analysis of neurovasculature 2-photon microscopy. Published novel software and integrations into ImageJ. Investigated micro-infarcts and the dynamics of pericytes with regards to cerebrovascular flow.

ACTIVITIES

Conferences

South Carolina Alzheimer's Disease Research Center 2024

→ Functional Connectivity and Shared Brain Network Patterns in Alzheimer's Disease and Traumatic Brain Injury

South Carolina Junior Academy of Science 2016

→ Differential Effects Of Mpep+Jnj-16259685 Micro-injections Into The V.T.A. On Cocaine-Induced Locomotor Sensitization In Saline-Exposed Rats And Rats With Repeated Traumatic Predator Odor Exposure

Community Involvement

Chair of Finance Committee & Treasurer	Clemson Graduate Student Government	2025-2026
Senator	Clemson Graduate Student Government	2023-2024
Judge	VEX U Robotics	2023
Co-Founder	Neuroscience Club of Clemson University	2018-2020
Vice President	TigerRPG	2018-2020
Official	CUSG Sustainability Committee	2017-2020
Founder	Clemson Gardening Club	2016-2020
Volunteer	Anderson Free Clinic	2018
Volunteer	Clemson Landscaping Restoration	2018
Representative	Clemson's Provost Commission on Sustainability	2017
Outreach Chair	Residential Life Ecological Representatives	2016-2018
Governor	Clemson Holmes/McCabes Community Council	2016-2017

SKILLS

Non-exhaustive list for brevity; please ask about any unlisted skills.

Apex, Visualforce	Python	Numpy, Scipy	PyTorch, Scikit	TensorFlow
JavaScript	Kubernetes, Docker	SQL	LaTeX	Streamlit
C#, C++, C	Neo4J	MATLAB	Java	R
Angular	SHAP, Lime, etc	Jupyter	SLURM, PBS	HTML, CSS
AWS	Arduin, Pi	Lua	React	Go

REFERENCES

Public access: references available only upon request.