

參與國際頂尖會議 開拓國際視野

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交大資訊鼓勵師生在頂尖國際會議論文發表，近期本院碩博士生在頂尖國際會議論文表現極為亮眼，特別在 AAI、CVPR 等重要的人工智慧頂尖會議都有學術發表。本院十分重視學生做研究的能力，透過鼓勵參與國際頂尖會議等學術活動，讓學生們有機會與全球一流人才互相切磋，達到增進國際視野與跨文化溝通能力，我們邀請幾位參與其中同學分享心得：

發表論文：Accelerating and Improving

AlphaZero Using Population Based Training

作者：Ti-Rong Wu, Ting-Han Wei, I-Chen Wu

指導教授：吳毅成老師

國際會議：Thirty-Fourth AAI Conference on Artificial Intelligence (AAI-20)

該會議重要性：The Thirty-Fourth AAI Conference on Artificial Intelligence，簡稱 AAI-20，是目前國際最頂尖的人工智慧學術會議之一。由於深度學習技術發展迅速並能有效地應用到各領域項目，近年來 AI 研究蔚為風潮，今年 AAI-20 會議投稿數量共計 7737 篇，其中僅 1591 篇被接受發表，接受率為 20.6%。接受的論文分成 oral、spotlight 兩種類型，並且每篇論文皆有海報展示。

吳迪融同學心得分享：這次會議前兩天參加了數場 tutorial，透過半天至一天的時間聆聽不同領域、主題的演講，往往能得到看待研究問題不同角度的觀點，收穫良多。會議第三到六天則是各論文的報告。這次發表的論文獲選為 oral（僅 453 篇接受為 oral；比率：453/7737 ≈ 5.85%），需要進行約莫 20 分鐘的口頭報告，向與會者介紹本篇論文技術重點及回復提問。另外也於當天晚上在海報展覽區向有興趣的與會者介紹並討論詳細的技術內容。而且會議的每天晚上，大會也安排好幾位不同研究領域的專家針對人工智慧在各領域演講。藉由參與這類型的會議以及與其他研究者的交流，不僅可以快速了解各領域的最新知識，更可以得知目前的人工智慧領域的趨勢與潮流發展，對於未來的研究方向會更有方向。

發表論文：Ghost Calls from Operational 4G

Call Systems: IMS Vulnerability, Call DoS

Attack, and Countermeasure

作者：Yu-Han Lu, Chi-Yu Li, Yao-Yu Li, Sandy

Hsin-Yu Hsiao, Tian Xie, Guan-Hua Tu, Wei-

Xun Chen

指導教授：李奇育老師

國際會議：ACM International Conference on Mobile Computing and Networking (MobiCom) 2020（接受率：17%）

該會議重要性：ACM MobiCom 為無線和移動網路 (wireless and mobile networking) 領域的頂尖國際會議，近五年平均接收率為 18%。

呂昱翰同學心得分享：本篇的論文是對 4G 網路與 IMS 系統設計上的缺失，設計攻擊手法與提供解決方案，同時結合機器學習來進行進一步的分析。我認為通往完成一篇論文的路上有許多問題，包含一開始確立研究目標、過程中尋找與解決問題、還有最後論文的呈現手法，這些我都受到同學及老師許多幫助，實驗室大家有各領域的知識能提供解答，或是給予不同觀點的看法，老師也會與我們討論研究方向，提供建議，集結眾人之力才能順利完成這篇論文。

發表論文：WBF-PS: WiGig Beam Fingerprinting for UAV Positioning System in GPS-denied

Environments

作者：Pei-Yuan Hong, Chi-Yu Li, Hong-Rong

Chang, YuanHao Hsueh, KuoChen Wang

指導教授：李奇育老師

國際會議：IEEE International Conference on Computer Communications (INFOCOM) 2020（接受率：20%）

該會議重要性：IEEE INFOCOM 為網路領域的頂尖國際會議，近五年平均接收率為 20%。

洪培元同學心得分享：很高興在李奇育教授的指導下，論文能上頂尖會議。這份榮譽是和老師學長學弟一起努力得來的。加入實驗室會從動手做和研讀一流論文開始。一段時間下來，便可知到領域的潮流，能找出別人不足的地方，還

