Sambit Panda

Baltimore, MD 21218 | US Citizen

919-637-6272 | spanda3@jhu.edu | linkedin.com/in/sampan501 | github.com/sampan501 | sampan.me

SUMMARY

- PhD candidate with experience in data science, machine learning, neuroscience, and genomics
- Author of 11 publications (h-index: 6)
- Interdisciplinary collaborator with experience working in clinical and translational settings

WORK EXPERIENCE

NeuroData, Johns Hopkins   **Jan 2019 – Present**
Graduate Researcher   *Baltimore, MD*

- Wrote 9 publications related to hypothesis testing, causal inference, and random forest extensions.
- Developed and maintained hyppo (about 50 users and 200 stars) and scikit-tree (about 50 stars) open-source Python software packages and ported some algorithms in SciPy.
- Presented work at top conferences like the BRAIN Initiative meeting and chaired/reviewed for the SciPy conference.
- Reviewed a paper for the SoftwareX journal, advised the venture capitalist firm A-Level Capital, and was a TA for the NeuroData Design I & II research class for two years.

Neurobehavioral Core, NIEHS   **May 2023 – Jul 2023**
Data Science Intern   *RTP, NC*

- Applied algorithms from my PhD work that discovered new relationships in the data; got 1st place at the poster conference for work.
- Wrote 2 publications related to neuroscience and a R package.

Sombers Lab, NC State   **Jan 2015 – May 2018**
Research Assistant   *Raleigh, NC*

- Created a new electrochemical sensor and wrote paper about it in ACS Analytical Chemistry.
- Investigated the chemical basis of abnormal involuntary movements (AIMs) during Parkinson's Disease.
- Presented research at top conferences like society of neuroscience (SfN) and Pittcon.
- Analyzed data and engineered numerous solutions for numerous additional projects.

Burleson Research Technologies   **May 2015 – Sep 2015**
Intern   *RTP, NC*

- Tested pharmaceutical drugs on rats and mice through various methods such as oral gavage, *i.p.*, and *i.v.*
- Helped lab run under good laboratory practices.

Developmental Neurobiology Group, NIEHS   **Jun 2013 – Jan 2014**
Research Assistant   *RTP, NC*

- Trained in several basic genetics and neuroscience techniques such as PCR, gel electrophoresis, etc.

PROJECTS

scikit-tree | *Python, Cython, GitHub Actions*   **2023 – Present**

- Helped develop the package for extensions of scikit-learn decision trees (about 50 stars).

hyppo (originally mgcpy) | *Python, CircleCI, Netlify, Codecov, AWS, Azure*   **2018 – Present**

- Developed and maintained a comprehensive multivariate hypothesis testing package in Python (about 50 users and 200 stars).

FiPhA | *R, Shiny*   **2023**

- Helped develop one of the most robust and user-friendly packages for fiber photometry analysis.

scipy.stats.multiscale_graphcorr | *Python, Cython*   **2019**

- Added Multiscale Graph Correlation, a powerful multivariate independence test, to SciPy (the first such test).

SKILLS

Languages: Python, R, MATLAB, JavaScript, HTML/CSS, C/C++, Java
Developer Tools: Git, Docker, CircleCI, TravisCI, Codecov, Coveralls, AWS, Azure, VS Code
Libraries: pandas, NumPy, SciPy, Matplotlib, seaborn, scikit-learn

EDUCATION

Johns Hopkins University — **Baltimore, MD**
PhD, Biomedical Engineering — *2020 – Present*
MSE, Biomedical Engineering — *2018 – 2020*

NC State University & UNC Chapel Hill — **Raleigh & Chapel Hill, NC**
BS, Biomedical Engineering & Biology — *2014 – 2018*

SELECT PUBLICATIONS (5 of 11)

