Jingtao Tang

Last Updated on 11th August 2021

personal infos

25 years old
Ph.D student @ Chinese University of Hong Kong, Shenzhen (CUHKSZ)

contacts

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Artificial Intelligence & Robotics Society(AIRS), Shenzhen, China

languages

Chinese (1st language), English (2nd language)

software&library

ROS, 360Lib, CUDA, Gazebo, OpenCV, Tensorflow, Unity

interested areas

Robotics / Autonomous Driving / Virtual Reality

other identities

amateur guitarist / amateur photographer

Resume

To whom it may concern, my name is Jingtao Tang, I want to pursue my academic career in robotics. My research interests include multi-robot decision making and planning and reinforcement learning.

Education

Sep'18 – Jun'21 **Ph.D Student** Computer & Information Engineering @ CUHKSZ, Shenzhen, China

Sep'18 – Jun'21 **Master's Degree** Software Engineering @ ECNU, Shanghai, China

Sep'14 – Jun'18 **Bachelor's Degree** Software Engineering @ ECNU, Shanghai, China

Publications

Jul, '21 **IEEE International Conference on Real-time Computing and Robotics 2021** Conference Paper
FT-MSTC*: An Efficient Fault Tolerance Algorithm for Multi-robot Coverage Path Planning. Chun Sun, Jingtao Tang, Xinyu Zhang

May, '21 **IEEE Conference on Robotics and Automation 2021** Conference Paper
MSTC*: Multi-robot Coverage Path Planning under Physical Constraint. Jingtao Tang, Chun Sun, Xinyu Zhang

Oct, '19 **Pacific Graphics 2019** Computer Graphics Forum Journal Paper
A Generalized Cubemap for Encoding 360 VR Videos using Polynomial Approximation. Jianye Xiao, Jingtao Tang, Xinyu Zhang

Mar, '19 **IEEE Conference on Virtual Reality and 3D User Interfaces 2019** Conference Paper
A Hybrid Projection Format for Encoding 360 VR Videos. Jingtao Tang, Xinyu Zhang

Research Experiences

Jul'21 – Now **Decision Making & Planning for Heterogeneous Multi-robot System** CUHKSZ/AIRS
Focus on: 1) Learning to cooperate for general coverage work in a heterogeneous multi-robot system consisted of multiple worker robots and mobile station via reinforcement learning; 2) Research relationship between multi-agent reinforcement learning algorithms and modules for exploration.

Feb'20 – Apr'21 **Multi-robot Coverage Path Planning and Motion Planning on Complex Terrain** ECNU
Focus on: 1) Multi-robot coverage path planning for wheeled mobile robot on surface embedded in $\mathbb{R}^3$; 2) Generating feasible trajectory on rough terrain of graduated fidelity; 3) Vehicle Route Problem and its variations.

Jun'19 – Jan'19 **Ecological Restoration Robot Swarms** ECNU
Main work: 1) Discussed, Designed the workflow of using robot swarms to do ecological restoration; 2) Adapting ROS as the software backbone of the robot. 3) Tested the performance of the vehicle with the ROS software stack in rough terrain of XinJiang and NeiMengGu with our lab team, including the localization, navigation and working conditions.

Aug'18 – May'19 **Projection Formats for Encoding 360VR Videos** ECNU
Main work: 1) A hybrid projection format for encoding 360VR videos;
2) Generalized CMP for 360 VR Projection: A generalized cubemap for encoding 360° VR videos using polynomial approximation.

Jan'18 – Jun'18 **Capability based Validation and Design of Microkernel Based System** ECNU
Main work: Inter-Process Communication (IPC) security design and optimization based on MINIX Microkernel.

Awards

Nov, '19	**2021 Shanghai Outstanding Graduate Student**	
Nov, '19	**The 2018-2019 Outstanding Student**	School Award
Oct, '19	**The 2018-2019 National Scholarship**	School Scholarship
May, '19	**The 2018-2019 Fuying Scholarship**	Enterprise Scholarship
May, '19	**The 2018-2019 Outstanding Youths of School of Computer Science and Software Engineering of ECNU**	School Award

Projects

Jul, '20 **Python Robotics**
Contributed 2 Coverage Path Planning algorithms to the repo: PythonRobotics. Including: 1) Wavefront Coverage Path Planning; 2) Spiral Spanning Tree Coverage Path Planning.

Jun, '20 **Pure Pursuit Controller for ROS**
Implemented a Pure Pursuit Path Tracking Controller for ROS that follows a given reference path, used to simulate the path tracking of coverage path with GPS/IMU/Odom Extented-Kalman-Filter localization in Gazebo.

Dec, '19 **Scout Robot Simulation with Gazebo/ROS**
Implemented the URDF of AgileX's Scout WMV and SDF simulation world, with the help of the ROS Robot-Localization Stack, I adapted the Extended-Kalman-Filter of GPS/IMU/Odometry data for vehilce localization, and the help of ROS Navigation Stack, I adapted the Hybrid-A* for global path planning and Dynamic-Window-Approach for local motion planning.

May, '19 **A MIPS Simulator (All instructions supported)**
Written in Python, the MIPS simulator performs: 1)Decode MIPS raw bytes into MIPS code with instructions, register and memory data; 2)Simulate a 4-stages pipeline execution with stack, register infos, instruction status infos printed.

Extracurricular

Spring, '20	**Robotics Technology class, ECNU, Shanghai, China**	Teach Assistant
Fall, '19	**Computer Organization class, ECNU, Shanghai, China**	Teach Assistant
Jul, 19'	**2019 ROS Summer School, Hefei, China**	Volunteer
Jul, 18'	**2018 ROS Summer School, Shenzhen, China**	Volunteer