

國立中央大學電機工程學系

講座教授

IEEE /IET/CIEE/AAIS Fellow

林法正 (*Faa-Jeng Lin*)

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Sep. 29, 2026

一、個人資料與簡介

姓名：林法正
服務機關/職稱：國立中央大學電機工程學系講座教授

主要學歷

國立清華大學電機工程研究所博士 1989/09 至 1993/07
國立成功大學電機工程研究所碩士 1983/09 至 1985/06
國立成功大學電機工程學系學士 1979/09 至 1983/06

主要經歷

國家中山科學研究院董事 2024/07~2026/08
國家科學及技術委員會政務副主任委員 2024/05~2026/08
國家實驗研究院院長 2022/06~2024/08
國家原子能科技研究院董事 2023/09至今
國立中央大學資電學院院長 2021/02~2022/05
聯合再生能源股份有限公司董事 2021/05~2024/05
行政院科技會報科技政策諮詢委員 2019/09~2021/12
台灣電力公司常務董事 2017/06至今
財團法人台灣大電力研究試驗中心專家董事 2016/11~2021/03
行政院科技計畫首席評議專家 2017/05~2019/04
行政院科技會報辦公室兼任研究員 2017/05~2019/04
國立中央大學聯合研究中心主任 2013/02~2017/01
能源國家型科技計畫第二期智慧電網主軸中心召集人 2014/01~2019/03
能源國家型科技計畫第一期智慧電網主軸計畫召集人 2010/01~2013/12
國立中央大學電機工程學系教授 2007/07 至今
國科會工程處電力學門召集人 2007/01 至 2009/12
國立東華大學電機工程學系教授兼教務長 2006/02 至 2007/07
國立東華大學電機工程學系教授兼研發長 2003/08 至 2006/01
國立東華大學電機工程學系教授兼系主任 2001/08 至 2003/07
中原大學電機工程學系教授 1998/08 至 2001/07
中原大學電機工程學系副教授 1993/08 至 1998/07
中山科學研究院三所助研員 1985/10 至 1989/09

專長

電機控制、非線性控制、智慧型控制、電力電子、再生能源、智慧電網

簡介

二、相關研究獎勵

一、國科會82,83,84,85,86,87,88,89學年度甲等研究獎勵
二、1999年晉升IEEE Senior Member
三、榮獲中原大學八十九學年度研究傑出教授獎
四、榮獲中國電機工程學會八十九年度優秀青年電機工程師獎
五、榮獲英國電機工程學會(IEE)2002年Electric Power Applications最佳論文獎 Crompton Premium
六、榮獲國科會九十三年度傑出研究獎
七、榮獲國立東華大學九十三學年度東華學術獎
八、榮獲2004、2005、2006、2009、2011年第三、四、五、八、十屆台灣電力電子研討會優秀論文獎
九、榮獲教育部九十三年度產業機台伺服定位專題競賽鈦昇科技獎
十、榮獲中國電機工程師學會九十四年度傑出電機工程教授獎
十一、榮獲英國The Institution of Engineering and Technology (IET) 2007年會士(Fellow)
十二、榮獲國立中央大學九十七年度特聘教授
十三、榮獲國科會九十七年度傑出學者研究計畫
十四、2009 MATLAB/Simulink技術與應用文章/論文徵文比賽佳作
十五、榮獲國立中央大學九十九學年度講座教授
十六、榮獲國科會九十九年度傑出研究獎
十七、榮獲中華民國自動控制學會一百年度傑出自動控制工程獎
十八、2012 DSP and MCU Applications Contest by Texas Instruments Asia比賽佳作
十九、榮獲國立中央大學102學年度講座教授
二十、2013年中華民國電力工程研討會電力學門貢獻獎
二十一、榮獲科技部一百零二年度傑出研究獎
二十二、榮獲工業技術研究院機械與系統研究所一百零二年最佳論文獎
二十三、Texas Instruments innovation challenge DSP/MPU Design Contest 2014, Taiwan第二名
二十四、榮獲國立中央大學103學年度績優專利獎
二十五、榮獲國立中央大學104學年度績優專利獎
二十六、榮獲中國工程師學會105年度傑出工程教授獎
二十七、榮獲國立中央大學105學年度講座教授
二十八、榮獲國立中央大學105學年度績優專利獎
二十九、ShanghaiRanking's 2016全球電機電子工程學科高被引學者 by Elsevier
三十、榮獲2016年第三十七屆中華民國電力工程研討會優秀論文獎
三十一、榮獲美國The Institute of Electrical and Electronics Engineers (IEEE) 2017年會士(Fellow)
三十二、榮獲2017年科技部特約研究計畫
三十三、榮獲國立中央大學107學年度績優專利獎

