Wei Du

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EDUCATION

Carnegie Mellon University (CMU) 08/2017-05/2019
- MS in Mechanical Engineering
- GPA: 3.89/4.0

Shanghai Jiaotong University (SJTU) 01/2016-07/2016
- Mechanical Engineering (Joint Program)
- GPA: 3.83/4.3

Harbin Institute of Technology (HIT) 08/2013-06/2017
- BEng in Mechanical Design, Manufacturing and Automation
- GPA: 3.76/4.00

RESEARCH EXPERIENCE

Multi-resolution A* Algorithm -- Search-based Planning Lab (CMU) 04/2019-Present
- Research on leveraging search-based planners with multiple resolution action space to speed up the search and increase the success rate of planners.

Walker Project -- Search-based Planning Lab (CMU) 04/2019-Present
- Implementing SLAM algorithms on Walker robot for its indoor navigation.
- Implementing planning algorithms on Walker robot for manipulation.
- Organizing vision-planning-grasping pipeline for grasping tasks on conveyor.

Cruzr Project -- Search-based Planning Lab (CMU) 10/2018-04/2019
- Responsible for SLAM module on Cruzr humanoid robot.
- Organizing pipeline between planning and SLAM.

Planning Using Soft Duplicate Detection -- Search-based Planning Lab (CMU) 12/2017-02/2019
- Exploring planning algorithm in continuous state space with soft duplicate detection scheme.
- Implementing machine learning techniques in penalizing states and map pattern recognition.
- Wrote a program in visualizing planning process.

Quad-rotor Trajectory Optimization -- the Robotics Institute (SJTU) 05/2016-06/2016
- Being responsible for quad-rotor trajectory planning with dynamic constraints by using optimization techniques.
- Adopted differential smoothing algorithm to reduce jitter.

Small Wheeled Jumping Robot -- Lab of Advanced Actuation Technologies (HIT) 08/2015-01/2016
- Designed cellular wheel structure force analysis.
- Completed circuit design of single chip microcomputer based on STM32 minimum system board.
- PID controller implementation.

National College "Freescale Cup" Smart Car Contest 09/2014-04/2015
- Applied PID controller, Kalman filter and used Labview software to simulate and analyze the performance of the smart car.

COURSE PROJECTS

Power plant Substation-to-feeder Path Prediction -- Bayesian Machin Learning 02/2019-05/2019
- Worked with Kevala company on predicting feeder-path endpoints by CNNs.
- Employed motion planning algorithms in generating the substation-to-feeder paths.

Offline Hand-written Chinese Characters Recognizing -- Pattern Recognition Theory 09/2018-12/2018
- Implemented CNNs in recognizing hand-written Chinese characters.
- Implemented decision-trees, SVM to as baselines against CNNs in recognizing hand-written Chinese characters.

Inserting a curve into an Existing Two Dimensional Mesh -- Advanced Engineering Computation 03/2018-05/2018
- Working on 2D mesh loading and rendering with OpenGL Library.
- Reproduce the work of one research paper about inserting a curve into one mesh figure in order to increase the smoothness on the edges between different components of this figure.

Aviation Game -- Engineering Computation 09/2017-12/2017
- Designed a GUI for an aviation simulator.
- Achieved the basic functionality of an aviation game including control of airplane based on kinematics and dynamics.

ACTIVITES

Visitor, HIT Robot Group 07/2015
- Technical communications on combination of production and academia research about industrial robots.

Volunteer, HIT Library 02/2014-07/2014
- Provided services to students.
- Worked with the librarian to organize books.

Member, Charitable Association to Transmit Childhood 09/2013-01/2014
- Organized and participated in public service activities for children with autism.
- Being responsible for designing activities and games that benefits mental health in autistic children.

HONORS & AWARDS

- People's Scholarship in China for three consecutive years 12/2013-12/2015
- SMC Scholarship 09/2015
- 2nd Prize in National College "Freescale Cup" Smart Car Contest 04/2015
- Shanghai Huiyi Scholarship 09/2014
- 2nd Prize in annual project at HIT 09/2014

PUBLICATIONS

- Wei Du, Sung-Kyun Kim, Oren Salzman and Maxim Likhachev. Efficient Search-Based Kinodynamic Planning using Soft Duplicate Detection. (IROS 19')
- Wei Du and Yingxiang Liu. (2017). Design on Test System and Experimental Research of Foot Piezoelectric Ultrasonic Motor. Graduation Thesis, School of Mechatronics Engineering, Harbin Institute of Technology, Harbin, China.

SKILLS

- Programming: C\C++, Java, Python, MATLAB
- Operation System: Linux, MacOS

RELATED COURSEWORK

Data Structures and Algorithms for Engineers;
Engineering Computation;
Advanced Engineering Computation;
Planning Techniques for Robotics;
Java for Application Programmers;
Pattern Recognition Theory;
Bayesian Machine Learning for Scientists and Engineers;
Robot Localization and Mapping;
Engineering Optimization;