有確立研究方向。題目選定後，會不斷和老師做攻防演練來找出缺失並改進，最後投稿便被接受了。

在我的學術生涯中，發論文倒是其次，最重要的是有個表率可以觀摩。讓我學習到老師良好的時間管理、做研究的方法，以及被他的熱情所影響。

發表論文：Time Flies: Animating a Still Image with Time-Lapse Video as Reference

作者：Chia-Chi Cheng, Hung-Yu Chen, Wei-

Chen Chiu

指導教授：邱維辰老師

國際會議名稱：IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2020)

該會議重要性：CVPR 為電腦視覺領域中最頂尖的會議。今年一共有 6656 篇有效投稿，其中有 1470 篇被接受，接受率為 22% 左右。

近年來深度學習與人工智慧越來越熱門，而電腦視覺也被認為是該領域中很重要的發展方向。因此 CVPR 也被公認為是 AI 領域中的頂尖會議之一。

鄭家期同學心得分享：這是我第一次參加頂尖會議，當初知道論文被接受時非常開心，以為能順利去美國發表，但後來因為疫情的關係改為線上會議。

雖然覺得有點可惜，但換個角度想可能也是因此而參加到最特別的一次 CVPR。因為時差的關係，我的報告時間為台灣的半夜一點，也是個特別的經驗。

會議過程中跟來自世界各地的學者討論我的研究方法、概念及結果，一開始非常緊張，但到後來越來越放鬆，也從中得到很多不錯的建議與想法。

這次會議中也讓我學到要對自己的研究跟想法有信心，與他人討論時也要盡量的表達自己，其實與會者們都是很互相欣賞的，也都希望可以互相學習，所以清楚闡述自己的想法及勇於發問一定會有意想不到的收穫！

發表論文：IF-Net: an Illumination-Invariant Feature Network

作者：陳柏亨，駱昭旭，黃祖寬，楊浚，陳冠文

國際會議名稱：ICRA 2020, International

Conference on Robotics and Automation

該會議重要性：於世界頂級 A 級會議，會議內論文主軸 focus 在機器人與人工智慧之研究議題與應用。

陳柏亨同學心得分享：很高興論文能夠被世界頂級的會議接受，尤其是在現在人工智慧領域這麼火熱的情況下，能夠讓自己的研究內容受到會議的肯定，是非常令人振奮的。在這次的虛擬會議中，遇到很多能力很強的研究學者，而且大家在線上會議的討論也非常熱烈，都在互相腦力激盪，也學到了很多其他領域的新知。而這次我們投稿的內容屬於 AI 領域的深度學習，所以在虛擬會議中也遇到不少對我們研究感興趣的學者，我也非常喜歡這種互相答辯來回的過程。經過這次參與國際會議的過程，整體而言是可以學到很多專業知識，感覺獲益良多。

發表論文：Spatiotemporal Super-Resolution with Cross-Task Consistency and its Semi-supervised Extension

作者：Han-Yi Lin, Pi-Cheng Hsiu, Tei-Wei Kuo, Yen-Yu Lin

指導教授：林彥宇老師

國際會議：International Joint Conference on Artificial Intelligence 2020 (IJCAI 2020)

該會議重要性：IJCAI 是人工智慧領域中的頂尖學術會議之一，首屆舉辦在 1969 年，原為每兩年一次，但隨著近年來深度學習技術的迅速發展與廣泛應用，自 2016 年起每年召開。今年的接受率更創下近年來新低 12.6%，今年投稿數為 4717 篇，有 592 篇被接受。

林翰毅同學心得分享：這是在 AI 領域的第一個研究成果，對這個領域從不熟悉到有一篇研究成果，前後花了約一年半的時間。一開始我先了解 AI 的核心技術以及此技術如何應用在電腦視覺領域，接著一邊大量閱讀論文也邊尋找可能的研究題目，然後與老師討論出這個研究主題，最後設計方法與反覆實驗，並寫成文章投稿。很開心這個領域正蓬勃發展的同時能夠參與其中，也感謝共同作者群的指導教授們，每周一起討論研究，不斷修正，最後才能產出這篇頂尖會議論文。

