Yunnuo (Noah) Zhang

(470)855-3655
Atlanta, GA

yzhang3563@gatech.edu
noahzhang.com

Education

Bachelor of Science in Computer Science, *Georgia Institute of Technology* Aug 2020 — May 2024
Information Network/Intelligence, GPA 3.93/4.0

Research Experience

Professional Research Assistant **May 2023 — Present**
LiLab @ ***Michigan State University*** *East Lansing, MI*

- Working with **Dr. Jinxing Li** on soft bio-electronics, brain-computer interfaces, and soft robotic research.
- Worked on PCB design with KiCAD and Altium Designer on SoC Bluetooth communication.
- Worked in wet lab experience with handling and operation of lab animals.

Research Assistant **Jan 2021 — Present**
Contextual Computing Group @ ***Georgia Tech*** *Atlanta, GA*

- Worked with **Dr. Thad Starner** on EEG-based Brain-Computer Interface prototypes for alternative text entry and selection with wearables.
- Worked on collecting Steady-State Visually Evoked Potential (SSVEP) and Auditory Steady-State Response (ASSR) signals with customized dry electrodes, applied machine learning algorithms including Generalized Linear Model(GLM), Canonical Component Analysis(CCA) and Hidden Markov Model(HMM) for signal classification.
- Worked on building customized dry active EEG electrodes with Driving Right leg(DgRL) and Tripolar Concentric Ring Electrodes (TCRE) with KiCAD PCB prototyping, conducted impedance level evaluation on different batches of amplifiers.
- Poster works won the 2022 President Undergraduate Research Award(PURA) at Georgia Tech.

Research Assistant **Jan 2021 — Present**
BrainLab @ ***Georgia Tech*** *Atlanta, GA*

- Worked with **Dr. Melody Jackson** on designing novel, mobile-friendly and non-invasive brain-computer interface modalities.
- Worked on collecting and preprocessing fMRI and fNIRS data. Applied pre-processing techniques including Principle Component Analysis (PCA) and Independent Component Analysis (ICA) for dimensionality reduction, whitening, and denoising using MATLAB and Python MNE Library.
- Worked on time series data analysis pipeline including Convolutional Neural Networks (CNNs), Long Short-Term Memory (LSTM) Networks, and Autoencoders.

Research Assistant **Jun 2018 — August 2018**
Bao Group @ ***Stanford University*** *Palo Alto, CA*

- Worked with **Dr. Jinxing Li** on neurotransmitter/dopamine level detection using electrochemical sensing techniques including Fast-Scan Cyclic Voltammetry(FSCV)-derived voltammogram in MATLAB. Achieved automatic graph generation and adjustment with LabVIEW MathScript.
- Created soft robot designs with SolidWorks, built an ESP32-based sound/humidity interface for humidity detection on soft robots and real-time data transmission with ESP8266 and Pyserial.

Industry Experience

Data Science Intern **May 2022 — Aug 2022**

AI Camp @ NLP Software Team *Palo Alto, CA*

- Led teams of five in a startup to do quick iterations on full-stack video transcript summarizing Chrome add-on.
- Pre-processed web-scraped dataset with nltk, deployed the model to an interactive Google Chrome add-on with Flask and Bootstrap.
- Designed and conducted user experience research on the final product including A/B testing and usability testing, and visualized the user study report with Plotly and Matplotlib.

Publication

[Under Review]

- *Vittorio Mottini, Charlie Meilinger, Liuxi Xing, Jiaqi Wang, Yi Xing, Abdallah Daha, Kalyn VanWormer, Jack Darbonne, Isabella Rodrigues, Juhua Wang, Joshua Labbe, Michael Ngatio, Paulina Bies,* ***Yunnuo Zhang****, Zhengxu Tang, Kevin Mozel, Calvin Xiang Chen, and Jinxing Li.* **Intrinsically Stretchable HD-sEMG Array for Inclusive Biomedical Interfaces.** Nature
- *Zhengxu Tang,* ***Yunnuo Zhang****, Abdallah Daha, Vittorio Mottini, Liuxi Xing, and Jinxing Li.* **Soft Magnetic Actuator for Stretchable, Bio-compatible, Underwater Soft Robots.** in IEEE International Conference on Robotics and Automation (ICRA) (2024)

[In Preparation]

- *Yuhui Zhao,* ***Yunnuo Zhang****, Kiavosh Peynabard, Vyja Bernard, Thad Starner, and Melody Jackson.* **Towards SSVEP-based High-speed Brain-Computer Interface Outside the Lab Environment.**

Honors & Awards

President Undergraduate Research Award, Georgia Tech
Dean's List, Georgia Tech
Faculty Honors, Georgia Tech
SDG Technical Innovation Award, Tsinghua University Shenzhen Institute
Software Design 3rd Place Award, ByteDance & Georgia Tech Shenzhen Institute

Teaching

CS 3600/6601: Artificial Intelligence **Jan 2023 — May 2023**

Georgia Tech *Atlanta, GA*

- Worked as a teaching assistant for co-registered CS3600/6601 **Artificial Intelligence** with Dr. Thad Starner.
- Worked on designing the course material and assist instruction of course material for over 1500 undergraduate/graduate students.

Natural Language Processing **May 2022 — Aug 2022**

AI Camp Inc. *Palo Alto, CA*

- Worked as a data science instructor for natural language processing introductory courses.
- Held sessions that tutored over 100 students and worked as project supervisor for high school attendants.

Presentations

Refereed and Non-refereed Posters and Demos

- *Yuhui Zhao, **Yunnuo Zhang**, Kiavosh Peynabard, Vyja Bernard, Thad Starner, and Melody Jackson.* **Towards a Practical, Reliable, High-speed Brain-Computer Interface Outside the Lab Environment.** in GVU Center Spring Research Showcase. April 2023
- *Yuhui Zhao, **Yunnuo Zhang**, Saurab Sirpurkar, Thad Starner, and Melody Jackson.* **Towards SSVEP-based EEG Handless Interaction in Non-Lab Settings with Driving Right Leg and Active Electrodes: a Proof-of-Concept Study.** in 16th Annual Undergraduate Research Spring Symposium, April 2022
- *Xin Hu, Yuzhi Li, **Yunnuo Zhang**, Huahua Tian, Jiajia Li, Yiqi Min, Ruobin Wang, and Di Song.* **Sleepal: a fNIRS-based Sleep Tracking System for CBTI Insomnia Treatment.** in 2020 SDG Open Hack at Tsinghua University and University De Geneve, November 2020

Skills

Programming Language	Python, C, C++, JavaScript, MATLAB, SQL, CSS, HTML
Software	Linux, KiCAD, Altium Designer, Git, Docker, Maven, Gradle, OpenCV
Frameworks/Tools	Android SDK, PyTorch, Scikit-Learn, MNE, MATLAB PsychToolbox, Tensorflow, Kaldi, HTK, React, Flutter, AWS Lambda Linux, Node.js
Prototyping	Embedded design, PCB design, laser cutting, 3D printing, laser cutting