

# Mengyu (Jack) Zhang

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## EDUCATION

### University of Southern California

Los Angeles, CA | 2019 - 2022

BS IN COMPUTER SCIENCE (GPA: 3.75/4)

**Courses:** Machine Learning, Artificial Intelligence, Software Development, Discrete Math, Advanced Data Structures & Algorithms, Probability Theory, Computer and Network Security

### University of California, Berkley

Berkley, CA | Summer 2019

SUMMER PROGRAM

**Courses:** Intro to Machine Learning, Linear Algebra, Operating Systems and Networking

### University of California, Merced

Merced, CA | 2018 - 2019

BS IN COMPUTER SCIENCE AND ENGINEERING (GPA: 3.75/4)

**Courses:** Data Structures & Algorithms, Calculus, Computer Architecture, Computer Organization

## RESEARCH EXPERIENCE

FOR MORE ON MY RESEARCH EXPERIENCE, VISIT [JACKZHANG.ME/RESEARCH](http://JACKZHANG.ME/RESEARCH)

### CHILDREN'S HOSPITAL LOS ANGELES, LEVITT LAB | RESEARCH SCHOLAR

CA | Since Jan 2021

- Under supervision of Dr. Pat Levitt and Dr. Sahana Nagabhushan Kalburgi
- Machine Learning research and neuroscience training with a focus on EEG data, computer vision, and signal processing.
- Primary goal: analyze and eliminate unwanted noise/artifacts from EEG data, build an ML pipeline eliminates/corrects unwanted noise from EEG data (artifact rejection/correction) with an emphasis on samples collected from new borns/babies
- Some major projects I've worked on/lead include:
  - EEG movement artifact analysis and rejection/correction pipeline using participant pose landmark data from OpenPose.
  - Evaluation and implementation of EEG artifact rejection pipelines like Autoreject and HAPPE for EEG Microstates analysis.
  - Analysis of Autism Spectrum Disorder patient brain activations using EEG Source Localization analysis from Brainstorm.
- Machine Learning/Neuroscience/Signal Processing/Time Series Classification/EEG/Python/MatLab

## PUBLICATIONS

### In Preparation:

- **Zhang M**, Nagabhushan Kalburgi S, Klein L, Ozuna A, Levitt PR. OpenPose movement artifact rejection (OMAR) pipeline for infant EEG data.
- Nagabhushan Kalburgi S, **Zhang M**, Key AP, Bodfish JW. Altered processing of social and nonsocial images in autism spectrum disorders: Evidence from event-related microstates.
- Nagabhushan Kalburgi S, **Zhang M**, Bodfish JW, Key AP, Levitt PR. Evaluation of automated data preprocessing pipelines for EEG microstate analysis.
- Nagabhushan Kalburgi S, **Zhang M**, Koenig T, Levitt PR. Developmental trajectory of temporal dynamics of healthy infant brain networks.
- Nagabhushan Kalburgi S, **Zhang M**, Koenig T, Levitt PR. Evolution of temporal brain network dynamics of infants later diagnosed with autism - a pilot study.

## INDUSTRY EXPERIENCE

### ROYAL BANK OF CANADA, AMPLIFY | SOFTWARE DEVELOPER INTERN

New Jersey, NY | Summer 2021

- Full-stack developer, worked on a team of 4.
- Developed an end-to-end automation solution for the monitoring eco-system at RBC as part of the infrastructure-as-code initiative.

- Front-end built with vanilla bootstrap.
- Backend built with Flask and deployed on Kubernetes.
- Python/Kubernetes/JavaScript/Jsonnet/DevOps

## UNIVERSITY OF SOUTHERN CALIFORNIA, CS@SC | TEACHING ASSISTANT

CA | Jun 2020 - May 2021

- Taught introductory and intermediate level Python, Java, and Web development to students of different levels from middle/high school.
- Created unit tests for student assignments, and wrote quizzes and review questions for the students.
- Python/Java/JavaScript

## PERSONAL PROJECTS

FOR MORE ON MY PROJECTS, VISIT [JACKZHANG.ME/PROJECTS](https://jackzhang.me/projects)

### KNOCKKNOCK

ANDROID AND FULL STACK | 2018-2020

Purpose: solve the problems I had with video calling people in noisy or inconvenient situations with extra features. Built a WebRTC based video conferencing app with features like real-time captioning, language identification, noise-canceling, and manual camera controls. Utilized Machine Learning for multiple audio/image processing steps. Java/Kotlin/Android/WebRTC/JavaScript/Python/Firebase/PHP/C++

### EEGLABIO

FULL STACK | SINCE 2021

Purpose: allow conversion between different EEG file formats. I/O support for EEGLAB native files in Python. Solution accepted into the popular Python EEG processing tool, MNE's upstream repository. Python/MATLAB/EEGLAB

### FILETUNNEL

FULL STACK | MAR 2019 HACKATHON

Purpose: satisfy the need to transfer files across devices on different platforms "serverless"-ly. Built a peer-to-peer file transferring website based on WebRTC. Utilized Node.JS's Socket.IO framework for server-side signaling. Supports transfer speed display, file caching and queuing. JavaScript/Node.js/WebRTC/Socket.IO/Google Cloud Platform

### GREATFINDS

FULL STACK | FALL 2020

Software Development class final project. A platform that allows users to share all kinds of media content. Utilized the Java EE stack to develop server-client platform. Built the project structure with core components like JPA (database) and JSF. Coordinated efforts among all group members. Java EE/JSF/JPA/MySQL/JavaScript

### CLASS REGISTRATION HELPER

ANDROID | FALL 2018

Purpose: register courses for people automatically. A course registration helper that monitors courses, and registers for you if needed. Android/Java/JavaScript

### TODO

ANDROID | 2017 - 2018

Purpose: a todo app with the features I want. A feature-rich ToDo list app with tagging, reminders, smart command parsing, full theme control, and more. Android/Java/Regular Expression

### KEEPFIT

ANDROID | FALL 2020

Purpose: a todo app with the features I want. Software Engineering class final project. A fitness app that has fitness tracking, videos & livestreams (via Zoom SDK), and a "vibrant" community. Android/Java/Regular Expression

## SKILLS

**Programming Languages:** Python, C/C++, Java, JavaScript, Kotlin, PHP, Bash, SQL, MATLAB

**Technology/Tools:** TensorFlow, Android, Node.js, Git, Firebase, AWS, GCP, Docker, React, Java EE, WebRTC, CI,  $\LaTeX$ , NoSQL