Yutian Lei

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Education

Carnegie Mellon University Pittsburgh, PA
M.S. in Robotics, GPA 4.19/4.00 *September 2020 - December 2022*

- Selected Coursework: Computer Vision (A+), Kinematics, Dynamics and Control (A+), Learning for 3D Vision (A+), Multimodal Machine Learning (A), Learning-Based Image Synthesis (A+)

Chinese University of Hong Kong, Shenzhen Guangdong, China
B.E. in Computer Science and Engineering, GPA 3.89/4.00 *Sep 2015 - June 2020*

- Student Outstanding Performance Award (5%), 2016-2019

Technical Skills

Programming & Tools: Python, MATLAB, SQL, MySQL, AWS, Docker, ROS, Git, Linux, Slurm, HTML/CSS
Libraries & Frameworks: TensorFlow, PyTorch, Numpy, Matplotlib, Scipy, Pandas, Dash, React

Research Experience

DeLight Lab, Carnegie Mellon University Pittsburgh, PA
Aligned Dense Supervision for Full-Range Monocular Detection of Human Body Meshes *March 2021 – Dec 2022*

- Addressed challenges in body mesh detection with monocular RGB cameras by introducing Aligned Dense Supervision (ADS), which leverages locally body-aligned ROIs and globally augmented locations.
- Successfully implemented ADS within multiple state-of-the-art (SOTA) mesh detection architectures, resulting in a 8.9% improvement in detection metrics in average.

Robotics and AI Laboratory, Chinese University of Hong Kong Guangdong, China
Calligraphy Robot: Creating and Writing as an Intelligent Calligrapher *June 2018 – June 2020*

- Pioneered a GAN-based algorithm capable of generating unique Chinese fonts, achieving 93% accuracy in style imitation, enabling the robot to emulate diverse handwriting styles.
- Fine-tuned the control parameters of the robot to ensure smooth, human-like movements during the writing process, leading to a more authentic calligraphy experience.

Professional Experience

Baidu USA Sunnyvale, CA
Intern (Software Development Engineer) *February 2023 – present*

- Integrated MixFormer into the SmartCarne system, improving real-time payload tracking performance by 26% during construction and enabling more efficient real-time decision-making.
- Led the design and development of the RobotGPT platform using V-REP, leveraging a visual language model (LLAVA), a policy agent based on Perceiver-Actor, and a unique vision-language representation. This integrated approach significantly improved 3D scene perception, strategic task planning, robotic decision-making, and human-robot interaction, leading to a 35% overall increase in robotics operations success rate.

UBTECH Robotics Guangdong, China
Intern (Research) *March 2019 – June 2019*

- Engineered a cutting-edge multimodal emotion recognition algorithm leveraging both acoustic and facial features in video data, which increased emotion recognition accuracy to 60.12% on MELD
- Contributed to the team that deployed the algorithm in actual product environments, improving user interaction and engagement rates by 35%.

PUBLICATIONS

Tiange Xiang, **Yutian Lei**, Jun Liu, Dong Huang. "Aligned Dense Supervision for Monocular Detection of Human Body Meshes." In Association for the Advancement of Artificial Intelligence (**AAAI**), 2023. (Submitted)
Yutian Lei, Abhinav Agarwalla, Dong Huang. "MAC: ModAlity Calibration for Object Detection". In ACM International Conference on Multimedia (**ACMMM**), 2023. (Submitted)
Yutian Lei, Liguang Zhou, Tianjiao Pan, Huihuan Qiann, Zhenglong Sun. "Learning and Generation of Personal Handwriting Style Chinese Font". In Proceedings of the IEEE **ROBIO**, December, 2018