Tony Kabilan Okeke

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Education

Drexel University — **Philadelphia, Pennsylvania**
Master/Bachelor of Science in Biomedical Engineering — *Anticipated Graduation: June 2024*
Concentrations: Biomedical Informatics & Neuroengineering — *Cummulative GPA: 4.00*
Minor: Computer Science

Experience

Invenio Lab, Hospital of the University of Pennsylvania — **March 2021 – Present**
Immunology Research Assistant — *Philadelphia, Pennsylvania*

- Developed SOPs and conducted assays for the isolation and extraction of DNA, RNA, and protein from human blood and urine samples, as well as the preparation of Next-Generation Sequencing Libraries for Reduced Representation Bisulfite Sequencing.
- Utilized *Scikit-learn*, *Pandas* and *NumPy* to apply unsupervised learning algorithms to clinical and multi-omic datasets, and presented results to colleagues using *Seaborn* in *Jupyter* notebooks.
- Developed *R* scripts for analyzing protein expression and clinical data from electronic medical records.
- Performed differential methylation, KEGG pathway enrichment, and Gene Ontology analysis on microarray results for patients who underwent cardiopulmonary bypass surgeries using *bash* and *R* scripts.

Zhou Lab, Children's Hospital of Philadelphia — **May 2020 – June 2021**
Undergraduate Research Intern — *Philadelphia, Pennsylvania*

- Contributed to the development of R packages for analyzing DNA methylation levels in data from Illumina microarrays.
- Validated R package performance using *GEO* public datasets.

Projects

Bicepital Groove Modelling GUI | *MATLAB, AppDesigner* — **Ongoing**

- Developing MATLAB-based GUI for analyzing ultrasound images of the bicepital grooves of baseball players.
- Utilizing image segmentation to reconstruct a 3D-model of each player's bicepital groove.

Well Plate Management GUI | *Python, Qt* — **July 2021**

- Utilized the Qt framework and *PyQt5* to design a GUI for generating and managing layouts for 96 and 384-well plates used for conducting DNA and ELISA assays.
- Processed user supplied data to generate excel files containing plate layouts and sample information using *pandas* and *openpyxl*.

ELISA Analysis Tool | *R, Shiny* — **September 2021**

- Processed Optical Density values from microplate readers using *tidyverse* packages.
- Developed *R* script for fitting OD values for ELISA standards to a 5-Parameter logistic regression model to estimate unknown sample concentrations.
- Built interactive web-application for ELISA curve fitting using the *RShiny* framework.

Portable Airborne Isolation for COVID-19 Patients | *MATLAB, Simulink, Fusion 360* — **September 2020**

- Utilized Gantt Charts to manage agile workflow for designing, building and testing the a prototype.
- Used ODEs to model airflow through system, and evaluated model performance using *MATLAB* and *Simulink*.
- Designed CAD models for system in *Fusion 360* and performed verification tests on prototype.

Technical Skills

Programming Languages: Python, R, Bash, MATLAB, SQL, AWK, PHP
Software & Tools: Microsoft Office Suite, GitHub, LoggerPro, Simulink, Fusion 360
Laboratory Skills: qPCR, RT-PCR, Bisulfite Conversion, Genomic DNA & RNA Extraction, Electophoresis, ELISA

Publications

- *Longitudinal urinary biomarkers of immunological activation in covid-19 patients without clinically apparent kidney disease versus acute and chronic failure.* Scientific Reports 11, 19675 (2021).
- *Unbiased Analysis of Temporal Changes in Immune Serum Markers in Acute COVID-19 Infection With Emphasis on Organ Failure, Anti-Viral Treatment, and Demographic Characteristics.* Frontiers in Immunology 12:650465 (2021).

Activities

- Project Manager, *Drexel Computational Design*, March 2021 - Present
- Member, *American Society of Mechanical Engineers*, June 2020 - Present
- Member, *Drexel Biomedical Engineering Undergraduate Association*, September 2019 - Present