Ying-Sheng Luo

Taipei, Taiwan
tray307969@gmail.com
https://ysluo.github.io/

EDUCATION

National Taiwan University of Science and Technology Taipei, TW
BS in Computer Science *GPA: 3.94/4.00* Sep 2013 - Jun 2016

National Taiwan University of Science and Technology Taipei, TW
MS in Computer Science *GPA: 4.13/4.30* Sep 2016 - Jun 2018

WORK EXPERIENCE

Research Engineer, Inventec Corporation July 2018 - Present

- Utilizing Sim2Real techniques, we successfully deployed the reinforcement learning policies trained in simulation onto the real-world Unitree A1 robot to perform a variety of skills.
- Developed RL frameworks for learning locomotion skills for quadruped and biped characters.
- Built an iOS APP and a backend RESTful API server that incorporates Kafka job queues to deploy AI products.

Graphics Engineer Intern, International Games System Corporation June 2015 - July 2015

- Implemented color grading, dynamic clouds, lightmaps, and HDR cubemap using GLSL and Cocos2d.
- Explored GPU performance analysis tool to improve rendering performance on mobile devices.

SKILLS

Programming Languages:	C++, Python, TensorFlow, Pytorch, C#, OpenGL, GLSL, Swift
Tools:	Unity, Blender, Visual Studio, Visual Studio Code, Xcode
Research Interests:	Computer Graphics, Computer Animation, Deep Reinforcement Learning, and Real-time Rendering

PUBLICATIONS

Journals & Conferences

- Guilherme Christmann, **Ying-Sheng Luo**, Jonathan Hans Soeseno, and Wei-Chao Chen. Expanding Versatility of Agile Locomotion through Policy Transitions Using Latent State Representation. *IEEE International Conference on Robotics and Automation* (ICRA 2023).
- Po-Hsuan Huang, Yi-Hsiang Pan, **Ying-Sheng Luo**, Yi-Fan Chen, Yu-Cheng Lo, Trista Pei-Chun Chen, Cherng-Kang Perng. Development of a Deep Learning-Based Tool to Assist Wound Classification. *Journal of Plastic, Reconstructive & Aesthetic Surgery*, 2023.
- Jonathan Hans Soeseno, **Ying-Sheng Luo**, Trista Pei-Chun Chen, and Wei-Chao Chen. Transition Motion Tensor: A Data-Driven Approach for Versatile and Controllable Agents in Physically Simulated Environments. *SIGGRAPH Asia 2021 Technical Communications* (Proc. SIGGRAPH Asia 2021).
- **Ying-Sheng Luo**, Jonathan Hans Soeseno, Trista Pei-Chun Chen, and Wei-Chao Chen. CARL: controllable agent with reinforcement learning for quadruped locomotion. *ACM Transactions on Graphics* (Proc. SIGGRAPH 2020), 39, 4, Article 38.
- Zhong-Qi Cai, **Ying-Sheng Luo**, Yu-Chi Lai, Chih-Shiang Chan, Wen-Kai Tai. Interactive Iconized Grammar-Based Pailou Modelling. *Computer Graphics Forum*, Vol. 39, No. 1 (2020).
- Kuo-Wei Chen, **Ying-Sheng Luo**, Yu-Chi Lai, Yan-Lin Chen, Chih-Yuan Yao, Hung-Kuo Chu, Tong-Yee Lee. Image Vectorization With Real-Time Thin-Plate Spline. *IEEE Transactions on Multimedia* (TMM), Vol. 22, No. 1 (2020).

Books

- Hung-Kuo Chu et al. OpenGL 3D real-time rendering programming. 2018. Flag Technology. (ISBN-13: 9789863125112) - Author of Chapter 13. Advanced Rendering Techniques and Chapter 16. Post-Processing.
- Yu-Chi Lai et al. Popular games do this! Unity3D Game Design Example Lecture 2nd Edition. 2016. Flag Technology. (ISBN-13: 9789863123552) - Author of Chapter 4. Character Animation.

Patents

- **Ying-Sheng Luo**, Jonathan Hans Soeseno, Trista Pei-Chun Chen, and Wei-Chao Chen. Method for Training Locomotion Controller of Robotic Animal. Taiwan patent I739604. Sep. 11, 2021.

PROJECTS

Robotics Sim2Real Transfer (2022-Present): Trained control policies using the NVIDIA Isaac Gym physics engine to imitate reference motions obtained from motion capture data. By applying additional domain randomization during the training process, we were able to successfully deploy these policies on the real-world Unitree A1 quadruped robot. Moreover, we developed novel methods to increase the range of motions without requiring any extra training or fine-tuning procedures.

Physics-based Character Animation (2020-2022): Create simulated characters learned from motion capture data using Deep-RL and GAN such that the character produces natural movements while obeying high-level user directives.

I-SWAT: AI-assisted diagnostics software in skin wound (2020-2021): Developed the iOS App using Swift and back-end inference server using PHP, Nginx and Kafka. The medical iOS APP passed the security certificate licensed by Gapertise.

Interior Lighting Design (2017-2018): Created a framework that maximizes lighting comfort by controlling interior lights and window blinds according to sunlight and weather conditions. This is achieved through the computation of global illumination of a 3D interior scene using precomputed radiance transfer and spherical harmonics lighting techniques.