三十四、榮獲國立中央大學107學年度績優技術移轉獎
三十五、榮獲國立中央大學108學年度講座教授
三十六、榮獲國立勤益科技大學108學年榮譽講座教授
三十七、榮獲2020年第十七屆台灣電力電子研討會優秀論文獎
三十八、榮獲2020年第四十一屆中華民國電力工程研討會優秀論文獎
三十九、榮獲國立中央大學109學年度績優技術移轉獎
四十、榮獲2020年科技部特約研究計畫
四十一、榮獲2021台灣創新技術博覽會發明競賽銅牌獎「馬達控制系統及其最大功率因數控制器的控制方法」
四十二、榮獲科技部110年度傑出特約研究員
四十三、榮獲國立中央大學111年產學合作績優獎
四十四、榮獲國立中央大學111學年度講座教授
四十五、榮獲2022年第二十九屆東元獎
四十六、榮獲NSTC2022年未來科技獎「智慧型互聯微電網電能共享與調度技術」
四十七、榮獲中國電機工程學會111年度會士
四十八、榮獲2023 Fellow of Asia-Pacific Artificial Intelligence Association (AAIA) now International Academy of Artificial Intelligence Sciences (AAIS) since Jan. 2016
四十九、指導碩士班生翁祥瑀榮獲111年度工研院電網人才發展聯盟優秀學生獎學金
五十、榮獲2023中華民國電力電子協會電力電子傑出貢獻獎
五十一、榮獲NSTC2024未來科技獎「用戶側韌性強化之模組化聚落式微電網解決方案」
五十二、榮獲國立中央大學113學年度績優技術移轉獎
五十三、榮獲中國電機工程學會113年「電機工程獎章」
五十四、榮獲113年中技社電機學術獎
五十五、榮獲Best Paper Award 2024 International Automatic Control Conference (CACS), Oct. 31, 2024, Taoyuan, Taiwan.
五十六、榮獲教育部第69屆學術獎
五十七、榮獲2025年第22屆台灣電力電子研討會優秀論文獎
五十八、榮獲Best Poster Presentation Award, IEEE Industrial Applications Society 2025 (IAS2025) Annual Meeting, June 2025, New Taipei City, Taiwan.

三、學術服務

90.8~93.7 國科會電力學門複審委員
90.9~96.7 中華民國電力電子協會資訊咨詢服務委員會主任委員，理事
91.7~92.8 中華民國電力電子協會會訊總編輯
92.8~99.7 中國電機工程學會學術研究委員會委員

92.8~96.7 東區奈米科技 K-12 教育發展中心計畫主持人
92.9~96.12 電力電子雙月刊總編輯
94.1~106.12 Member of Editorial Board, IET Electric Power Applications
94.10~105.7 教育部 94, 95, 96, 97, 98, 103, 105 學年度科技大學評鑑委員會委員
94.8~95.11 國科會電力學門複審委員
95.12~98.12 國科會電力學門召集人
96.1~106.6 國科會中央政府科技發展計畫審議作業群組委員
96.9~106.7 中華工程教育學會(IEET)認證委員
96.9~108.12 中華民國電力電子協會常務理事
96.9~ 99.8 IEEE IE13/PEL35 台北分會主席
98.1~ 99.12 IEEE台北分會理事及Officer, Student activities
98.6~106.12 Regional Editor – Asia Pacific, IET Electric Power Applications
99.1~100.12 中華民國自動控制學會理事
99.1~ Technical Committee Member, Fuzzy Systems Technical Committee, IEEE Computational Intelligence Society
99.9~101.12 台灣智慧型電網產業協會副理事長
99.12~102.12 能源國家型科技計畫第一期智慧電網與讀表子項與主軸計畫召集人
100.1~ 101.12 教育部大學校院校務評鑑委員會委員
100.1~ 107.12, 114.3~ Associate Editor, IEEE Trans. Fuzzy Systems
100.1~ 102.12 經濟部技術審查會委員
100.1~106.7 經濟部技術處小型企業創新研發計畫(SBIR)審查委員
100.1~101.6 工業技術研究院太陽光電發電系統設置補助申請案審查委員
100.1~103.12 國科會電力學門複審委員
100.8~101.9 經濟部能源局台灣智慧電網總體規劃委員
100.9~102.8 經濟部國家產業創新獎審查委員
101.1~ 103.12 IEEE Computational Intelligence Society 台北分會主席
101.1~ 經濟部能源策略規劃小組委員
101.6~102.12 經濟部能源局能源業務策略規劃委員
101.10~ 經濟部智慧電網推動小組委員
102.1~108.3 能源國家型科技計畫第二期智慧電網主軸計畫召集人
102.1~105.11 台灣智慧型電網產業協會理事長
103.1~106.7 教育部第二期再造技優計畫電子電機領域召集人
104.1~106.7 中科管理局高科技設備前瞻技術發展第二期計畫技術發展委員會委員
104.1~106.7 南科管理局綠能低碳計畫主審委員
104.9~105.8 教育部 104 學年度技術學院綜合評鑑電機類召集委員
105.1~ 107.12 科技部電力學門複審委員
105.11~ 114.4 Associate Editor, IEEE Trans. Power Electronics
105.11~110.3 財團法人台灣大電力研究試驗中心專家董事

