



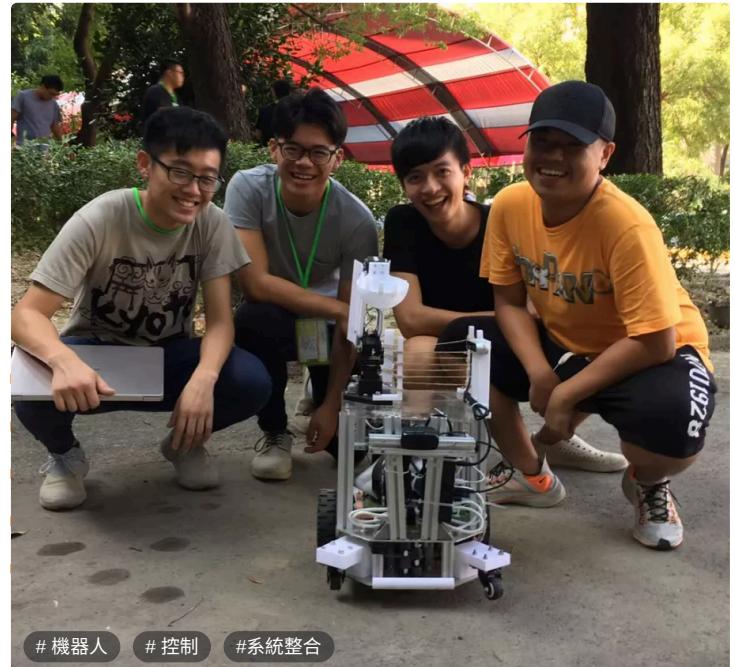
武敬祥



國立臺灣大學 | 自動控制/電機工程學系 碩士畢業

希望職稱：機器人工程師

你好，我是武敬祥。喜歡接觸並學習各種新事物，曾經接觸過影像處理，機器學習，機器人的整合，機器手臂的運動學，與控制相關的各種課程與專題，演算法的部分也略有涉略，對機器人的領域有濃厚的興趣。



機器人 # 控制 # 系統整合

個人資料 男、26歲、役畢(2022/11)

就業狀態 待業中

主要手機 0972-724-369

E-mail tiger871108@gmail.com

通訊地址 台北市內湖區大湖山***

英文姓名 Ching-Hsiang Wu

聯絡電話 (02)2790-1640

聯絡方式 0972724369

駕駛執照 普通小型車駕照、普通重型機車駕照

交通工具 普通小型車

學歷

國立臺灣大學

2023/2~2025/2

自動控制/電機工程學系 | 碩士畢業

國立臺灣大學

2017/9~2022/1

生物機電工程學系 | 大學畢業

求職條件

希望性質 實習工作、全職工作

上班時段 日班

可上班日 錄取後一個月可上班

希望待遇 面議

希望地點 台北市

遠端工作 對遠端工作有意願

希望職稱 機器人工程師

希望職類 韌體工程師、軟體工程師

希望產業 電腦系統整合服務業、電腦軟體服務業

專長

程式語言/軟體

程式語言

- C/C++
- Python

軟體

- Solidworks
- Matlab/Simulink
- QT

機器人作業系統

ROS

- 在Adlink舉辦的"2020 TAUYUAN ROS SUMMER SCHOOL" 中獲得"進階組"季軍
- 在學校的自走車專題中運用ROS1 melodic整合包括webcam, ultrasonic 之類的sensor
- 在學校的實驗室專題中運用ROS1 melodic 整合醫療機器人

ROS2

- 使用PX4 Autopilot 結合 Gazebo simulator 以及ROS2 Humble 進行無人機的模擬

模擬器

- Gazebo
- Isaac Sim

影像處理/電腦視覺

2D

- 使用傳統影像處理(template matching, binary image)來對樂譜進行音名辨識

3D

- 利用 P3P+RANSAC algorithm 來做 Camera relocalization
- 使用 feature extractor 得到 essential matrix，再將essential matrix 分解得出兩張圖片的rotation 和 translation 。藉由得出一連串的rotation 和 translation 來得到移動軌跡(Visual odometry)
- 結合Homography 以及手勢辨識來製作踩地雷 AR 遊戲

