Naveen Kannan

RESEARCH ASSOCIATE

Cleveland, Ohio | United States Permanent Resident

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Data Scientist experienced with automating and building scientific workflows, data analysis, visualization and Data Engineering. I have a strong passion for innovation and problem solving. I enjoy learning new skills and blogging about them on my website.

Work Experience

Research Associate *Cleveland, Ohio*
POPULATION HEALTH AND QUANTITATIVE HEALTH SCIENCES, CASE WESTERN RESERVE UNIVERSITY *MAY 2023 - Present*

- Engineered Mamba-driven Docker/Singularity containers, **reducing build times by 3x**, transferred Docker storage cache to a physical hard drive, eliminating future storage errors, and created Dockerized servers with Data Science/ Bioinformatics tools installed.
- Established, configured, and maintained VM and Raspberry Pi bare-metal servers, documenting the set-up, and automated the deployment of **HDFS, YARN, Hadoop and Spark/PySpark** on them along with **bioinformatics (Hail, Glow) tools** using Ansible scripts.
- Collaborated with the Alzheimer's Disease Sequencing Project, annotating and scoring **362 million structural genetic variants linked to Alzheimer's Disease**, followed by statistical analysis and presentation of findings at the ASHG (American Society of Human Genetics) Conference in Washington DC (November 2023).

Graduate Research Assistant *Cleveland, Ohio*
POPULATION HEALTH AND QUANTITATIVE HEALTH SCIENCES, CASE WESTERN RESERVE UNIVERSITY *JANUARY 2023 - MAY 2023*

- Engineered Docker containers for streamlined deployment of specialized R packages and Python modules, optimizing analyses for single-cell RNA datasets.

Graduate Research Assistant *Cleveland, Ohio*
GIS HEALTH AND HAZARDS LAB, SCHOOL OF MEDICINE, CASE WESTERN RESERVE UNIVERSITY *MAY 2022 - DECEMBER 2022*

- Automated GPS coordinate extraction from **geospatial video feeds** of refugee camps in the Democratic Republic of Congo post Mt Nyiragongo's eruption using Python scripts.
- Processed data, **implemented ML algorithms for tent detection** along with GPS coordinates, and **generated heat maps** to map refugee migration patterns, contributing to a peer-reviewed publication manuscript.

Junior Resident Doctor *Chennai, India*
DEPARTMENT OF PSYCHIATRY, SAVEETHA MEDICAL COLLEGE *JULY 2020 - SEPTEMBER 2020*

- Evaluated and diagnosed psychiatric illnesses in stressful environments, and met the assigned goal of management of five patients per day.

Junior Resident Doctor *Chennai, India*
MADRAS MEDICAL COLLEGE *MARCH 2019 - MARCH 2020*

- Rotated through the following departments: Internal Medicine, General Surgery, Obstetrics and Gynecology, Community Medicine, Psychiatry, Emergency Trauma Ward, Labor Ward.

Skills

Operating Systems	Programming Languages	Software	Geospatial Analytics	Markup Languages	Version Control	Python-based skills	Bioinformatics Tools
Unix, Debian Linux, Fedora Red Hat Linux, Windows 11	Python, R, Bash, SQL	Hadoop/Spark, Hive, Jupyter, Docker, Singularity, SLURM, Ansible	Geopandas, sf(R), QGIS, ArcGIS	LaTeX, Markdown, RMarkdown	Git, GitHub, gh client	PySpark, Tensorflow, Pytorch, pandas, scikit-learn, numpy, scipy	samtools, BCFtools, HTSlib, Tabix

Education

MSc in Biomedical and Health Informatics *Cleveland, Ohio*
CASE WESTERN RESERVE UNIVERSITY *JANUARY 2022 – AUGUST 2023*

- GPA-3.9

Bachelor of Medicine and Bachelor of Surgery *Chennai, India*
MADRAS MEDICAL COLLEGE *SEPTEMBER 2016 - MARCH 2020*
- GPA-4.0

Leadership

Steiner House International Co-op *Cleveland, Ohio*
VICE PRESIDENT, ADMISSIONS MANAGER, AND ORDERING MANAGER *MAY 2022 - OCTOBER 2022*
- Spearheaded integration initiatives for new residents, fostering community through monthly social events, collaborating with the executive board to ensure effective daily house management and organizing inclusive monthly events.
- Screened and interviewed prospective residents, communicated results transparently, admitted diverse global graduate students, and facilitated seamless onboarding for 8 students at Steiner House.
- Managed inventory for Steiner House (capacity: 21 students), ensuring a continuous supply of consumables and non-consumables for smooth operations.

