Yihao CAI

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EDUCATION

Worcester Polytechnic Institute (Worcester, MA, USA) **Sep. 2021 – Present**

- **Major**: Robotics Engineering
- **GPA (Present)**: 3.66/4.0
- **Relevant Coursework**: Foundations of Robotics, Robot Dynamics, Robot Control, HRI (Human Robot Interaction), Computer Vision, Machine Learning, Motion Planning, Algorithm Design, amongst others

Nanjing University of Post and Telecommunication (Nanjing, Jiangsu, China) **Sep. 2016 – Jun. 2020**

- **Major**: Special Talents Program (Telecommunications Engineering)
- **GPA**: 3.36/4.0 (84/100 pts by top 15%)
- **Relevant Coursework**: Engineering Mathematical Analysis, Circuit Analysis Fundamentals, Signals and Systems, Simulated Circuits, Digital Circuits, Telecommunications Principles, Digital Telecommunications Circuits, Data Structure, etc.

USA CITIZENSHIP STATUS

- **Green Card Pending (Due to Covid-19)**

SKILLS

- **Programming Languages:**
  - **Skilled:** C/C++, Python, Matlab, Shell/Tcl, C#, Golang, SQL
  - **Mastered:** HTML5/CSS, JavaScript, Assembly, VHDL/Verilog
- **Tools/Platforms:**
  - **IDE:** Mircosoft Visual Studio, VSCode, CLion, PyCharm, MASM, Wireshark, SolidWorks, Qt Creator, Unity
  - **Frameworks:** ROS, CMake, Docker/Kubernetes, Tomcat, Nginx, Git/SVN, Oracle, TensorFlow/Keras, Vim

RESEARCH EXPERIENCE

WPI HiRO (Human-Inspired Robotics Laboratory) Lab Researcher **Sept. 2021 – Present**

- Working on *Perception-action Coupling in Robot Teleoperation* with fields focused on HRI (Human Robot Interaction)
- Development of wearable system using RealSense Cameras, HTC Trackers and VR Headset with Unity and C#. Design User Study and collect/analyze data for the research results (https://github.com/CharlesCai123/Wearable-MultiCamera-System)

National University Science & Technology Innovation Program – *SLR (Sign Language Recognition)* **Sept. 2018 – Jan. 2020**

- Data Extraction of sign language features from a batch of video frames captured by Kinect-V2 (C++ & Python) plus image-processing algorithms from OpenCV (Edge Detection, Threshold Segmentation, Image Filtering) as optimization procedure
- Implementation of Neural Networks (C3D, LSTM, R(2+1)D, etc.) to train model and model parameters adjustment on server

An Intelligent Housekeeper System Demo Design Based on Physical Raspberry Pi using C++ **Dec. 2018 – May. 2019**

- Creation of a master controlling system with deployment of wires on bread board for the hardware part of whole project system used for scenarios where people deal with daily routines at home (Smart House System)
- Coding for different module sensors using C++ and a user-friendly GUI design with Qt Creator under Raspberry Pi

Summer Mathematical Modelling Application Activity **Jun. 2018 – Sept. 2018**

- Master common mathematical models and algorithms like regression model, correlation analysis and grey prediction, etc.
- Responsible for creating mathematical models applied to daily life and improve the parameters (Matlab)

University Automation Science Laboratory Robotics Research Project – 2 years **Jan. 2017 – Dec. 2018**

- Manipulate physical robots (TurtleBot, DOBOT Arm, etc.) in lab to perform basic tasks (Navigation, Locomotion, etc.)
- Build a framework for robot hand-eye coordination system using Halcon and Matlab, plus implementation of it for object detection and grasping without collision using motion planning algorithms from MoveIt library

EXTRA-CURRICULAR ACTIVITIES

- Member of Cyber Security and IEEE Club in WPI **2021 - Present**
- Founder Member of University Piobot Robotics Club in NJUPT **2017 - 2019**

  Team Leader of Robotics Arm Team, organizing instruction lessons and participating in national competition and projects

HONORS / AWARDS

- Paper with field focused on HRI is planned to be published on ICRA 2021 (On Process) **2021**
- Paper published on IWPR 2020 (DOI: http://dx.doi.org/10.1117/12.2574424) **2020**
- First Prize in 2018 National University Artificial Intelligence Internet Innovation Competition **2018**
- Third Prize in Jiangsu Provincial Mathematics Modelling Competition **2018**
- Third Prize in 2018 China National Service Robot Competition **2018**
- First Prize in Jiangsu Provincial University Advanced Mathematics Contest **2017**
- Faculty Honors: Faculty Academic Excellence Scholarship, Civilian Award **2016 - 2017**

WORKING EXPERIENCE

Hillstone Networks Co., Ltd **Apr. 2021 – Aug. 2021**

Software Development Engineer, Department of Cloud Security

- Use Linux security mechanism (SELinux, AppArmor, IPC namespace, etc.) and docker (with the internal modules dockerd, containerd and runc) to set up the profile for the hosts to preventing the container attack within.
- Responsible for configuring microservice modules telecommunication correspondence in docker (Golang) for Container Security Product HSCA (HillStone Cloud Armour) with common RPC framework like Http, Restful, gRPC, etc.

iWhaleCloud Computation Technology Co., Ltd **Jul. 2020 – Mar. 2021**

Delivery (Maintenance) Engineer, Department of International & Operation Center

- Deployment of service modules on Linux server, including Tomcat, Nginx, Dubbo and Zookeeper, etc. Simulate socket program to send packets, use Tcpdump to analyze them with Wireshark and filter packets by iptables chain rules
- Manage database in Oracle syntax and stored procedure, write Shell scripts for task execution and interaction among servers