



電腦遊戲與智慧實驗室 (CGI Lab) 包辦 AWS DeepRacer League 前三名

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2022 AWS DeepRacer 全球自動駕駛賽車聯盟，自 2022 三月起展開為期八個月的線上資格賽，吸引世界眾多業界與學術界的高手參加，總計超過 15 萬人次的挑戰和篩選，最終由 50 位全球各界好手，在拉斯維加斯進行總決賽。

AWS DeepRacer 是一個由進階機器學習技術「強化學習」(Reinforcement Learning, RL) 驅動的 1/18 比例自動駕駛賽車，自 Amazon Web Services(AWS) 於 2018 年發表以來受到各界注目，並為此每年舉辦賽車比賽，參賽者須運用強化學習驅動，是 AWS 專為強化學習初學者所設計的機器，希望透過有趣和高娛樂性的方式為開發人員提供探索機器學習的機會。

歷年來實驗室的學長們在 AWS DeepRacer 的表現就相當卓越，2019 的朱詠嘉學長獲得季軍、2020 的許博鈞、郭奎廷學長獲得冠軍、季軍等佳績。而去年我們也有參賽，但在 2021 我們(李頤、李政毅、施囿維)參賽時在總決賽的時候失誤，在 24 強就輸掉了比賽沒能晉級。

而 2022 年總決賽時我們不止記取去年的教

訓，也透過歷屆參與過比賽的學長們的經驗分享和技術傳承，在每一場比賽中觀察對手、優化模型讓模型在賽道上跑得更快，爭取到總決賽的參賽資格，而在決賽第一輪 50 取 32 強階段時，我們的模型表現並不如預期，雖然順利晉級了前 32 強，但第一輪時跑得最快的前三名都是來自 JPMC (摩根大通) 頂尖的工程師，其中包含去年 2021 的冠軍選手 Rogue。我們在比完第一輪決賽後回飯店緊急賽後討論，根據當天我們三人對車子及場地的狀況進行分析，並對模型做調整，到隔天第二輪決賽(32 取 8)、第三輪決賽(8 取 3) 都在不斷調整我們的模型，最終才成功調整出最優的模型跑出最佳成績。

在第二輪決賽時李政毅以最短時間 13.768 的時間打破第一輪決賽時 JPMC 所保持的最快紀錄，而在最終決賽時李頤又以最短時間 13.756 秒的打破李政毅的最快紀錄，成為該賽道的紀錄保持人，最終由李頤、李政毅、施囿維分別拿下冠軍、亞軍、季軍的成績，成功打敗許多優秀的企業參賽者，將世界總冠軍抱回台灣，再度向世界顯示台灣的科技人才不容小覷。

CGI Lab Winning All 3 Medals at AWS DeepRacer League

The 2022 AWS DeepRacer League has launched an eight-month qualification tournament from March 2022. The tournament attracted developers from academia and industry around the world to participate in the qualifying stage. More than 150,000 developers participated in the challenges and screenings and eventually 50 players from all over the world advanced to the knockout stage of the championship in Las Vegas.

AWS DeepRacer is an autonomous 1/18th scale race car powered by advanced machine learning technology called "Reinforcement Learning (RL)". Since AWS DeepRacer was announced by Amazon Web Services (AWS) in 2018, it has attracted attention from all over the world and the racing competition is held every year. Participants have to develop a reinforcement model to control throttle and steering. The platform designed by AWS for RL beginners provides an interesting and fun way for developers to get started with machine learning.

Over the years, the seniors of CGI Lab have performed very well in AWS DeepRacer League, including Yongjia Zhu (bronze medal 2019), Bo-Chun Hsu (gold medal 2020), and Kuei-Ting Kuo (bronze medal 2020). CGI Lab also participated the competition last year, although we (Lee I, Lee Cheng Yi, Shih Yu Wei) made a mistake in the final and finalized the top 24 in 2021.

In the 2022 finals, we not only remembered the

lessons from the last year, but also shared the experience and technical inheritance of the seniors who have participated in the past competitions. By observing our opponents in each game and optimizing the model to make the model run faster on the track, we finally strive to compete for the spot in the finals. In the round-of-32 stage of the finals, our model did not perform as expected. Although we successfully advanced to the top 32, the top three fastest runners in the first round were top engineers from JPMC (JPMorgan Chase), including 2021 champion Rogue. After the first round of finals, we went back to the hotel for an urgent postgame discussion. We analyzed the conditions of the car and the venue on the day and adjusted the model accordingly. We kept adjusting the model in the second round of finals (8 out of 32) and the third round of finals (3 out of 8), thereby optimizing the model to get the best result.

In the second round of finals, Lee Cheng Yi broke the record held by JPMC in the first round of finals, posting a personal best time of 13.768 seconds. In the third round of the final, Lee I broke Lee Cheng Yi's record with 13.756s, thereby becoming the track record holder. In the end, Lee I, Lee Cheng Yi, and Shih Yu Wei won the championship, runner-up, and third place, respectively. We have successfully defeated many outstanding competitors from industry. Bringing the world championship back to Taiwan, we showed once again the world that Taiwan's scientific and technological talents should not be underestimated.

