# Xinyue Wang

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## Research Experience

**Laboratory of Medical Informatics & Neural Dynamics** Sept. 2019 – Jan. 2021

*Brain-Computer Interface System Developer* GD, CN

- Developed a **Python based real-time visualization tool** for visualizing and storing brain signal on the host computer
- Developed a **multi-module C++ based real-time Neurofeedback system** on OpenBCI(the slave microcomputer) including modules of data processing, data storage, phase decoding, visual stimulus
- Designed and conducted comparison tests to quantify the intensity and depth of the system's modulation of brain wave, which was **improved 55.6%** compared to previous research
- Formally presented research outcome on the 9th International Conference of Bioinformatics and Biomedicine, and published an **research paper** as the first author

## Projects

### Finger Flexion Angle Prediction

- Built an analysis pipeline to automatically predict what finger flexion angles patient wants for his/her ten fingers respectively.
- Designed comprehensive feature engineering based on complex brain wave data, as well as developed Logistic Regression Weighted Random Forest algorithm to improve prediction according to specific sample distribution.
- **Top 5 Solution**; achieved **52.8%** and **46.7%** correlation on the public leaderboard and private leaderboard.

### Google - Hindi and Tamil Question Answering

- Led teammates to collect external data and processed long Hindi and Tamil text like data cleaning and augmentation.
- Conducted multi-task pre-training and fine-tuning based on XLM-RoBERTa, distilled and ensembled 16 models by sentence-level log weighted to automatically answer questions in Hindi or Tamil language.
- **Kaggle Silver Medal Solution**; Achieved **74.2% Jaccard score** on private leaderboard, ranking **Top 39/959**

### Sartorius - Cell Instance Segmentation

- Secondarily pretrained Cascade R-CNN on LIVECell data and leveraged semi-supervised learning technique to improve the robustness of pretrained model with 3 rounds of pseudo labels.
- Prototyped the neuronal cells instance segmentation pipeline based on the pretrained model, and designed class-wise instance post-process methods to better recognize different kinds of cells according to data distribution.
- **Kaggle Silver Medal Solution**; Achieved **34.5% mAP score** on private leaderboard, ranking **Top 17/1559**.

## EDUCATION

**University of Pennsylvania** Sept. 2021 – May. 2023

*Master of Engineering in Bioengineering* PA, US

- **Coursework**: Applied Machine Learning, Deep Learning for Data Science, Graph Neural Network

**Shenzhen University** Sept. 2017 – May. 2021

*Bachelor of Engineering in Biomedical Engineering* GD, CN

- **Coursework**: Data Structures, Object-Oriented Programming, Python Programming, Scientific Computation, Probability and Statistics, Linear Algebra

## SKILLS

**Languages** : Python, Matlab, C++, C, MySQL

**Tools** : Sklearn, Pytorch, Latex, Tableau, Microsoft Office Suite, SPSS

**Others** : Kaggle Expert (https://www.kaggle.com/charonwangg)