吳毅成教授
榮獲科技部傑出研究獎

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科技部為獎勵研究成果傑出之科學技術人才，長期從事學術或產學研究，提升台灣學術、產學研究水準，增強國家科技實力，特別設立「傑出研究獎」。本院吳毅成教授榮獲科技部 109 年度傑出研究獎。

吳毅成教授專研電腦對局應用與深度強化式學習相關應用，獲許多突破性研究成果。研發圍棋程式 CGI（CGI Go Intelligence），是第一個能下讓子棋的深度強化式學習（DRL）電腦圍棋程式，並提出新的 AlphaZero 方法，以此大幅改良 CGI 程式並提高勝率。該程式在 2017 年八月世界智能圍棋公開賽中，獲得預賽全勝冠軍、決賽亞軍，其中曾擊敗騰訊公司的絕藝、DeepZenGo，也是第一個學界程式在正式的人機賽中，打敗職業九段棋士。此外，吳教授團隊同時提出新的棋力調整方法，為全球第一個能提供超過三十多種不同圍棋棋力的系統，可在對弈過程中動態偵測棋士的棋力，研究團隊各項成果已用於培訓國家級職業高段棋士。

吳毅成教授是台灣在 AI 領域最具指標性的學者之一。他聚焦 AI 如何從虛擬環境走入真實世界的應用，這樣的結果不僅開啟學界對 DRL 技術的研

究熱潮，同時也預告未來 AI 將更有機會應用於多方領域，走向產業化發展，其研究成果對台灣產業及社會有莫大貢獻，以下是吳毅成教授傑出研究獎得獎感言：

吳毅成教授：我很幸運有一個很好的研究團隊

感謝科技部的肯定，很榮幸獲得科技部「傑出研究獎」！有機會獲得此獎，應該是我很幸運地有一個很好的研究團隊，這個獎也是對我們團隊的肯定。首先要感謝科技部的支持，尤其是早期人工智慧專案計畫的關鍵協助，以及後續普適人工智慧中心給予持續的支持，以及國網的計算資源配合。也感謝陽明交大資訊學院一直以來提供很好的研究環境，諸多長官、同仁、先進於研究路途上一直給予的鼓勵與支持。這使得我們有機會與國際前沿的研究單位如 Facebook，挑戰許多高難度研究議題。我也要感謝棋界如海峰棋院（林文伯董事長）、紅面棋王周俊勳等的支持與合作，除了捐款給我們團隊做研究，也配合我們的研究，甚至啟發我們許多新研究議題，如自動棋力調整技術。

Professor I-Chen Wu was awarded the Outstanding Research Award of the Ministry of Science and Technology

The "Outstanding Research Award", instituted by the Ministry of Science and Technology (MOST), honors scientific and technological talents having outstanding research performance, thereby encouraging them to devote themselves to academic and industry-academic research to improve the quality of Taiwan's research in the international community, and ultimately boost the country's technological capacity. Dr. I-Chen Wu, professor of the College of Computer Science, received the 2020 Outstanding Research Award from the Ministry of Science and Technology.

Professor I-Chen Wu, specializing in applications of computer games and deep reinforcement learning, has achieved breakthrough results in his research. CGI (CGI Go Intelligence) is the first deep reinforcement learning (DRL) computer Go program that can play handicap-Go. Professor Wu proposed a revised AlphaZero algorithm to substantially improve CGI so that the win rate increases. In August 2017, CGI Go program won the second place in "CITIC Securities Cup", the first World AI Go Open. In this competition, CGI swept the first day of the preliminary round, and defeated FineArt, developed by Tencent Inc., and DeepZenGo from Japan. In the meantime, CGI is the first Go program developed at academic institutes to beat a 9 dan human professional in formal competitions. Moreover, Professor Wu's team proposed a new approach to strength adjustment for the Go program. This strength adjustment system is the first program in the world that offers more than 30 different levels, and supports the dynamic detection of players' strengths. It has been adopted to train Go professionals, e.g., the national team, to promote the national Go team skill.

Professor I-Chen Wu is one of the most prominent scholars in artificial intelligence in Taiwan. He focused

on the AI technologies applied to computer games and extended to the real world. His findings not only ignited a boom in the research toward DRL in academia, but also foresaw that AI would have greater impact on diverse areas and move toward Industrial development. His research has made great contributions to industry and society in Taiwan. The acceptance speech by Professor Wu is as follows:

Professor I-Chen Wu: I feel very lucky to be a part of such a great team!

I am extremely grateful to the Ministry of Science and Technology for acknowledging my hard work this year. It is truly an honor to receive the outstanding research award of MOST. The biggest honor goes to my team. It would never be possible for me to win this award without their help and dedication. Firstly, I would like to show my sincere appreciation to the Ministry of Science and Technology for its support, especially to the early artificial intelligence project, the follow-up support of PAIR Labs, and the computing resources of Taiwan Computing Cloud. My special gratitude goes to the School of Computer Science of National Yang Ming Chiao Tung University for providing such a great research environment. I am truly thankful to officials and colleagues for the constant encouragement and advice on my research. These supports gave us the opportunity to solve challenging topics with international cutting-edge research institutions, such as Facebook. Finally, I would like to thank the Go Association such as Haifong Go (Chairman Bough Lin) and Chun-Hsun Chou for their support and cooperation. With their sponsorship and engagement in our research team, we are even inspired for new research topics, such as automatic strength adjustment technology.