1. Shen, C., **Panda, S.**, & Vogelstein, J. T. (2022). The Chi-Square Test of Distance Correlation. *Journal of Computational and Graphical Statistics*, *31*(1), 254–262. https://doi.org/10.1080/10618600.2021.1938585
2. **Panda, S.**, Palaniappan, S., Xiong, J., Bridgeford, E. W., Mehta, R., Shen, C., & Vogelstein, J. T. (2021). *hyppo: A Multivariate Hypothesis Testing Python Package* (arXiv:1907.02088). arXiv. https://doi.org/10.48550/arXiv.1907.02088
3. **Panda, S.**, Shen, C., Perry, R., Zorn, J., Lutz, A., Priebe, C. E., & Vogelstein, J. T. (2021). *Nonpar MANOVA via Independence Testing* (arXiv:1910.08883). arXiv. https://doi.org/10.48550/arXiv.1910.08883
4. Shen, C., **Panda, S.**, & Vogelstein, J. T. (2020). *Learning Interpretable Characteristic Kernels via Decision Forests* (arXiv:1812.00029). arXiv. https://doi.org/10.48550/arXiv.1812.00029
5. Wilson, L. R., **Panda, S.**, Schmidt, A. C., & Sombers, L. A. (2018). Selective and Mechanically Robust Sensors for Electrochemical Measurements of Real-Time Hydrogen Peroxide Dynamics in Vivo. *Analytical Chemistry*, *90*(1), 888–895. https://doi.org/10.1021/acs.analchem.7b03770

SELECT PRESENTATIONS (6 of 21)

1. **Panda, S.**, Wilson, L. R., Stallone, J., Kendricks, D., Stevanovic, K., & Cushman, J. D. (2023, July). *Elucidating Relationships within Neurological Screening Batteries via Random Forest-Based Hypothesis Testing* [Poster Presentation] RTP, NC, USA.
2. **Panda, S.**, Shen, C., Perry, R., Zorn, J., Lutz, A., Priebe, C. E., & Vogelstein, J. T. (2022, January). *Nonparametric MANOVA via Independence Testing* [Oral Presentation]. Global Young Scientists Summit, Virtual. https://www.youtube.com/watch?v=rJyuTwkgfjQ
3. **Panda, S.**, Shen, C., Perry, R., Zorn, J., Lutz, A., Priebe, C. E., & Vogelstein, J. T. (2021, June). *Nonparametric MANOVA via Independence Testing* [Poster Presentation] BRAIN Initiative Meeting, Virtual.
4. **Panda, S.**, Wilson, L. R., & Sombers, L. A. (2018, February). *Hydrogen peroxide-specific sensors for In vivo measurements using carbon-fiber microelectrodes* [Poster Presentation] Pittcon, Orlando, FL, USA.
5. Wilson, L. R., **Panda, S.**, & Sombers, L. A. (2017, November). *Hydrogen peroxide-specific sensors for In vivo measurements using carbon-fiber microelectrodes* [Poster Presentation] Society for Neuroscience, Washington, DC, USA. https://www.abstractsonline.com/pp8/index.html#!/4376/presentation/19683
6. **Panda, S.**, Wilson, L. R., Schmidt, A. C., & Sombers, L. A. (2016, November). *Multiple sources contribute to extracellular H2O2 dynamics in the striatum* [Poster Presentation] Society for Neuroscience, San Diego, CA, USA. https://www.abstractsonline.com/pp8/index.html#!/4071/presentation/22335

AWARDS & HONORS

Computational Biology Fellowship, *Johns Hopkins University*	**2020**
AWS IMAGINE Grant, *Amazon Web Services* (Supported the mgcpy (now hyppo) package)	**2018**
Magna Cum Laurde, *NC State University*	**2018**
University Honors Program, *NC State University*	**2018**
Dean's List, *NC State University*	**2014 – 2018**
Enrichment Grants, *Goodnight Scholars Program, NC State University*	**2014 – 2018**
Goodnight Scholarship, *NC State University*	**2014**
National Merit Corporate Scholarship, *National Merit Scholarship Corporation*	**2014**