

Yuyuan Yuan (袁佑緣)

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Taiwan

EXPERIENCE

- **CAVEDU**
Engineer of production on embedded device and lecturer of tutorials about IoT and cloud service. We write books to introduce the latest technology and serves a [technical blog](#) to promote the latest AI applications.
Sep. 2015 - Sep. 2020
- **Software Engineer Summer Internship**
IBM, Thomas J. Watson Research Center, NY, US
Attended in the research of speeding up the training of a large text-to-speech generation model. We split the model into small modules and proposed a new model pipeline framework to resolve the issue of performance bottleneck.
Jul. 2018 - Aug. 2018
- **Teaching Assistant at NTU**
Calculus I & II
Introduction to Computational Mathematics
(<https://yuanyuyuan.github.io/itcm>)
Sep. 2018 - Jan. 2021

EDUCATION

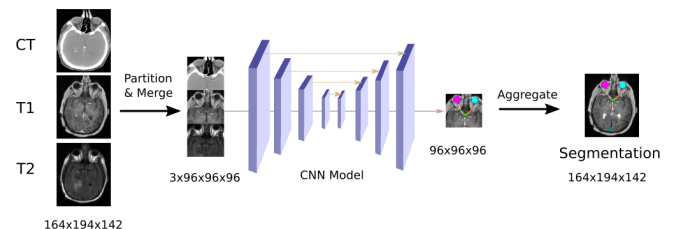
- **Master of Science, Applied Mathematics**
National Taiwan University, 2021
- **Bachelor of Science, Mathematics**
National Taiwan University, 2018
- **Bachelor of Engineering, Mechanical Engineering**
National Taiwan University, 2018

Publications

- Design and Implementation of an Inchworm Robot Y. Y. Yuan, W. C. Lu, C. J. Kao, J. J. Hung, P. C. Lin, International Conference on Advanced Robotics and Intelligent systems (ARIS), 2016
- Challenge IoT with LinkIt Smart 7688 Duo (ISBN: 978-986-93299-2-7)
- LattePanda v.s. IoT (ISBN: 978-986-93299-3-4)

PROJECTS

- **MIS - Medical Image Segmentation**
(<https://github.com/YuanYuYuan/MIS>)
Automatically segmenting brain structures is important for radiation therapy since manual delineation requires anatomical knowledge and the procedure is time-consuming. MIS is a library for automatic analysis and structure segmentation on 3D medical images with powerful deep learning models implemented in PyTorch to help the automatic brain radiotherapy treatment. In practice, the model is also equipped with robustness and works well on datasets from worldwide institutions. Our segmentation model achieved 7th prize in 2020 MICCAI ABCs Challenge.



Deep Learning, Medical Image

- **Auto Grabbing with Robotic Arm**
A robotic arm equipped with a color+depth camera can detect objects using computer vision, and then grab and place the objects appropriately by machine learning models. The algorithm on it can model the objects in 3D space and map them onto a point cloud. The detection accuracy can achieve a tolerance of 1cm. Furthermore, the backend system written in Rust is fully asynchronous that makes the robot be responsive in real-time.