Participation in Top International Conferences Would Broaden a Global Vision

The college of Computer Science, NCTU, encourages faculty and students to submit papers at top international conferences. Recently, our master and PhD students have performed extremely well at top international conferences, especially in AAAI, CVPR and other important artificial intelligence top conferences. Our college holds students' research abilities in great regard. By encouraging participation in top international conferences, students would have opportunities to interact with world-class talents to broaden their global vision and develop effective cross-cultural communication skills. Here are some students' experiences.

Title of Article: Accelerating and Improving AlphaZero Using Population Based Training
Author: Ti-Rong Wu, Ting-Han Wei, I-Chen Wu
Advisor: Dr. I-Chen Wu

International Conference: Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20)
The Significance of the conference: The Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20), is one of the top international conferences. Due to the recent advances and applications of deep learning technology in various fields, AI has become a growing area of research and development in the past few years. In this year's AAAI-20 conference, 7,737 papers were reviewed, and 1,591 papers were accepted, with an acceptance rate of 20.6%. Accepted papers will be divided into two categories: oral presentation and poster presentation. Each paper has a poster display.

The experience of Ti-Rong Wu: I participated in several tutorial sessions in the first two days of the conference. I listened to speeches in various topics and field and gained a lot of knowledge from a wide variety of perspectives on research through quite a few sessions. Papers were presented during the last 4 days of the conference. Our paper was accepted as oral presentation (only 453 papers were accepted as oral; ratio: 453/7737 ≈ 5.85%). An oral presentation would take about 20 minutes to introduce the technical highlights of the paper and answer questions. In addition, we will introduce and discuss our technology in more detail in the poster exhibition area in the evening.

Title of Article: Ghost Calls from Operational 4G Call Systems: IMS Vulnerability, Call DoS Attack, and Countermeasure

Author: Yu-Han Lu, Chi-Yu Li, Yao-Yu Li, Sandy Hsin-Yu Hsiao, Tian Xie, Guan-Hua Tu, Wei-Xun Chen

Advisor: Dr. CHI-YU LI
International Conference: ACM International Conference on Mobile Computing and Networking (MobiCom) 2020 (acceptance rate: 17%)
The Significance of the conference: ACM MobiCom is a top international conference on wireless and mobile networking. The acceptance rate is 18% over the past 5 years.

The experience of Yu-Han Lu: Our paper is about the discussion of design deficiencies and attack techniques of 4G network and IMS system, thereby providing effective solutions and integrating machine learning for further analysis. There are many challenges regarding the completion of a paper, including setting up a research goal in the beginning, finding and solving problems during the research process, and compiling the final paper. I have received a lot of help from classmates and my advisor. Everyone in the laboratory may provide answers in various fields, or give different perspectives. My advisor would also discuss research directions with us and provide suggestions. The completion of this paper would be a team work to me.

Title of Article: WBF-PS: WiGig Beam Fingerprinting for UAV Positioning System in GPS-denied Environments
Author: Pei-Yuan Hong, Chi-Yu Li, Hong-Rong Chang, YuanHao Hsueh, KuoChen Wang
Advisor: Dr. CHI-YU LI

International Conference: IEEE International Conference on Computer Communications (INFOCOM) 2020 (acceptance rate: 20%)
The Significance of the conference: IEEE INFOCOM is a top international conference on Networks. The acceptance rate is 20% over the past 5 years.
The experience of Pei-Yuan Hong: It is a pressure to me that my paper was accepted in the international conference under the guidance of Dr. Chi-Yu Li. The honor should be shared by my advisor, my colleagues, and me due to the joint effort. Being a member of the lab, we begin with hands-on works and survey excellent papers. After studying for some time, you will realize the trends in the field, recognize other's weaknesses, and choose research directions. After the topic is defined, we will continue to conduct offensive and defensive drills with our advisor to find

out the weak points and make improvements. Finally, the paper is accepted. In my academic career, paper publishing is the second priority. The most important thing to me is to find a role model who possesses merits I can learn from. My adviser is exactly the one: his good time management, the research methods he teaches, and his enthusiasm for the research.

