Naraen Palanikumar

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Summary

Highly motivated Bioengineering graduate student with a strong background in computational biology, data analysis, and inter-disciplinary research. Proficient in applying and developing bioinformatics and statistical methods for complex biological datasets, including high-throughput sequencing and physiological data. Experienced in utilizing Python, R, cloud computing platforms, and high-performance computing environments. Proven ability to contribute to research publications, develop analytical tools, and collaborate effectively within scientific teams. Eager to leverage expertise in bioengineering, data science, and research methodologies to drive innovation.

Education

University of Illinois at Urbana-Champaign **Aug 2023 - May 2024**
Master of Engineering (M.Eng.), Bioengineering *Champaign, IL*

University of Illinois at Urbana-Champaign **Aug 2019 - May 2023**
Bachelor of Science (B.S.), Bioengineering *Champaign, IL*

Experience

Malloy Lab, Uniformed Services University of the Health Sciences **Oct 2024 - Jun 2025**
Bioinformatics Research Assistant *Bethesda, MD*

- Investigated respiratory infectious diseases and their progression through advanced bioinformatic analyses, leading to improved understanding of disease mechanisms
- Processed incoming biological samples for flow cytometry and single-cell RNA sequencing immediately upon arrival, ensuring high-quality data for subsequent analyses.
- Contributed to the analysis and interpretation of large-scale transcriptomic datasets, preparing findings for publication.

Carle Foundation Hospital, Emergency Department **Sep 2023 - Jul 2024**
Healthcare Technician *Champaign, IL*

- Performed critical patient care tasks, including EKGs, blood collection, and urinalysis.
- Facilitated seamless information flow between patients and providers in a fast-paced environment.
- Managed patient requests and assisted in various emergency department sections, from triage to specialized EKG technician roles.

Sweeney Lab, University of Illinois at Urbana-Champaign **Aug 2021 - Jun 2023**
Undergraduate Research Assistant *Champaign, IL*

- Utilized R and Python to analyze single-cell RNA sequencing (scRNAseq) and fiber photometry data, transforming raw data into actionable biological insights.
- Developed an interactive analytical application for fiber photometry data, significantly enhancing lab efficiency and data processing capabilities.
- Co-authored a peer-reviewed publication in The Journal of Neuroscience, demonstrating strong data interpretation and scientific communication skills.

IEMS **Jan 2022 - May 2023**
Emergency Medical Technician (EMT-B) *Champaign, IL*

- Provided immediate medical response and direct patient care at university athletic and cultural events, ensuring smooth operation and expedient care.
- Maintained meticulous records of incidents and managed essential medical equipment.

Thom Lab **May 2020 - Aug 2020**
Research Assistant *Wheaton, IL*

- Conducted a meta-analysis of 54 studies using R programming, involving data extraction, transformation, and statistical analysis.
- Developed a comprehensive seven-part video series to document analytical methods and workflows, ensuring reproducibility and facilitating training for future lab members.

Technical Skills

- **Programming Languages**: R, Python, Shell Scripting, SQL
- **Bioinformatics & Data Analysis**: High-Throughput Sequencing Data Analysis, scRNAseq, Physiological Data Collection & Analysis, Statistical Modeling, Algorithm Development, Data Transformation & Engineering, Data Visualization, Metadata Capture
- **Computing Environment**: UNIX/Linux, High-Performance Computing (HPC) systems, 10x Genomics platform, Cloud Platforms, GCP
- **Bioinformatics Tools & Workflows**: Seurat, 10x Genomics Pipeline, Open-Source Bioinformatics Tools
- **Laboratory Skills**: Biological Sample Processing, Flow Cytometry
- **Software**: MS Office Suite, Google Suite

Awards & Recognition

- **National AP Scholar:** May 2019
- **USA Biology Olympiad Semifinalist:** April 2018
- **National Merit Scholarship Finalist:** February 2019

Publications

- Dajin Cho, Kyle O'Berry, Ingrid Camila Possa-Paranhos, Jared Butts, Naraen Palanikumar, and Patrick Sweeney.Paraventricular Thalamic MC3R Circuits Link Energy Homeostasis with Anxiety-Related Behavior.This paper elucidates a novel neurobiological pathway in which a specific population of neurons acts as a crucial link between energy regulation and anxiety. These findings offer a new understanding of how metabolic states can directly influence behavior, with significant implications for both obesity and psychiatric research. My primary contribution to this paper was the development of an interactive analytical application using R with an R Shiny external interface. This tool was used to more efficiently process and analyze fiber photometry data, which transformed raw data into actionable biological insights through figures presented in the publication.

Languages

- English (Fluent)
- Spanish (Professional)