Jyun‑Ting Song

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Research Interests

Fields: Computer Vision, Robotics, Machine Learning
Topics: Human Pose Estimation, Contact Detection, Physics Simulation

Education

Carnegie Mellon University   *Advisor: Prof. __Kris Kitani__*
M.S. in Robotics, Cumulative GPA: 3.8/4.0   *Sept 2023 – present*

National Taiwan Normal University   *Advisor: Prof. __Jacky Baltes__*
M.S. in Electrical Engineering, GPA: 4.21/4.3   *Sept 2021 – Jan 2023*

National Taiwan Normal University   *Advisor: Prof. __Jacky Baltes__*
B.S. in Electrical Engineering, GPA: 3.8/4.3   *Sept 2017 – May 2021*

Research Experience

Video‑based Human‑Object Contact Detection   *Aug 2024 - Present*
- Constructing a multi‑view video dataset with human‑object contact annotations
- Developing a method to robustly detect the contact state of a human over time

Multi‑Human 3D Reconstruction from In‑the‑Wild Videos   *Oct 2023 - Jun 2024*
- Constructed a large‑scale 3D multi‑human dataset with diverse dynamic activities
- Generated human‑related annotations (3D poses and human meshes) from multi‑view videos

Balancing Control for a Humanoid Agent in a Dynamic Environment   *Jan 2022 - Jan 2023*
- Designed RL algorithm structure based on Proximal Policy Optimization (PPO) to train a humanoid agent to play a balance board in a simulation environment (Isaac Gym)

An Olympics Sports Humanoid Robot   *Sept 2019 - July 2021*
- Developed versatile humanoid robot that could perform skills of Olympic sports events such as archery, basketball, weightlifting, sprint and marathon

Publications

* indicates equal contribution

[1] **Harmony4D: A Video Dataset for In‑The‑Wild Close Human Interactions**
    Rawal Khirodkar*, **Jyun‑Ting Song***, Jinkun Cao, Zhengyi Luo, Kris Kitani
    Thirty‑Eighth Annual Conference on Neural Information Processing Systems (NeurIPS), 2024

[2] **Reinforcement Learning and Action Space Shaping for Humanoids in Highly Dynamic Environment**
    Jyun‑Ting Song, Guilherme Christmann, Jaesik Jeong, Jacky Baltes
    Springer's Studies in Computational Intelligence (SCI), 2023

[3] **The Corsmal Benchmark for the Prediction of the Properties of Containers**
    Alessio Xompero, et al.
    IEEE Access, 2022

[4] **Interactive Card Magic with Humanoid Robot** (A technical report)
    Jyun‑Ting Song, Jacky Baltes
    FIRA World Simmit, 2021

Work Experience

Graduate Research Assistant   *Pittsburgh, USA*
Carnegie Mellon University   *Oct 2023 – present*

Teaching Assistant - Reinforcement Learning   *Taipei, Taiwan*
National Taiwan Normal University   *Sep 2022 – Jan 2023*

Research Assistant   *Taipei, Taiwan*
National Taiwan Normal University   *Sep 2021 – Jan 2023*

Competitions & Awards

1st Place, All‑Round, HuroCUP, FIRA RoboWorld Cup 2022   *July 2022*
  ○ **1st Place** in Basketball and Weightlifting, **2nd Place** in Sprint and Archery [link]

1st Place, IJCAI 2021 - Robot Magic and Music Competition   *Aug 2021*
  ○ Developed a humanoid robot that could perform interactive card magic [link]

2nd Place, Basketball, FIRA SimulCup 2021   *July 2021*
  ○ Developed a humanoid that could grab and dunk a ball with 98% accuracy [link]

2nd Place, ICPR 2020 - CORSMAL Challenge   *Sept 2020*
  ○ Estimated mass, type, and fill level of containers using multimodal dataset (visual, audio) [link]

1st Place, Archery, Taiwan Humanoid 2020   *July 2020*
  ○ Developed a humanoid robot to autonomously shoot an arrow at a moving target [link]

Skills & Interests

Languages: Mandarin Chinese (native), English (fluent)
Programming: Python, C++, C, HTML, LaTeX
Platforms & Tools: PyTorch, Keras, OpenCV, Scikit‑learn, NumPy, Pandas, Matplotlib, Open3D, ROS
Interests: Basketball, Guitar, GO