Title of Article: Time Flies: Animating a Still Image with Time-Lapse Video as Reference
Author: Chia-Chi Cheng, Hung-Yu Chen, Wei-Chen Chiu

Advisor: Dr. Wei-Chen Chiu
International Conference: IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2020)
The Significance of the conference: CVPR is one of the top international conferences on computer vision. In this year's CVPR conference, 6,656 papers were reviewed, and 1,470 papers were accepted, with an acceptance rate of 22%.

In recent years, deep learning and artificial intelligence have become more and more popular. Computer vision is also considered to be one of the very important development directions in the field. Therefore, CVPR is recognized as one of the top conferences in the AI field.

The experience of Chia-Chi Cheng: It is my first time attending a top international conference. I was very happy when I was informed that my paper was accepted. I thought I would go to the United States for a presentation; however, it was changed to an online conference due to the COVID-19 pandemic. Although I felt sorry for not going abroad, I thought this CVPR might be the most special one from a different perspective. Because of the time difference, my presentation time was 1:00am, right in the middle of the night in Taiwan, which was also a special experience to me.

During the presentation, I discussed my research methods, concepts, and results with scholars all over the world. At first, I was very nervous, but later on I was getting relaxed. I received many good suggestions and ideas from them. I have learned so much at this conference: building my confidence in my own research and ideas and expressing my ideas in great detail while discussing with others. I realized that all participants appreciated each other and hoped to learn from each other. Therefore, you would gain beyond all expectations if you express yourself clearly and ask questions bravely!

Title of Article: IF-Net: an illumination-invariant Feature Network
Author: Po-Heng Chen, Zhao-Xu Luo, Zu-Kuan Huang, Chun Yang

Advisor: Dr. Kuan-Wen Chen

International Conference: ICRA 2020, International Conference on Robotics and Automation
The Significance of the conference: ICRA 2020 is the world's largest and most comprehensive technical conference focused on the topics and applications of robotics and automation.

The experience of Po-Heng Chen: I am very happy that my paper was accepted in the top international conference. Among the booming of AI research, it is very exciting that my research was affirmed by the conference committee. In this virtual conference, I met many capable scholars. The discussions in the online conference were very enthusiastic. We tried to bounce ideas off each other, and also learned a lot of new ideas in other fields. The paper we presented in this conference was categorized to deep learning in the AI field, so that I met many scholars who are interested in our research online. I especially enjoyed the Q&A session. In general, I have learned a lot of professional knowledge and gained a lot at the conference.

Title of Article: Spatiotemporal Super-Resolution with Cross-Task Consistency and its Semi-supervised Extension
Author: Han-Yi Lin, Pi-Cheng Hsiu, Tei-Wei Kuo, Yen-Yu Lin
Advisor: Dr. Yen-Yu Lin

International Conference: International Joint Conference on Artificial Intelligence 2020 (IJCAI 2020)
The Significance of the conference: IJCAI, one of the top international conferences in the AI field, was founded in 1969, and held biennially in odd-numbered years since 1969. Due to the recent advances and applications of deep learning, IJCAI has been held every year since 2016. The 12.6 percent acceptance rate based on valid submissions marked a historic low for the prestigious and discerning conference. In this year's IJCAI conference, 4,717 papers were reviewed, and 592 papers were accepted.

The experience of Han-Yi Lin: This is my first paper in the AI field. It took me one and a half year from knowing nothing in the field to conducting a research paper.

In the beginning, I first studied the core technology of AI and how to apply this technology to computer vision. Next, I surveyed a lot of papers while looking for possible research topics. I discussed my research directions with my advisor, designed my research methods and repeated experiments, and finally submitted my paper to the conference. I enjoyed the participation among the booming AI field. I would like to thank the advisors of the joint research group for discussing together every week and constantly refining my paper, which molded this top conference paper at the end.