

Zikang Leng

✉ zleng7@gatech.edu

🏠 [zikangleng.github.io](https://github.com/zikangleng)

in [zikang-leng](https://www.linkedin.com/in/zikang-leng)

🌐 [ZikangLeng](https://www.zikangleng.com)

EDUCATION

Georgia Institute of Technology

PhD in Computer Science

Atlanta, GA

Starting Aug. 2024

Georgia Institute of Technology

B.S. in Computer Science (Theory & AI), B.S. in Physics | GPA: 4.0

Atlanta, GA

Aug. 2021 - Exp. May. 2024

- Research Areas: Human Activity Recognition, Data Generation, Computer Vision
- Advised by Prof. Thomas Plötz and Hyeokhyen Kwon

EXPERIENCE

Undergraduate Research Assistant (Computational Behavior Analysis Lab)

Aug. 2022 - Present

Georgia Institute of Technology

Atlanta, GA

- Working on diabetic foot ulcer image segmentation and 3d foot reconstruction from videos
- Created a system that can generate virtual IMU data from virtual textual descriptions of activities by combining ChatGPT, motion synthesis, and signal processing method
- Created FingerSpeller, an innovative text entry system that accurately recognizes American Sign Language fingerspelling words using smart rings
- Introduced a novel method for measuring the subtlety of motion involved in activities in videos using optical flow and 2D pose estimation to evaluate the benefit of virtual IMU data for fine-grained Human Activity Recognition.
- Enhanced modules of IMUTube, a computer vision-based pipeline for extracting virtual IMU data from videos.

Machine Learning Research Intern - SULI (Advised by Dr. Xiaodong Yu)

May. 2023 - Aug. 2023

Argonne National Laboratory

Lemont, IL

- Accelerated the training of graph neural network (GNN) for ocean simulation 213 times using 256 GPU
- Augmented GNN training data by performing IDW interpolation on existing data, enabling training at a larger scale
- Showcased findings in a poster presentation to the students and staff of Argonne National Laboratory

Undergraduate Research Assistant (Dr. Glen Evenbly's Group)

Nov. 2021 - Jul. 2022

Georgia Institute of Technology

Atlanta, GA

- Conducted research on using quantum-inspired tensor network as classifiers for supervised learning
- Implemented a training algorithm for the Matrix Product States (MPS)
- Tested and compared the performance of MPS, deep neural network (DNN), and convolutional neural network (CNN) on several bitstring rules, MNIST dataset, and Fashion-MNIST dataset
- Benchmarked how well MPS, DNN, and CNN can learn random instances of each other

PUBLICATIONS

IMUGPT 2.0: Language-Based Cross Modality Transfer for Sensor-Based Human Activity Recognition

Zikang Leng, Amritrajit Bhattacharjee, Hrudhai Rajasekhar, Lizhe Zhang, Elizabeth Bruda, Hyeokhyen Kwon, Thomas Plötz

Under Review

[\[paper\]](#)

We Need More Data for People with Disabilities: A Comparative Study on Data Collection for Wheelchair Transportation Mode Detection

Sungjin Hwang, Zikang Leng*, Seungwoo Oh, Kwanguk Kim, Thomas Plötz*

Under Review

FingerSpeller: Camera-Free Text Entry Using Smart Rings for American Sign Language Fingerspelling Recognition

David Martin, Zikang Leng*, Tan Gemicioglu, Jon Womack, Jocelyn Heath, Bill Neubauer, Hyeokhyen Kwon, Thomas Plötz, Thad Starner*

ASSETS '23

[\[paper\]](#)

Generating Virtual On-body Accelerometer Data from Virtual Textual Descriptions for Human Activity Recognition (Best Paper Honorable Mention) <i>Zikang Leng, Hyeokhyen Kwon, Thomas Plötz</i>	UbiComp/ISWC '23 [paper] [code] [news]
On the Utility of Virtual On-body Acceleration Data for Fine-grained Human Activity Recognition <i>Zikang Leng, Yash Jain, Hyeokhyen Kwon, Thomas Plötz</i>	UbiComp/ISWC '23 [paper]
On the Benefit of Generative Foundational Models for Human Activity Recognition <i>Zikang Leng, Hyeokhyen Kwon, Thomas Plötz</i>	GenAI4PC Symposium [page] [paper]

AWARDS

NSF Graduate Research Fellowship (GRFP)	2024
Provost's Academic Excellence Award	2024
Georgia Tech Institute Fellowship	2024
Georgia Tech President's Fellowship	2024
Best Paper Honorable Mention ACM ISWC	2023
President's Undergraduate Research Awards (Salary and Travel)	2023

PROJECTS

American Sign Language Recogniton	Mar. 2023 - Apr. 2023
<ul style="list-style-type: none"> • Processed and visualized Google's Isolated Sign Language Recogniton dataset (GISLR) from Kaggle • Implemented deep learning models such as DNN, LSTM, ConvLSTM, and Transformer to predict signs from 3d poses • Benchmarked and analyzed the models performance on GISLR 	

RELEVANT COURSEWORKS

CS 4644: Deep Learning
 CS 4641: Machine Learning
 CS 4540: Advanced Algorithm
 CS 4510: Automata and Complexity Theory
 CS 3630: Introduction to Perception and Robotics
 CS 3600: Introduction to Artificial Intelligence

TECHNICAL SKILLS

Languages: Python, Java/JavaFX, C/C++, LC3 Assembly, LaTeX, UML, Bash, Matlab

Developer Tools: Git, Docker, VS Code, IntelliJ, Eclipse

Libraries: PyTorch, OpenCV, scikit-learn, NumPy, Keras, TensorFlow

MENTORED STUDENTS

Masters Students: Amitrajit Bhattacharjee, Hrudhai Rajasekhar

Undergraduate Students: Jocelyn Heath, Lizhe Zhang, William (Bill) C Neubauer, Ruijia Peng, Yaqi Liu

REFERENCES

Dr. Thomas Plötz	Professor, School of Interactive Computing, Georgia Institute of Technology
Dr. Hyeokhyen Kwon	Assistant Professor, Department of Biomedical Informatics, Emory University
Dr. Thad Starner	Professor, School of Interactive Computing, Georgia Institute of Technology