Kehan Wang

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EDUCATION

University of California, Berkeley   Aug 2021 — May 2022
Master of Science in Electrical Engineering and Computer Science

University of California, Berkeley   Aug 2017 — Aug 2021
Bachelor of Arts in Computer Science   GPA: 3.91 / 4.0

RESEARCH PROJECT

Neural Face Identification in 2D Wireframe Projection
Coohom   Hangzhou, 2021

- Propose a Transformer-based model to find face loops in 2D line drawings.
- Formulate face identification as a seq2seq problem. Existing methods use various heuristic searches.
- Use co-edge to give our model a stronger prior and achieve > 90% recall and precision in face detection.
- Reconstruct 3D model from the 2D line drawing using the predicted face loops.
- Paper accepted by Conference on Computer Vision and Pattern Recognition (CVPR 2022).

Multi-modal Misinformation Detection
Video and Image Processing Lab   UC Berkeley, 2021

- Detect if a social media post's text description matches with its video content.
- Construct mismatches through pairing a video with randomly selected post text.
- Experiment with both contrastive learning and Masked-language Modeling given video.
- Both approaches achieve > 90% accuracy on collected Twitter dataset.
- Paper accepted by 28th International Conference on Multimedia Modeling (MMM 2022).

Y-Net Barcode Segmentation
BAIR   UC Berkeley, 2020

- Segmentation of small barcodes in a large image is computationally challenging because of the large area of background present. Existing methods are too slow and inefficient.
- Developed a pipeline with Regional Proposal Network and a new ConvNet architecture (Y-Net) to classify barcodes, and generate segmentation results using bounding boxes methods from OpenCV.
- Paper published in 28th IEEE International Conference on Image Processing (ICIP 2021).

Wavelet: Efficient DNN Training
RISE Lab   UC Berkeley, 2020

- GPU memory usage has peaks and valleys during training. Existing methods schedules trainings synchronously.
- Developed Wavelet, an efficient tick-tock scheduling method for DNN training. By interleaving different GPU's peaks and valleys, our distributed training model can achieve up to 6.7x speedup.
- Paper published in Fourth Conference on Machine Learning and Systems (MLSys 2021).

SensAI Robotics
RISE Lab   UC Berkeley, 2020

- Model Predictive Control (MPC) is a powerful control method. However, solving it iteratively in real time is slow for low-end machines such as on-drone processors.
- Developed a provably efficient, stable and robust imitated MPC by distributing a drone's central controller work onto four individual propellers using imitation learning.

Integrated Dynamic Transit Operation Systems
California PATH   UC Berkeley, 2018

- Developed PathTransit, a public transit app that supports bus-user location matching for transit services.
- Created an algorithm that classifies if a passenger is on the bus, given sparse GPS data from passenger and bus.

TEACHING EXPERIENCE

University of California, Berkeley   Jan 2018   May 2019
Lab Assistant EE16A/B: Designing Information Devices & Systems I/II   Berkeley, CA

WORK EXPERIENCE

Coohom   May 2021   Aug 2021
Research Intern   Hangzhou, China
- Worked on research project "Neural Face Identification in 2D Wireframe Projection".

Microsoft   May 2020   Aug 2020
Software Engineer Intern   Redmond, WA
- Worked on Microsoft Teams, a unified communication and collaboration platform.
- Developed new features on the Desktop/Web Client: Expiry Status (set "Away" for 30 mins), Set Out of Office auto-reply message using Angular, Typescript, C#.

Brilliant Home Technology   May 2019   Aug 2019
Software Engineer Intern   San Mateo, CA
- Brilliant Smart Home control panel and mobile app connect all smart home devices together and let users control everything from one place.
- Developed new features such as Alexa Skills compatibility, user preferences persistence, smart shades support, and user home devices administration on both Android and iOS (Kotlin and Swift).

Simpatica Medicine, Inc   Feb 2018   May 2018
Software Engineer Intern   Berkeley, CA
- Developed a scalable backend using Docker Containers to increase data needs from machine learning on how different AIDS patients react to different medical treatments.

PUBLICATION

- **Kehan Wang**, Jia Zheng, Zihan Zhou, "Neural Face Identification in a 2D Wireframe Projection of a Manifold Object", 2022 Conference on Computer Vision and Pattern Recognition **(CVPR 2022)**, June 2022, USA
- Scott McCrae, **Kehan Wang**, Avideh Zakhor, "Multi-Modal Semantic Inconsistency Detection in Social Media News Posts", 28th International Conference on Multimedia Modeling(MMM), April 2022, Vietnam
- Guanhua Wang, **Kehan Wang**, Kenan Jiang, Xiangjun Li, Ion Stoica, "Wavelet: Efficient DNN Training with Tick-Tock Scheduling", Fourth Conference on Machine Learning and Systems (MLSys), April 2021, USA
- Jerome Quenum, **Kehan Wang**, Avideh Zakhor, "Fast, Accurate Barcode Detection in Ultra High-Resolution Images", 28th IEEE International Conference on Image Processing (ICIP), September 2021, USA

AWARD & HONOR

1st Place Winner   Nov 2018
Cal Hacks 5.0 (36-hour hackathon with ~2000 hackers, ~250 teams.)   Berkeley, CA
- Won first place with *Navii*, an AR mobile app for indoor navigation.

EXTRACURRICULAR ACTIVITIES

Industrial Relations Chair
Upsilon Pi Epsilon
- UPE is a Computer Science Honor Society for top 30% of Computer Science major. Industrial Relations committee manages its relations to both the EECS department and our partner companies.
- As a UPE officer, attend weekly meetings and hold Office Hour that serves everyone in UC Berkeley CS.