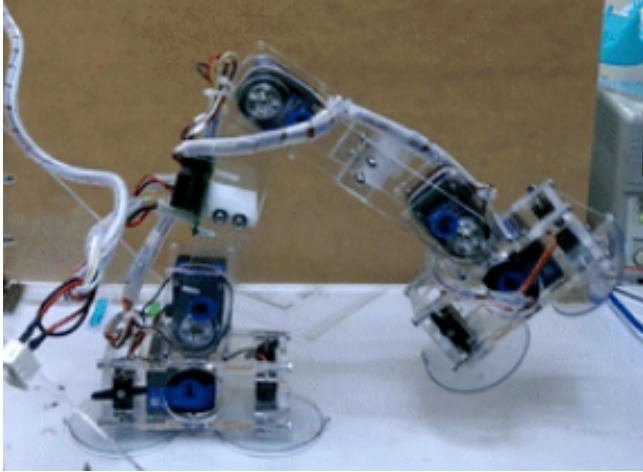


Object Detection, Robotic Arm

PROJECTS

- Inchworm Robot

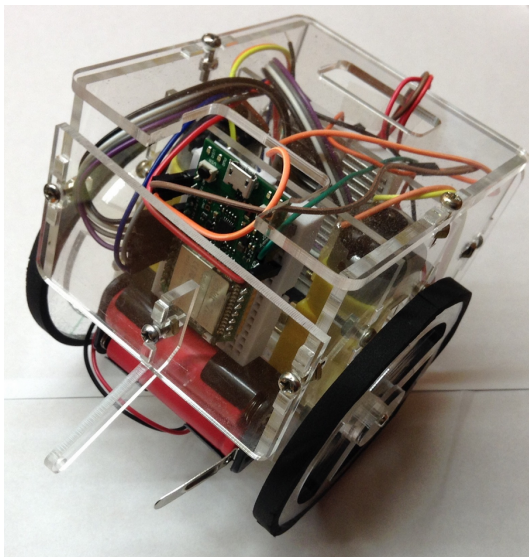
A robot with seven degrees-of-freedom inspired by the inchworm for the research of optimal gait under the physical constraints with robotics. The robot can climb on wall with suction cup and crawl rapidly with minimal energy.



Robotics, Optimal Control

- Balancing Robot

A two-wheeled robot can balance itself with the classical control theorem. Furthermore, the robot can learn to balance well under a simulation environment with reinforcement learning.



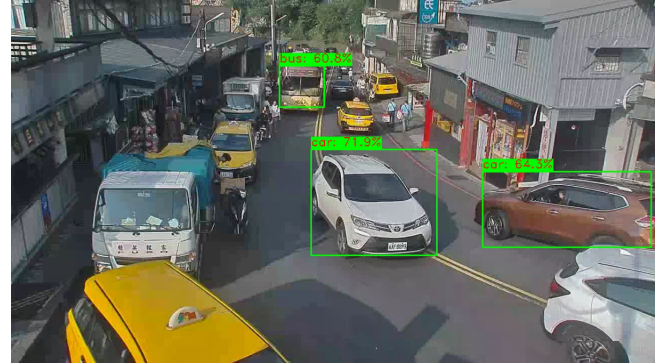
Control Theory, Reinforcement Learning

PROJECTS

- Object Detection on Taiwan Street

(<https://github.com/YuanYuYuan/opencvino-object-detection>)

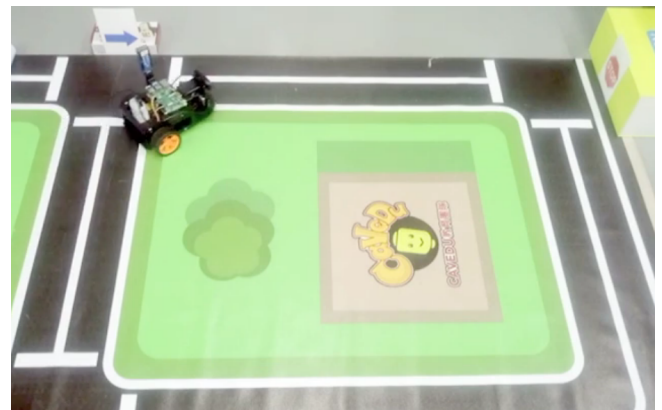
We use the pre-train model from Google Tensorflow Detection and deploy the model to Intel Neural Compute Stick (NCS) to perform edge computing.



Edge Computing, Object Detection

- Automated Guided Vehicle

A robotic car equipped with a camera can follow the street road and recognize the traffic signs by trained with deep learning models. The inference model is optimized and able to run on the microchip in real-time.



Edge Computing, Object Classification

SKILLS

- Technologies

Computer Vision, Cloud Computing, Deep Learning, Robotics, IoT

- Programming Languages

Python, C/C++, Java, Rust, MATLAB, Julia