

# TONY KABILAN OKEKE

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## EDUCATION

### Drexel University

Master/Bachelor of Science in Biomedical Engineering

Concentrations: Biomedical Informatics & Neuroengineering

Minor: Computer Science

Philadelphia, Pennsylvania

Anticipated Graduation: June 2024

Cummulative GPA: 4.00

## 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

### Bicepatal Groove Modelling GUI | MATLAB, AppDesigner

Ongoing

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