Wenchao Ding

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EDUCATION

- **Hong Kong University of Science and Technology** — Hong Kong, China
  Ph.D. in Electronic and Computer Engineering, HKUST — *Sept. 2015 – June. 2020 (Expected)*
  GPA: 4.18/4.3; Hong Kong PhD Fellowship — Supervisor: Prof. Shaojie Shen
  HKUST Aerial Robotics Group — Robotics Institute

- **Huazhong University of Science and Technology** — Hubei, China
  Bachelor of Electronics and Information Engineering, HUST — *Sept. 2011 – June. 2015*
  GPA: 92.81/100; Ranked 1st — Supervisor: Prof. Wei Liu

RESEARCH

- **Planning and Decision-Making for Autonomous Vehicles**
  HKUST Aerial Robotics Group — *Oct. 2017 - Present*

  ○ **Prediction**: Interaction-aware accurate prediction of vehicle behaviors in a long horizon using learning-based methods; Online hierarchical prediction framework for modeling multimodal behaviors and contextual factors in complex urban environments.

  ○ **Motion planning**: Safe and unified motion planning framework for modeling numerous semantic elements in complex urban environments based on spatiotemporal information.

  ○ **Behavior planning**: Uncertainty-aware safe behavior planning framework to deal with uncertainties from control/perception/planning perspectives.

- **Planning for Micro Aerial Vehicles**
  HKUST Aerial Robotics Group — *Dec. 2016 - Oct. 2017*

  ○ **Trajectory planning for monocular vision-based quadrotors**: Efficient trajectory replanning framework for onboard autonomous flight in unknown indoor and outdoor environments with only one camera and one IMU.

  ○ **Trajectory planning for dual-fisheye vision-based quadrotors**: Trajectory planning framework for a quadrotor with dual-fisheye cameras to achieve omnidirectional vision, navigation and exploration.

PUBLICATIONS

- **Published or Accepted**:

1. **Wenchao Ding**, Jing Chen, and Shaojie Shen. "Predicting Vehicle Behaviors Over an Extended Horizon Using Behavior Interaction Network." In *IEEE International Conference on Robotics and Automation (ICRA)*, Montreal, Canada, 2019. [Paper] [Video]

2. **Wenchao Ding**, and Shaojie Shen. "Online Vehicle Trajectory Prediction using Policy Anticipation Network and Optimization-based Context Reasoning." In *IEEE International Conference on Robotics and Automation (ICRA)*, Montreal, Canada, 2019. [Paper] [Video]

3. **Wenchao Ding**, Wenliang Gao, Kaixuan Wang, and Shaojie Shen. "Trajectory Replanning for Quadrotors Using Kinodynamic Search and Elastic Optimization." In *IEEE International Conference on Robotics and Automation (ICRA)*, Brisbane, Australia, 2018. [Paper] [Video]

4. Kaixuan Wang, **Wenchao Ding**, and Shaojie Shen. "Quadtree-accelerated Real-time Monocular Dense Mapping." In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Madrid, Spain, 2018. [Paper] [Video]

- **Pre-prints**:

1. **Wenchao Ding**, Wenliang Gao, Kaixuan Wang, and Shaojie Shen. "An Efficient B-spline-Based Kinodynamic Replanning Framework for Quadrotors." **Conditionally Accepted** by *IEEE Transactions on Robotics (T-RO)*, 2019. [Video]

2. **Wenchao Ding**, Lu Zhang, and Shaojie Shen. "Safe Trajectory Generation For Complex Urban Environments Using Spatio-temporal Semantic Corridor." Submitted to *IEEE Robotics and Automation Letters (RA-L)* with IROS, 2019. [Code] [Video]

3. Wenliang Gao, Kaixuan Wang, **Wenchao Ding**, Fei Gao, Tong Qin, and Shaojie Shen. "Autonomous Aerial Robot Using Dual-fisheye Cameras." Submitted to *Journal of Field Robotics*, 2019.

Honors and Awards

- **Graduate - Hong Kong University of Science and Technology (HKUST)**:

Hong Kong PhD Fellowship	*Sept. 2015 - Present*
Conference Travel Award: ICML 2018, Stockholm, Sweden	*July 2018*
Conference Travel Award: ICRA 2018, Brisbane, Australia	*May 2018*
Conference Travel Award: RSS 2017, Massachusetts, USA	*July 2017*

- **Undergraduate - Huazhong University of Science and Technology (HUST)**:

ChangJiang Student (20 awardees in all 2015 graduates in **Hubei province**, China)	*June 2015*
BaoGang Outstanding Scholarship (25 awardees from **Nationwide** election, China)	*Nov. 2014*
Outstanding Winner in Mathematical Contest in Modeling (MCM, 13/6755, USA)	*2014*
Frank Giordano Award, MCM, USA	*2014*
Outstanding Undergraduate Student in HUST	*2015*
National Scholarship (Top 2%) & School Merit Student (Top 3%), China	*2014*
National Scholarship (Top 2%) & School Merit Student (Top 3%), China	*2013*
National Scholarship (Top 2%) & School Merit Student (Top 3%), China	*2012*
Excellent Student of Qiming School, HUST (Top 5%)	*2012*
First Prize in Mathematical Modeling Contest, Huazhong Region, China	*2013*

Teaching

Teaching Assistant: ELEC2600 Probability and Random Process, HKUST	*Spring 2016*
Teaching Assistant: ELEC4100 Digital Communications and Wireless Systems, HKUST	*Summer 2016*

Experience

Internship: DJI Ltd (Shenzhen, China)	*June 2018 - Oct 2018*
Summer Internship: Texas Instruments (TI, Shanghai, China)	*Aug. 2013*
Summer Camp: Microsoft Research Asia (MSRA, Beijing, China)	*Aug. 2014*

Useful links

- Follow my Google Scholar: https://scholar.google.com.hk/citations?user=44f1ubYAAAAJ&hl=en

- Follow me on Github: https://github.com/WenchaoDing for open source packages.

- Subscribe my channel on Youtube: Wenchao Ding for experimental results.