**Vishnu Prem**

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**EDUCATION**

**University of Pennsylvania,** School of Engineering & Applied Science *Philadelphia, PA*

Candidate for Master of Science in Engineering in Robotics *– GPA: 3.3/4* *May 2021*

*Courses: Design of Mechatronic Systems, Introduction to Robotics, Applied Machine Learning, Machine Perception, Learning in Robotics, Deep Learning for Data Science*

**Manipal Academy of Higher Education,** School of Engineering & IT *Dubai, UAE*

Bachelor of Technology in Mechatronics Engineering; minor: Robotics and Automation —*GPA*: *9.46/10 Oct 2018*

*Research Abroad*: University of Salford, UK in Spring 2018

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**EXPERIENCE**

**Autonomous Systems and Advanced Robotics Research Centre - University of Salford** *Manchester, UK*

*Undergraduate Student Researcher Feb 2018 – May 2018*

* Created algorithms for mobile robot localization using visual landmarks and depth camera
* Implemented obstacle avoidance using sensor fusion of multiple sonar sensors
* Deployed deep learning-based object detection model and retrained on new classes

**Mimic Production** *Berlin, Germany*

*Robotics and Animatronics Intern*   *Mar 2019 – May 2019*

* Developed Python software pipeline in embedded Linux platform for animatronic control of humanoid robot face
* Constructed hardware prototype for facial muscle mechanisms

**Pico International**  *Dubai, UAE*

*Intern- Digital Media & IT department* Oct *2018 – Jan 2019*

* Developed embedded software and electronic circuits for mechatronic exhibits at events and exhibitions

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**TECHNICAL SKILLS**

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| * *Software*: C, C++, Python, ROS | * *Libraries:* OpenCV, Numpy, PyTorch, OpenAIGym |

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**FMT\* Planning framework for Autonomous Cars** *(2019)*

* Fast marching tree planner implementation in C++ with ROS framework
* Tracking of generated path using pure pursuit algorithm with simulation in RViz

**Semi-Autonomous Battle-bot** *(2019)*

* Fabricated hardware and programmed microcontroller to localize robot using IR beacon in embedded C
* Set up remote control via UDP and implemented PD control for autonomous navigation

**CNN for Violence Detection** *(2019)*

* Extracted frames and optical flow features from videos using OpenCV
* Trained dual stream CNN for detecting violent actions from videos using PyTorch

**Chess Playing Robot** *(2017)*

* Developed computer vision algorithm using Python and OpenCV for detecting move made by human
* Integrated motors and wrote embedded software on microcontroller for robot arm control

**RL for Bipedal walking** *(2017)*

* Used Reinforcement Learning to train a two-legged agent to walk using Python and OpenAI Gym

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**ACTIVITIES & OTHER ACHIEVMENTS**

Volunteer Head of Mechatronics Department for annual tech festival Technovanza’17 at MAHE Dubai • 1st Place in ‘Institute of Physics’ Young Lecturer Competition ‘18 at Manchester Metropolitan University, UK • Best Actor Award at Interhouse Drama Competition ’14 SEPS, Abu Dhabi • Best Speaker at Interhouse Debate Competition’14 SEPS, Abu Dhabi

***References available upon request***