人工智慧

機器學習/深度學習

- 有運用過tensorflow, keras建過基本的model
- 在田間機器人競賽中，有使用過開源的yolov3程式碼，並自行label 以用來辨識蘋果

強化學習

- 使用PPO algorithm 於 Isaac Sim/ Lab 中對機器狗進行pedipulation的training使其可以利用指定的腳到達指定位置

控制板 & 單板電腦

1. Arduino
2. Raspberry pi
3. Nvidia TX2/Xavier/Nano
4. Pixhawk

[機器人領域]

在大三時加入了實驗室，正式打開我對機器人的領域的大門。我們的實驗室是機器人與醫療實驗室，在這裡的兩年也完整參與到一個關於醫療機器人的專案，舉凡機構設計，上下層的訊號溝通，介面的設計，都有更深刻的了解。

[自學與除錯]

我認為待在實驗室的生活就像是一個小型的是社會縮影。在實驗室做事時，要盡量滿足專案的需求並頻繁跟老師溝通，卻又沒有一個標準的答案，常常需要自己上網或是主動跟學長姊討論，而且也不一定都是做同樣的工作，舉凡跟機器人系統整合的都會接觸到，長久以來不斷面對新事物下，無論自學能力感覺明顯增加，除錯能力也變得更加敏銳。

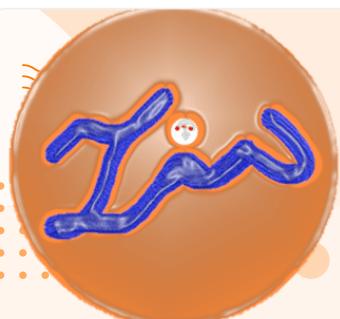
[合作與溝通]

常常享受著獨力完成工作時的成就感，但“獨”的下場只有到處碰壁且無法完成工作要求。大三時加入了服務性社團，在帶小朋友的過程中，溝通的技巧、耐心、態度都要有所改變，更加深了我合作與溝通的能力。對現在的我而言“獨”所帶來的效益會是線性增加的，而合作則是指數增加。

[關於我]

對各種新事物都很有興趣，一旦感興趣就會想要追根究柢，也因此在大學與研究所時修了各種領域的課，更著重在各種有關“機器”的課，機電整合、機器學習、機器人動力控制、機器人學、機器人視覺等等，跟機器有關的“控制領域”也有所鑽研，在涉獵許多科目的情況下，很難說樣樣精通，但因為我擁有好的[自學與除錯]能力，我有自信，無論面對任何新事物都可以更快更好的抓到學習的方向，並透過與同儕的[合作與溝通]，在廣大的[機器人領域]中，將問題迎刃而解。

附件



tigerwuu.github.io/

Personal website

AR VISION: Immersive Entertainment through Virtual Devices

Craig-Hsiang Wu*, Jing-Huei Kao*, and Jo-Hsien Weng*

* Dept. of Electrical Engineering
National Kaohsiung Normal University, Kaohsiung 822, Taiwan
** Dept. of Computer Science
National Taiwan University, Taipei 10617, Taiwan

Abstract: This project aims to visualize the Apple Vision Pro during the process to play games in reality. We utilize an AR mobile application to enable users to control 3D objects to modify, switch, or even move around objects to realize the function of VR. Unlike VR, AR vision has the advantage that it is more accessible for many people. Therefore, our goal is to develop a cost-effective and efficient system that integrates Apple Vision Pro.

Keywords: Augmented Reality - Image warping - Gesture recognition

1. Motivation:
All eyes are on the upcoming launch of the Apple Vision Pro in the next year [1]. With the arrival of the first AR mobile device, we can expect many new AR applications. However, the majority of the AR applications need to be developed on a computer. It is hard to understand AR vision for most people. Therefore, our goal is to develop a cost-effective and efficient system that integrates Apple Vision Pro.

2. Problem Definition:
To develop a system visualizing the Apple Vision Pro, we use a telephone to stimulate AR glasses and a computer to show what they are. In addition to this, we also want to make the AR vision as simple as possible.

