Zenan Li

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ABOUT ME

I'm a Research and development engineer at Deepmotion with 5+ years experience. I obtained my M.S. Degree supervised by Prof. Mikhail Gofman at California State University, Fullerton and then I was supervised by Prof. Libin Liu for 2 years at Deepmotion.
My Research interests focus on Generative AI, Computer Vision, Model Optimization for Real-Time, Data Processing. My biggest passion is commercializing ML research models/topics to impact different industries.

RESEARCH INTERESTS

- **Generative AI** RAG, Character Motion and Video Generation with Multimodalities, Multimodal Retrieval, MLLM, Video Understanding
- **Computer Vision** Human Body/Face/Hand Pose Estimation, Multiple Object Tracking Object Detection/Segmentation, 3D Lifting
- **Model Optimization** Real-Time on-device, Transfer Learing, Distillation Learning, Software/Hardware Acceleration
- **Data Processing** Cross-modality Data Synthesis, Data Augmentation, Model Interpretability and Intermediate Feature Editing

EXPERIENCES

Research&Development Engineer Nov 2021-Present
DeepMotion, Inc. San Mateo, CA
Associate R&D Engineer Aug 2019-Nov 2021
DeepMotion, Inc. San Mateo, CA
Machine Learning Intern May 2018-Aug 2018
Beneufit Inc. Palo Alto, CA
Research Assistant Sep 2018-Jul 2019
California State University, Fullerton. Fullerton, CA
Full Stack Engineer Apr 2016-Jul 2017
China Telecom Co. Ltd. Guangzhou, China

PROJECTS

- **SayMotion** Nov 2022-Present
  SayMotion is a generative AI Cloud/API service that employs a combination of **Causal Transformer** models, **Mask Transformers**, and **VQVAE** as its core architectural components, generate motion via **Multimodal Conditioning**. The product is designed to address the challenges in text/motion to motion generation/editing by integrating various **multi-modal models** to perform training **data synthesis and augmentation** which achieved **0.8M** data size. In the post-processing stage, SayMotion incorporates a range of methods to refine the generated outputs. Specifically, it utilizes **LLM+RAG** for prompt optimization, various auxiliary models(e.g. **Text-Motion-Retrieval, Motion Discriminator**) are applied for output motion selections. Accepted to SIGGRAPH'24 real-time live.
- **Animate 3D** Aug 2019-Present
  Animate 3D is a cutting-edge machine learning Cloud/API/SDK service designed to accurately motion capture human body, hand, and facial poses in RGB video streams. optimized for both real-time performance and high precision. Capable of processing multiple individuals simultaneously, this system integrates advanced techniques in **object detection, object tracking, pose estimation, person re-identification (ReID)**, and **segmentation(e.g. Segment Anything)**. **Score-Guided Diffusion** method is applied for post-processing. Featured demo in Snapdragon Tech Summit 2021 Keynote, US Patent granted.
- **Tracer** May 2018-July 2019
  Tracer is an advanced clinical application designed to diagnose movement disorders by analyzing joint movements through **time-series pose estimation**. The system is trained on extensive clinical data, allowing it to identify subtle patterns and anomalies in motor function that may indicate the presence of a movement disorder. US Patent granted.
- **Face and Ear Dual-modality Identification** Sep 2018-Jul 2019
  Face and Ear Dual-modality Identification is an advanced approach to human identification that leverages **Convolutional Neural Networks** (CNNs) to jointly encode features from both facial and ear images. By integrating these two modalities, the system aims to improve identification accuracy. **Few-shot learning** and **transfer learning** are applied to address the face, ear data imbalance.
- **Multiple-Person 3D Human Mesh Recovery from Single 2D Picture** Oct 2018-May 2019
  Generate multiple SMPL poses all at once and end-to-end by leveraging Densepose's intemediate features.

- **Early Research projects**
  iMaterialist Challenge (Fashion) at FGVC5, Car Plate Recognition, Stock Price Predictor, Monkey Species Classification, etc.

SKILLS

- **Languages** Python, C++, Java, Javascript, C#, SQL, CSS, HTML
- **Frameworks/Libraries** Pytorch, OpenCV, PEFT, Transformers--Hugging face, Tensorboard, Scikit-image, Matplotlib, SciPy, Onnx, TensorRT, CUDA, cuDNN, TensorFlow Lite, TensorFlow, Keras, Scikit-learn, Pandas, Spacy, NLTK, Apex, Pytorch Lighting
- **Deployment Apps** Docker, Nginx, Apache
- **Cloud Services** GCP, AWS, Lambda Labs, GoDaddy
- **Version Control System** Git, SVN
- **3D Tools** Maya, Unity
- **Project Management** Jira, Linear

EDUCATION

Master of Science, Computer Science Aug 2017-May 2019
California State University, Fullerton
Bachelor of Science, Computer Science Sep 2012-Jul 2016
North China University of Science and Technology
Exchange Program, Computer Science Jan 2015-Jan 2016
California State University, Fullerton

PATENTS&PUBLICATIONS

- Enhancing Narratives with SayMotion's text-to-3D animation and LLMs.
  Kevin He, Annette Lapham, and **Zenan Li**
  [SIGGRAPH'24 | Project | Paper]
- Methods and systems for detecting 3d poses from 2d images and editing 3d poses
  Kaichuan He, Jakub Stepien, **Zenan Li**, Grzegorz Kabza, Marcin Hulist, Mikolaj Korcz
  [US Patent'24 | Project | Paper]
- Measuring dynamic body movement
  Jeffery Broderick, Douglas Van Blaricom, Jerome Lisk, **Zenan Li**, Sukhad Anand
  [US Patent'22 | Project | Paper]
- Multiple-Person 3D Human Mesh Recovery from Single 2D Picture
  Zenan Li
  [Thesis'19 | Project | Paper]

EVENTS

- Silicon Valley Chinese AI Forum Multimodal Panel Discussion
  Presenter: Kevin He, Contributor: **Zenan Li**
- Game Developers Conference(GDC) 2024
  Exhibitor
- Game Developers Conference(GDC) 2023
  Exhibitor
- SIGGRAPH 2024
  Attendee
- CVPR 2023
  Attendee

AWARDS

- DeepMotion Performance Award
  2023
- China Telecom Performance Award
  2017