

# HaoChih, LIN

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## EXPERIENCES

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

*Topic: Curriculum Reinforcement Learning for Overtaking in PS4-GTS. (score: 6.0/6.0, <https://uzh-rpg.github.io/gts/>)*

Advisors: Yunlong Song, Elia Kaufmann, Prof. Dr. Davide Scaramuzza ([UZH-RPG](https://uzh-rpg.github.io/)), Dr. Peter Durr ([SonyAI](https://www.sony.ai/) Zurich)

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)

*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 (NDI), where the learned dynamics and NDI controller are trained by closed-loop Neural ODE. Experiments show that RMBIL is competitive to GAIL but without the needs of environment interactions, and gets ~30% performance increase over BC.

**Research Assistant - Autonomous Systems Lab, ETHZ.** Zurich, Switzerland. (2019-06 ~ 2019-08)

- Developed a C++ plugin for [Maplab](https://github.com/Maplab/Maplab) VI-SLAM framework to integrate Hololens data stream (use [Kalibr](https://github.com/Kalibr/kalibr) for calibration)
- Transferred the learned detectors/descriptors from [SuperPoint](https://github.com/ethz-asl/SupérPoint) to Maplab to improve localization robustness.

**Research Assistant - Robotic Systems Lab, ETHZ.** Zurich, Switzerland. (2018-09 ~ 2019-06)

- Joined the development of Noesis, a reinforcement learning framework (Tensorflow/C++) for robot-dog ([ANYmal](https://anybot.com/)).
- Implemented SOTA reinforcement algorithms (PPO & DQN) on the framework with multi-threads safety features.
- 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 system architecture design for integrating ROS2 middleware with existing [ADLINK products](#).
- Supervised the development of autonomous mobile robot (AMR) 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).
- Provided proof-of-concept (PoC) service for robotics applications, e.g. autonomous indoor exploration using [drone](#).
- Organized the largest ROS developer meetup in Taiwan with ~100 participants (<https://ros-taipei.wixsite.com/2018>).

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## 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](#))

**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)

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## PROJECTS

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

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

Advisors: Vassilios Tsounis, Dr. Farbod Farshidian, Prof. Dr. Hutter, Marco.

Integrate Mixture Density Network with Neural ODE to learn continuous actuated hybrid dynamics (the legged robot with different gaits). The results achieved SOTA accuracy for multi-steps (200 steps forward) trajectory prediction.

**Institut Supérieur de l'Aéronautique et de l'Espace (ISAE-Supaero),** Toulouse, France (2016-09 ~ 2017-01)

*Independent research: Loosely Coupled Stereo Inertial Odometry on Low-cost System ([IMAV paper link](#))*

Developed a low-cost, loosely-coupled error states kalman filter based stereo VIO system. (deployed on ODDROID)

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## SKILLS

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