Fan Li

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EDUCATION

Tongji University, Shanghai, China 2021.09 – 2024.03 (expected)

M.Sc. in Machanical Engineering

- Main courses: Robotics, Planning algorithms, Pattern recognition

École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland 2022.09 – 2023.02

Exchange study in Robotics

- Main courses: Convex optimization, Model predictive control

Tongji University, Shanghai, China 2016.09 – 2021.08

B.Eng. in Machanical Engineering (Specialization: Mechatronics)

- Granted the honor of **Excellent Graduate Student** in Shanghai (top 3% students from all majors, provincial)
- Seized the **China National Scholarship** (top 0.2%, national) and the Scholarship for Excellence, etc.

PROJECT EXPERIENCES

LASA lab at EPFL Sep. 2022 – Mar. 2023

Research assistant

- Proposed a dynamically-feasible collision-free planner for manipulator throwing in constrained environments.
- Proposed heuristic sampling and collision checking methods based on neural implicit representations.
- Developed a toolkit for sample-based dynamic planning, and verified the effectiveness of the method.

Bosch Oct. 2021 – Jul. 2022

Sensor Fusion R&D Intern

- Proposed a novel end-to-end method to segment foreground that can impact the traffic and verified in real cases.
- Simulated traffic using Carla and constructed dataset tightly connected to the industrial for training and evaluation.
- Determined the KPI to evaluate the work on bounding box-based dataset to show the safety concept.
- Fused V2X sensors to provide guaranteed regional information for autonomous driving.

Hesai Technology Jul.2020 – Aug.2020

Perception Algorithm R&D Intern

- Tested various network frameworks fusing multiple frames for point cloud-based object detection.
- Improved the evaluation tool of OpenPCDet to support Waymo Dataset.

Vision4Robotics Lab at Tongji Univ. Nov. 2018 – Oct. 2020

Research assistant

- Researched CF-based methods for UAV tracking. Related works have been published in top conferences.

Tongji Univ. DIAN Racing Formula Student Electric Team Mar. 2018 – May 2020

Powertrain & Driverless Member

- Simulated mathematically motor control for independent research and development of the motor.
- Developed a Simscape-based 3-D vehicle model to simulate the motion of 4WD formula racecar.

PUBLICATIONS

- *Training-Set Distillation for Real-Time UAV Object Tracking,* **Fan Li**, Changhong Fu*, Fuling Lin, Yiming Li, and Peng Lu, In ICRA'20 [paper] [code]
- *Learning Consistency Pursued Correlation Filters for Real-Time UAV Tracking,* Changhong Fu*, Xiaoxiao Yang, **Fan Li**, Changjing Liu, and Peng Lu, In IROS'20 [paper] [code]

SKILLS

Programming	Python, Matlab, C++ (basic)	**Language**	Chinese (native), English (C1), Deutsch (B1)
Libraries	PyTorch, Sklearn	**Dev tools**	Linux, ROS, Latex

李凡

个人主页 · (+86) 189-1607-6386 · lifan@tongji.edu.cn

教育背景

同济大学, 上海，中国 2021.09 – 2024.03 (预计)

硕士研究生 机械与能源工程学院

- 主要课程: 机器人学, 规划算法, 模式识别

洛桑联邦理工（EPFL）, 洛桑，瑞士 2022.09 – 2023.02

交换学习 机器人专业

- 主要课程: 凸优化，模型预测控制

同济大学, 上海，中国 2016.09 – 2021.08

本科毕业生 机械与能源工程学院

- 2021 届上海市优秀毕业生
- 国家奖学金，同济大学本科优秀学生奖学金，同济大学优秀学生等

项目与实习经历

LASA 实验室（EPFL） 2022.09 – 2023.03

研究助理

- 面向机械臂投掷任务，提出了可同时满足运动学和动力学约束的规划器，并可实现投掷过程中的避障
- 利用神经网络隐式表征机器人几何结构，并基于此网路提出了启发式采样和碰撞检测方法
- 开发了基于采样的动力学运动规划器工具箱，并利用此工具箱验证了所提出方法的有效性

博世中国 2021.10 – 2022.07

传感器融合算法研究实习生

- 提出了一种端到端的神经网络用于分割可能会影响交通的前景，并在真实案例中验证了方法的有效性
- 利用 Carla 仿真交通情况，并在仿真环境中基于工业实际情景构建了数据集用于网路的训练和验证
- 改进了传统利用边界框标定的数据集的 KPI，以准确评估各类分割方法的功能安全性
- 融合 V2X 传感器信息，为自动驾驶提供准确的区域信息以提高车端的安全性

禾赛科技 2020.07 – 2020.08

感知算法研究实习生

- 在 PyTorch 框架测试了多种融合多帧信息以提升性能的点云目标检测算法
- 改进了 OpenPCDnet 的评价工具箱，使其可用于评估 Waymo 数据集

Vision4Robotics 实验室（同济大学） 2018.11 – 2020.10

研究助理

- 基于相关滤波方法研究无人机视觉目标跟踪，相关工作已发表于 ICRA、IROS 等顶会

同济大学 DIAN Racing 大学生电动方程式车队 2018.03 – 2020.05

动力组成员 & 无人驾驶组成员

- 参与车队电机的自主研发，基于 Simulink 完成了电机控制部分的数学建模与仿真
- 负责车队的圈速仿真工作，基于 Simscape 将单自由度整车模型拓展到三自由度整车模型

学术成果

- 第一作者论文《Training-Set Distillation for Real-Time UAV Object Tracking》收录于 ICRA'20 [paper] [code]
- 第二学生作者论文《Learning Consistency Pursued Correlation Filters for Real-Time UAV Tracking》收录于 IROS'20 [paper] [code]

主要技能

编程语言	Python, Matlab, C++ (基础)	**语言**	英语（C1），德语（B1）
工具库	PyTorch, Sklearn	**开发工具**	Linux, ROS, Latex