

HaoChih, LIN

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EXPERIENCES

AI Engineer - Sony AI. Zurich, Switzerland. (2020-11 ~ present)

Apply Reinforcement Learning on Commercial Products (focus on Gaming AI)

- Designed a novel continuous shaping reward that improves performance by 30% and beats the human experts.
- Proposed new metrics and pipelines to evaluate the trained policies. It helps the team to find the best agent.
- Showed the ability to locate and debug several critical bugs and worked with team members to fix them in a day.

Master Thesis - Sony AI. Zurich, Switzerland. (2020-04 ~ 2020-10)

Topic: Curriculum Reinforcement Learning for Overtaking in PS4-GTS. (the result got accepted by ICRA2021)

Proposed the Three-Stage Curriculum SAC to train a control policy for aggressive overtaking in multi-car racing game.

Research Intern - Baidu USA. Sunnyvale, USA. (2019-09 ~ 2020-02)

Conduct independent research on imitation learning. (the result got accepted by ICRA2021)

Topic: RMBIL - Robust Model-Based Imitation Learning via Nonlinear Dynamics Inversion with Neural ODE

Formulated imitation learning as a nonlinear tracking control problem via nonlinear dynamics inversion using NODE.

Research Assistant - RSL, ETHZ. Zurich, Switzerland. (2018-09 ~ 2019-06)

- Joined the development of Noesis, a reinforcement learning framework (Tensorflow/C++) for robot-dog (ANYmal).
- Implemented SOTA reinforcement algorithms (PPO & DQN) with multi-thread safety features on the framework.
- Developed user-friendly python tools for training and inference performance comparison (against openai-baselines).

Senior Robotics Software Engineer - ADLINK Technology Inc. New Taipei, Taiwan (2017-08 ~ 2018-07)

ADLINK is the 2nd biggest industrial computers manufacturer in Taiwan. Joined ARPG team, reported to CEO directly.

- Developed ROS2/DDS demo kit (multi-sensor fusion, VI-SLAM, avoidance), and presented it in ROS-I Meeting.
- In charged of the autonomous mobile robot (AMR) development for warehouse applications (budge:2M USD).

Founder & Lecturer - HyphaROS Workshop. Taipei, Taiwan (2017-04 ~ 2018-07)

HyphaROS is one of the most famous workshop for providing ROS training/services in Taiwan.

- Developed ROS kits: RaceCar (1/10, 3 m/s) & MiniCar (1/20 lidar-encoder ackermann rover with 2-layers MPC).
- Organized the largest ROS developer meetup in Taiwan - 100 participants (<https://ros-taipei.wixsite.com/2018>).

EDUCATION

Eidgenössische Technische Hochschule Zürich (ETHZ), Zurich, Switzerland (2018-09 ~ 2020-10).

Master of Science in Robotics, Systems and Control (mentor: Prof. Dr. Roland Siegwart, Overall GPA: 5.5/6.0)

National Cheng Kung University (NCKU), Tainan, Taiwan (2011-09 ~ 2015-06).

Bachelor of Aeronautics and Astronautics (Overall GPA: 3.96/4.0, Major GPA: 4.0/4.0, Rank: 1/58)

PROJECTS

Eidgenössische Technische Hochschule Zürich (ETHZ), Zurich, Switzerland (2019-04 ~ 2019-08)

Semester Project: *Learning Continuous Time Dynamics using ODENets* (5.5/6.0)

Advisor: Vassilios Tsounis (PhD candidate), Dr. Farbod Farshidian, Prof. Dr. Hutter, Marco.

Integrate Mixture Density Network with ODENets to predict continuous actuated hybrid dynamics (with different gaits).

PUBLICATIONS

[ICRA2021] *Fast & Furious: Autonomous Overtaking in Gran Turismo Sport Using Curriculum Reinforcement Learning*
Yunlong Song*, **HaoChih Lin***, Elia Kaufmann, Peter Durr, and Davide Scaramuzza (*equal contribution)

[ICRA2021] *No Need for Interactions: Robust Model-Based Imitation Learning using Neural ODE*

HaoChih Lin, Baopu Li, Xin Zhou, Jiankun Wang, and Max Q.-H. Meng

SKILLS

Python (proficiency), C++ (intermediate), PyTorch (intermediate), Tensorflow (intermediate), ROS/ROS2 (proficiency)