

# Cao Yutao

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<https://github.com/YutaoC24>

## EDUCATION

<b>Master of Science, Computer Science</b> , University of Southern California	2024/08-present
<b>Master of Computer and Information Technology</b> , University of Pennsylvania —GPA: 3.97/4.0 (Ranking Top 5%)	2022/08-2024/05
<b>B.A. with honors in Media Arts and Design</b> , minor in Physics, University of Chicago —GPA: 3.9/4.0 (Ranking Top 10%)	2020/09-2022/06
<b>Major in Arts, Physics, Science Communication(Transferred)</b> , Vanderbilt University —GPA: 3.86/4.0	2018/09-2020/06

## WORK EXPERIENCE

<b>Shanghai Rongmeng Technology Co., Machine Learning Engineer Intern</b> —Classified 10000+ frames in videos into corresponding sports categories with feature extraction and support vector machine. —Developed unsupervised auto-annotation for 1280x720 videos at 0.3s/frame, enhancing accuracy up to 90%. —Spearheaded implementation of 'Pose as Compositional Tokens' deep learning model, achieving mAP exceeding 85% on the proprietary dataset of 10k+ images with transformer structure optimization. —Trained YOLOv8, YOLONAS-pose for live human pose tracking, surpassing 76% accuracy.	2024/01-2024/08
<b>University of Pennsylvania, Teaching Assistant</b> (CIS5810 computer vision and computational photography) —Prepared course materials around topics of optical flow estimation and image morphing. —Provided guidance and support to 16 students on final group projects, enhancing their understanding of camera calibration, checkerboard artifact prevention, and image-stitching techniques.	2023/08-2024/05

## RESEARCH EXPERIENCE

<b>Multi-camera-view Animal Pose Reconstruction and Detection</b> - Blender, Python Research Volunteer at University of California Santa Barbara 2023/04-2024/01 Advisor: Prof. Misha Sra —Built a 3D animal injury pose database and generated more than 100 animated 3D animal models. —Constructed panoramic 3D scenes for reconstruction from video. —Developed and fine-tuned an SVM model for hashed pose classification.
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## INDIVIDUAL PROJECTS

<b>Basketball Scoring Detection and 3D-2D Position Mapping</b> - Python (OpenCV, NumPy) <a href="https://github.com/YutaoC24/Basketball-Scoring-Detection-Yolov8">https://github.com/YutaoC24/Basketball-Scoring-Detection-Yolov8</a> —Trained YOLO pose detection, image detection model and segmentation model on AWS instance with 15k+ crawled images, achieving 80%+ pose detection and rim detection accuracy. —Implemented 3D-pose to 2D mapping method that recognizes the player's 2D position on the court when shooting, with an error rate < 6.8%.
<b>Live Weather Forecasting App</b> - Node.js, Angular (Bootstrap, NoSQL Database, GCP) <a href="https://multiweatherviewfront.wl.r.appspot.com">https://multiweatherviewfront.wl.r.appspot.com</a> —Designed responsive web UIs and page view for multiple digital mediums. —Implemented favorite geolocation functionality with MongoDB database management. —Retrieved and queried over 1000+ rows of geo-weather information from 3 external APIs.

## SKILLS

Programming languages: Python, Java, C, Javascript(Node.js), HTML/CSS  
Framework for AI: PyTorch, Version Control: Git, Cloud: AWS, Google Cloud Platform

An entry engineer with a strong academic background in Computer Science and extensive hands-on experience in machine learning, computer vision, and software development. Proven ability to develop innovative solutions and enhance system performance through advanced algorithms and data analysis. Seeking to leverage expertise in a challenging role within a forward-thinking organization.

To visit my design and game projects in the past, please visit [www.yutaocao.com](http://www.yutaocao.com)