Yucheng Zhang

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EDUCATION

University of Illinois Urbana-Champaign   **Urbana, IL, USA**
Bachelor of Science in Computer Engineering (expected July 2025)   *Sep. 2021-Present*

- Cumulative GPA: 3.97/4.0
- Core Courses: Introduction to Algorithms & Models of Computers, Computer Systems Engineering, Probability with Engineering Applications, Machine Learning, IoT and Cognitive Computing

Zhejiang University - University of Illinois Urbana-Champaign Institute   **Zhejiang, China**
Bachelor of Engineering in Electrical and Computer Engineering (expected July 2025)   *Sep. 2021-Present*

- Cumulative GPA: 3.90/4.0
- Core Courses: Data Structures, Computer Systems & Programming, Numerical Analysis, Applied Parallel Programming, Data Science Analytics using Probabilistic Graph Models

Awards and Honors
- Gold Medal, 46th ICPC Asia Regional Contest Jinan Site (National) (top 10%)   2021
- Silver Medal, 2021 China Collegiate Programming Contest, Weihai Site (National)   2021
- Innovation and Entrepreneurship Pacesetter   2021-2022
- Dean's List (ZJUI)   2021-2022
- Dean's List (UIUC)   2023-2024

PUBLICATIONS

- Sirui Xu*, Dongting Li*, **Yucheng Zhang*** et.al, "InterAct: Advancing Large-Scale Versatile 3D Human-Object Interaction Generation", CVPR (Under Review)
- Enxin Song*, Wenhao Chai*, Guanhong Wang*, **Yucheng Zhang** et.al, "MovieChat: From Dense Token to Sparse Memory for Long Video Understanding", CVPR 2024

RESEARCH EXPERIENCE

Human-Object Interaction with Skinned Multi-Person Linear Models | Research Assistant   Feb.2024-Present

Advisor: Yuxiong Wang (Professor, University of Illinois Urbana-Champaign)

- Proposed a new method for representing human poses with a small number of markers.
- Built a data collection website on Amazon Mechanical Turk to create a dataset with 22.94 hours of human-object interaction data and detailed annotations.
- Processed data including splitting video with respect to motion changes by measuring Posecode change and implementing GPT-oriented annotation and augmentation.
- Performed tasks like penetration evaluation and motion prediction on the dataset.

Long Video Understanding | Team Leader   Jul. 2023-Dec.2023

Advisor: Gaoang Wang (Professor, ZJU-UIUC Institute)

- Developed a new memory management method to solve long video understanding problems with high computational load and memory cost.
- Reduced memory costs by storing short-term memory and selectively storing long term memory according to the similarity between frames.
- Built a dataset of 1,000 long videos and manually annotated them with summaries and Q&A.

- Paper, "MovieChat: From Dense Token to Sparse Memory for Long Video Understanding," accepted by CVPR 2024.

Temporal Action Detection under Weak Supervision | Team Leader   Mar. 2023-Oct. 2023

Advisor: Gaoang Wang (Professor, ZJU-UIUC Institute)

- Modified the model, implementing methods from language models to reduce the accuracy gap between supervised and unsupervised models.
- Used attention mechanism and transformer to detect and identify motions using poorly labeled learning data.

DNN Encryption | Individual Research   Jul. 2021-Aug. 2021

Advisor: Jian Liu (Professor, Zhejiang University)

- Modified the two-party deep neural network inference model, which involved lattice-based homomorphic encryption DNN.
- Improved performance by using vector-oblivious linear evaluation (VOLE)-styled oblivious transfer (OT) to transfer data of linear layers of Resnet50 in appropriate batches to accelerate and reduce transformation bandwidth and computation.
- Achieved performance improvements.

PROJECTS

Simplified Computer System

- Used C and assembly language to build a simplified computer system that supports various operations, including running programs in parallel, instruction input and storage, and program call.
- Implemented drivers, RTC, system calls, file system, scheduling, memory map, and signals.

Traffic Light Simulation Control System

- Used YOLO to identify vehicles at intersections from videos, and created an algorithm to adaptatively change the lasting time of the traffic light according to the presence of waiting cars and accumulated waiting time.
- Built a server to run the YOLO and light control code on FPGA, modified light length according to the cars, and visualized the results with LED lights.

TEACHING EXPERIENCE

MATH 241 Calculus III   Teaching Assistant   Fall 2024

- Ran weekly discussion sections, office hours and review sections.
- Graded homework and exams.

SKILLS AND OTHERS

Programming: MATLAB, C/C++, Python, Sagemath

Frameworks and Tools: Pandas, PyTorch, smplx, Keras, NumPy, SciPy, tqdm