Yixiao Wang

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Education

Northwestern University Sept. 2019 – Mar. 2021(Expected)

Master of Mechanical Engineering (GPA: 4.0/4.0)

Shanghai Jiao Tong University Sept. 2018 – Mar. 2021(Expected)

Master of Mechanical Engineering

Shanghai Jiao Tong University Sept. 2014 – June 2018

B.S. in Mechanical Engineering (Major GPA: 3.8/4.3 Rank: 5%)

Professional Skills

Expert Knowledge	Path Planning, Additive Manufacturing, Optimization, Machine Learning
Frameworks and Models	ROS, Pytorch, Muzero
Coding and Tools	C++, Python, VS, Matlab, Abaqus, UG

Research Experience

Path Planning for Force-controlled Robotic Grinding of Hub Surfaces Oct. 2020 – Dec. 2020

- Proposed a **numerical surface segmentation** algorithm based on sweeping lines so that local path can be continuous in each sub-surface and ultimately increase **production efficiency**.
- Developed **feed velocity and path spacing planning** algorithm by solving constrained nonlinear optimization problems with the goal of minimizing the average residual volume to be polished.
- Generated grinding **interval movement planning** (non-grinding path planning) algorithm to decrease the unnecessary production time .

Toolpath Planning for AM through Reinforcement Learning Jan. 2020 – Present

- Reproduced **Muzero** algorithm, a deep reinforcement learning model combining with **Monte Carlo Tree Search**, to plan an optimal coverage path for arbitrary geometries in additive manufacturing (AM).
- Established a **distributed framework** for a faster training convergence and designed a proper network structure for better total rewards

Path Planning for 6-DOF Robot Grasping with Obstacles Dec. 2017 – July 2018

- Generated a **path planning** algorithm with better overall performance in a **dense environment** based on RRT-connect, RRT* and self-designed **probability field sampling** in the configuration space of UR10

Motion Planning on the Coverage Path of UAV Dec. 2015 – Oct. 2017

- Planned an optimal smooth **spiral coverage path** for sweeping the arbitrary areas including concave geometries with islands by **Partial Differential Equations** and **B-spline curve**
- Based on the B-spline path representation, optimize the trajectory for time minimization under the physical constraints of UAV and tracking accuracy requirements through discretization and linearization

Honor

Shanghai Jiao Tong University Outstanding Graduates	Dec. 2020
Shanghai Outstanding Graduates (21/415)	June 2018
Scholarship of Shanghai City (9/415)	Dec. 2017
First Prize of SGMW Scholarship (Top 10%)	Oct. 2016
INESA Scholarship (Top 20%)	Dec. 2015