**Program: Computer Science and Engineering Ph.D.**
**U-M ID: 98197295**

# Zhenyuan Zhang | Resume

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## Education

**University of Michigan** **Ann Arbor**
*Bachelor of Science in Computer Science, GPA 4.0 out of 4.0* *Sep. 2019 – May 2021*
**Core courses**: Computer Architecture, Data Structures and Algorithms, Operating Systems, Compiler Construction

**University of Michigan – Shanghai Jiao Tong University Joint Institute** **Shanghai**
*Bachelor of Science in Electronic and Computer Engineering, GPA 3.6 out of 4.0* *Sep. 2017 – Aug. 2021*
**Core courses**: Engineering Probabilistic Methods, Differential Equations, Linear Algebra, Discrete Mathmetics

## Experience And Activities

**Stealth Game Project**
*Designer and Programmer* *October 2020 – present*
A course project for University of Michigan's game developing course
- Designed core mechanism focused on planning and executing a heist
- Implemented the basic code architecture
- Implemented enemy AI with complex but reasonable behavior using `Goal Oriented Action Planning`
- Tried to do narrative generation using planning algorithms

**Research in ARM Lab on Trap Aware Model Predictive Control**
*Research Assistant* *May 2020 – present*
An online model-based controller for escaping traps in novel environments
- Implemented baseline based on `Guided Policy Search`
- Implemented baseline based on `Soft Actor-Critic`

**WolverineSoft Studio Game Project**
*Unity Programmer* *June. 2020 – August. 2020*
A 3D first-person stealth horror game where the player must traverse through a castle avoiding horrible monsters
- Worked over the course of one semester with a team of 30 developers
- Generated enemy animations using trajectory optimization
- Implemented an easy-to-use interacting system
- Implemented dialogue system for narrative purpose

**Procedural Animation Project**
*Leader* *May. 2020 – June 2020*
A 3D cat locomotion generation demo written in `Rust`
- Utilized Entity-Component-System architecture
- Implemented IK system based on CCDIK algorithm
- Implemented gait generation inspired from biological Central Pattern Generator

**Undergraduate Research Program**
*Student* *Nov. 2018 – Apr. 2019*
Evaluation of Algorithms for Deep Reinforcement Learning
- Set up an unified environment that integrates different algorithms and scenarios
- Implemented reinforcement learning algorithms including `PPO` and `DDPG` in `TensorFlow`
- Implemented a benchmarking procedure for algorithm evaluating

## Computer Skills

**Programming Languages**:
- `C++`: Have good coding style; Have experience in projects of multiple disciplines
- `Rust`: Understand ownership, lifetime and type traits; Have experience in projects
- `Python`: Can implement machine learning algorithms and train agents

**Game Engines**: `Unity` (`C#`), `Amethyst` (`Rust`)