Fig. 1: Apple Vision Pro

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AR Vision: Immersive Entertain...

Wuu/DIP

digital image processing homework and

0 Issues **0** Stars **0** Forks

github.com/TigerWuu/DIP/tree/OMR_pr...

Converting Notes to Solmizations...

機器人動力與控制Final Project.pdf

機器人動力與控制(matlab/python/...



第 10 組

器人視覺期末專題

robot vision final project.pdf

同步機器手臂與機器視覺於醫療的...

Abstract: When it comes to controlling a tracked mobile robot, there are two main problems. One is how to estimate the tracking parameters. The other is how to control the mobile robot by using these estimated parameters. In this paper, we propose a novel method to solve the tracking problem. The tracked mobile robot is in a dynamic environment. Subsequently, the tracking parameters must be adjusted in real time. The proposed way among researchers. Lots of researchers have adopted the camera to obtain the tracking parameters of the tracked mobile robot. This is not appropriate. The camera must be directly attached to the mobile robot, which is the overhead that the mobile robot must carry. This will reduce the degree of freedom of the mobile robot. The proposed way is to use an optical sensor. The optical sensor is a cheap and feasible way to obtain the tracking parameters. In [1], the slipping problem when tracking the mobile robot was discussed. We also studied the slipping problem when tracking the mobile robot using a camera. There are many existing resources trying to solve this problem. In this paper, we propose a novel way to solve the slipping problem. This novel way is to use an optical sensor to estimate the slipping parameters [2]. [3] is the previous work of this paper. We also proposed a novel way to model sensors or motion functions such as mobile robot trajectories. In this paper, the mobile robot trajectory is described by a complicated nonlinear function g(t). Then this function g(t) is approximated by a linear function g(t) = at + b. The slipping rate R is defined as Eq 1:

II. PROBLEM FORMULATION
Slipping rate R is defined as Eq 1:

The kinematics of the mobile robot is defined as:

$$\begin{bmatrix} \dot{x} \\ \dot{y} \\ \dot{\theta} \end{bmatrix} = \begin{bmatrix} \cos \theta & 0 & 0 \\ 0 & \sin \theta & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \dot{x}(t) - \dot{x}_d \\ \dot{y}(t) - \dot{y}_d \\ \dot{\theta}(t) - \dot{\theta}_d \end{bmatrix}$$

where $a = 1, b = 0$, θ^0 is the Cartesian coordinate of the mobile robot.

III. APPROACHES

The kinematics of the mobile robot is defined as:

$$\begin{bmatrix} \dot{x} \\ \dot{y} \\ \dot{\theta} \end{bmatrix} = \begin{bmatrix} \cos \theta & 0 & 0 \\ 0 & \sin \theta & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \dot{x}(t) - \dot{x}_d \\ \dot{y}(t) - \dot{y}_d \\ \dot{\theta}(t) - \dot{\theta}_d \end{bmatrix}$$

where $a = 1, b = 0$, θ^0 is the Cartesian coordinate of the mobile robot.

IV. CONCLUSION

This paper proposes a novel way to estimate the slipping parameters. This novel way is to use an optical sensor to estimate the slipping parameters. This novel way is to use an optical sensor to estimate the slipping parameters. This novel way is to use an optical sensor to estimate the slipping parameters. This novel way is to use an optical sensor to estimate the slipping parameters. This novel way is to use an optical sensor to estimate the slipping parameters. This novel way is to use an optical sensor to estimate the slipping parameters.

V. ACKNOWLEDGMENT

This work is supported by the Ministry of Science and Technology (NSC) of Taiwan. The authors would like to thank the NSC for its financial support.

Adaptive_control_final_project.pdf

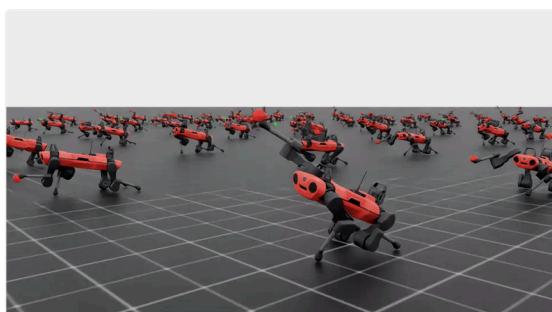
Estimation for Slip Ratio and Ada...