Projects

Mapping the Environmental Impact of the Norfolk Southern Train Derailment in Ohio. *Case Western Reserve University*
HTTPS://NAVEEN-KANNAN.SHINYAPPS.IO/FINAL_EAST_PALESTINE_DASHBOARD_2 *2023*
- Developed scripts to scrape air and water quality data from USGS and AirNow AQI for counties within a 30-mile radius of a train derailment, creating an interactive Shiny dashboard in R for users to explore and analyze daily trends in Ohio, West Virginia, and Pennsylvania during January and February 2023.

Data Science Blog *Cleveland, Ohio*
HTTPS://NAVEENKANNAN.NETLIFY.APP/BLOG_MAIN.HTML *2022*
- Authored tutorials on topics ranging from Docker/Singularity container creation to data engineering tutorials on setting up Spark and Hadoop.

Publications

- Jayakrishnan Ajayakumar [a], Andrew J. Curtis [a], Felicien Maisha [b], Sandra Bempah [c], Afsar Ali [b,d], J. Glenn Morris Jr. [b,e], **Naveen Kannan** [a], and Grace Armstrong [a], [a]Department of Population and Quantitative Health Sciences, School of Medicine, Case Western Reserve University, Cleveland, Ohio, USA; [b]Emerging Pathogens Institute, University of Florida, Gainesville, Florida, USA; [c]Department of Geography, Kent State University, Kent, Ohio, USA; [d]Department of Environmental & Global Health, College of Public Health and Health Professions, University of Florida, Gainesville, Florida, USA; [e]College of Medicine, University of Florida, Gainesville, Florida, USA, Using Spatial Video and Deep Learning for Automated Mapping of Relief Camps. [Manuscript under review]

- **N. Kannan**[1], N. Wheeler[1], Genome Center for Alzheimer's Disease, L-S. Wang[2], Y. Leung[2], W. S. Bush[1]; [1]Cleveland Inst. for Computational Biology, Dept. for Population and Quantitative Hlth.Sci., Case Western Reserve Univ., Cleveland, OH, [2]Dept. of Pathology and Lab. Med., Penn Neurodegeneration Genomics Ctr., Perelman Sch. of Med., Univ. of Pennsylvania, Philadelphia, PA., Annotation and scoring of the deleteriousness of individual genetic variants in the 4th release of the Alzheimer's Disease Sequencing Project;(PB4451). Presented at the Annual Meeting of The American Society of Human Genetics, November 3, 2023, in Washington DC.

- Suebsarn R., W. T., **Naveen K**., Ellis W., Atsadaporn N., Chitchanok B., Chantira C., Christine S., Heba A. Using regression analysis and machine learning approach to understand the association between comorbidities, medication nonadherence, activity of daily living, and heart condition status among older adults in the United States. [Manuscript under review]

- Segamalai, D., Abdul Jameel, A. R., **Kannan, N**., Anbalagan, A., Duraisamy, B., Raju, P., & Devy Gounder, K. (2017). Mediastinal pseudocyst: varied presentations and management—experience from a tertiary referral care centre in India. *HPB Surgery*, *2017*.

- Vellaisamy, R., **Kannan, N**., Anbalagan, A., Raju, P., Duraisamy, B., Murugesan, C. S., & Gounder, K. D. (2016). Endoscopic access to hepatic duct through duodenum during follow up–after primary surgery for hepatolithiasis. *HPB*, *18*, e530.

- Ramasamy, V., Vellaisamy, R., **Kannan, N**., & Gounder, K. D. (2016). Refined technique of access loop in hepatobiliary surgery. *HPB*, *18*, e593-e594.

- **Kannan, N.**, Vellaisamy, R., Govindarajan, M., & Gounder, K. D. (2016). Pellagra following pancreaticoduodenectomy for malignant pancreatic carcinoid with pluripotent hormonal potential. *HPB*, *18*, e381-e382.