FLYNN O'CONNELL

Neuroscientist | Software Developer

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Summary: Experienced Neuroscientist and Software Developer with a strong background in scientific computing, image analysis, and data processing. Expertise in Python, C/C++, MATLAB, and Java, with a focus on quantitative and mathematical skills. Proficient in machine learning, particularly spike-distance and deep learning frameworks. Passionate about learning, improving, and staying at the forefront of emerging technologies and scientific theory.

WORK EXPERIENCE

Research Scientist
Binghamton University **December 2018 - Present Date. Binghamton, NY**

- Responsible for processing and analysis of one-photon calcium imaging, optogenetic and electrophysiological datasets.
- Developed C++ and Python API for crosstalk between neuroimaging systems (Inscopix and Plexon Data Acquisition Systems).
- Integrated, validated, and documented complex codebases for processing intricate datasets, emphasizing comprehensive documentation and code quality.
- Deployed and maintained version-controlled libraries in Python, C++, and MATLAB to streamline code management and facilitate collaboration.
- Built machine learning models utilizing TensorFlow and SciKit-learn Python libraries for advanced data analysis, focusing on image processing and classification.
- Developed an algorithm to use Victor/Purpura spike distance information as a classification task.
- Enhanced the performance of legacy applications by optimizing SQL queries and implementing vectorization techniques.
- Created multiple data-processing repositories using Python and C++ to support various neuroimaging research initiatives, contributing to the advancement of knowledge in the field.

PROJECTS/PORTFOLIO

Calcium Imaging Data Analysis Package (Python, C++) **https://github.com/NeuroPyPy/CalciumAnalysis**
- Process, load and integrate large multi-faceted dataset for statistics and visualization.
- Preprocess dataset for outliers, trends, and deviations.

Neuroexplore (Python, C++) **https://github.com/NeuroPyPy/Neuroexplore**
- An interactive data visualization and exploration tool for neuroscience data.
- Provides real-time analysis and visualization of neural activity.

Metric-Space-Analysis (Python, C, MATLAB) **https://github.com/NeuroPyPy/Neuroexplore**
- Software to calculate distance matrix given point-process spike trains.
- Calculates theoretical information from spike timing to be used in classification.

Web-dataviewer (JavaScript, Python) **https://github.com/NeuroPyPy/web-dataviewer**
- Web-based data visualization and sharing template.
- Used to build locally hosted data sharing websites.

EDUCATION

Bachelor of Science in Integrative Neuroscience & Psychology
State University of New York at Binghamton, 2018 | Dean's list | Presidents Award

TECHNICAL SKILLS

Languages: Python, SQL, Java, C++, JavaScript, MATLAB, HTML, CSS

Frameworks: Node.js, Flask, TensorFlow, ReactJs, WebGL, Docker

Databases: Oracle, MySQL, Google Cloud

Other: Git, Linux/Unix, Bash, Shell