Master's thesis : LBFC with SMWO Design for Fix... 2023/9~2024/12

This thesis proposes a fixed-wing UAVs formation flight system instead of rotorcraft UAVs to improve wind resistance and flight range. A fixed-wing UAVs formation flight system is expected to utilize the wake vortex effect from the leader UAV to extend the flight range. Additionally, a wind observer is proposed to provide the estimated wind velocity and acceleration compensating for the formation flight system to mitigate the threats posed by the variant wind field. Finally, the performance of the fixed-wing UAVs formation flight system with the wind compensation is successfully validated through an ideal model-in-the-loop (MIL) simulation and a more realistic software-in-the-loop (SITL) simulation. In both imulations, the result shows that the formation error is significantly reduced with the wind compensation under variant wind field environments in two formation flight trajectories. The successful integration of the proposed system with the SITL simulation also indicates the feasibility of real-world applications.

[前往查看 >](#)



Q-DRIVE: Quadrupedal Deep Reinforcement for ... 2024/11~2024/12

Legged robots are increasingly sought for tasks that require both agile locomotion and versatile manipulation, yet equipping them with dedicated arms often adds weight and complexity. In this work, we introduce a hierarchical reinforcement learning framework for pedipulation---using a quadruped's legs for manipulation tasks. Our approach comprises a high-level policy that dynamically selects which leg to use, and a low-level policy that learns precise foot control, including stable contact force when interacting with rigid objects. By combining these two levels of control, we significantly reduce execution time when tasks (e.g., pressing a button) appear on different sides, while maintaining robust balance and accuracy. Crucially, we propose a novel reward design that encourages both reaching the target point and applying the correct contact force to ensure successful and safe manipulation. Simulation results show that our hierarchical method outperforms single-limb approaches in both efficiency and fine-force control, demonstrating the feasibility of using multiple legs for rapid, precise, and stable interactions in dynamic environments.

[前往查看 >](#)

證照

其他證照

1. 中華民國桌球C級裁判證
2. 中華民國桌球C級教練證
3. EMT1 初級救護員

工作經驗

總年資 1年(含)以下工作經歷



AI Robotic Engineer

艾知科技股份有限公司（電腦系統整合服務業 1~30人）

演算法工程師 | 台北市內湖區

2021/10~2022/8

11個月

Build a fully autonomous VTOL system with ROS

- Mount a variety of sensors, such as intel Realsense d435i, T265, and webcam on Raspberry Pi4.
- Study the obstacle avoidance and SLAM techniques to be applied to UAV systems.
- Enable precision landing function with the distance sensor and irlock beacon.

#AI #系統整合 #Python #ROS

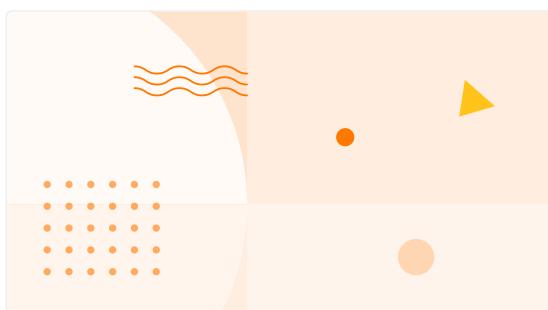
鄉村服務社



2020/3~2021/6

每年的寒暑假到南投的瑞峰國中進行為期一周的生活營，營隊內容以活潑輕鬆的方式讓當地的學生了解各種時事或科學知識，各種時事如投票、媒體識讀，科學知識如空氣砲、降落傘等等

桌球教練/陪練



2018/6~2019/6

先後到兩所國小進行桌球夏令營的老師及桌球隊的陪練及教練

語文能力

英文

聽/略懂 說/略懂 讀/略懂 寫/略懂

TOEFL 86