106.1~ 台灣智慧型電網產業協會榮譽理事長
106.1~106.7 竹科研發精進產學合作計畫主審委員
106.5~110.12 行政院科技會報兼任研究員
106.5~108.4 行政院科技計畫首席評議專家
106.6~ 台灣電力公司常務董事
107.1~ Member of International editorial board, Energy Systems Research, Melentiev Energy Systems Institute, 俄羅斯科學院西伯利亞分院
107.1~ 教育部「優化技職校院實作環境計畫」「建置區域產業人才及技術培育基地計畫」審查委員
107.1~ Member of IEEE SMC, IE and CIS Fellow Evaluating Committee
107.2~107.12 行政院原子能委員會 107 年辦理所屬機關員額評鑑小組委員
107.8~110.12 工研院「電網管理諮議委員會」委員
107.8~111.12 台灣電力公司智慧電網專案小組諮詢委員
108.1~111.12 台灣電力公司電力交易平台小組委員
108.6~110.12 經濟部綠能科技產業推動中心技術發展組專家顧問
108.6~112.07 國立中興大學節能減碳執行委員會委員
108.9~110.12 行政院科技會報科技政策諮詢委員
109.1~110.12 台灣電力公司電力系統穩定度及可靠度小組委員
109.1~ 中華民國電力電子協會常務監事
109.2~111.12 工業局產業升級創新平台輔導計畫委員
110.4~ 中央研究院「永續轉型減碳路徑政策建議諮詢平台」委員會委員
110.5~111.12 行政院淨零排放路徑專案去碳能源工作圈系統整合工作小組召集人
110.5~113.5 聯合再生能源股份有限公司董事
110.7~111.8 台灣電力公司董事會投資計畫暨事業計畫審議小組會議召集人
111.4~111.12 科技部科技白皮書環境面召集人
112.9~ 國家原子能科技研究院董事
113.3~114.12 教育部「 114 學年度大學校院申請增設、調整特殊項目院、系、所、學位學程」 －電資類領域召集人
113.7~115.8 國家中山科學研究院董事
113.7~115.8 文化內容策進院董事

四、研究成果目錄

A. SCIE and International Journal Papers: (First Author is also the Corresponding Author; Times Cited/Google Scholar, Dec. 2022)

[1] F. J. Lin, C. I. Chen, Y. T. Cheng, and Y. H. Wu, " Topology Optimization of Modular Rundling Microgrids as a System of Systems for Resilient Transportation Energy Using KADDQN and Resilience Index," IEEE Systems Journal, Accepted, 2026. (SCIE)

[2] S. G. Chen, F. J. Lin*, S. R. Lee, X. D. Wang, and B. Y. Huang "Online

Enhanced Efficiency Control for Synchronous Reluctance Motor," IEEE Trans. Industrial Applications, Accepted, 2026. (* Corresponding Author, SCIE)

[3] S. G. Chen, F. J. Lin*, B. Y. Huang, S. R. Lee, and X. D. Wang, "Adaptive Computed Flux Control for SynRM with Modified MTPA and Enhanced Transient Control," IEEE/ASME Trans. Mechatronics, Accepted, 2026. (* Corresponding Author, SCIE)

[4] F. J. Lin, K. H. Tan, C. T. Lin, C. Y. Wang, and W. K. Wei, "Droop Controlled Microgrid Using Intelligent Pre-Synchronization for Grid Connection," IEEE Journal of Emerging and Selected Topics in Power Electronics, Accepted, 2026. (SCIE)

[5] C. Y. Chen, F. J. Lin, P. J. Chen, C. C. Chen, and C. T. Wu, "Optimal Home Energy Management System for a Residential Grid Connected Microgrid using Improved Slime Mould Algorithm," IEEE Systems Journal, Accepted, 2026. (SCIE)

[6] F. J. Lin, S. Y. Chen, C. X. Xu, and H. H. Hsu, "Model Predictive Current Control Using Adaptive Neural Network Based Sliding Mode Observer for IPMSM," IEEE Access, vol. 13, pp. 178556-178570, 2025. (SCIE, IF 3.745, 35/156) MOST 112-2221-E-008-010-MY3

[7] C. G. Chen, F. J. Lin*, T. S. Sun, and F. H. Teng, "Intelligent Backstepping Controlled Synchronous Reluctance Motor Position Servo Drive with PPFNN," International Journal of Fuzzy Systems, Published Online, Oct. 24, 2025. (* Corresponding Author, SCIE, IF 4.406, 29/137) NSTC 112-2221-E-008-010-MY3

[8] C. I. Chen, F. J. Lin, Z. M. Su, and Y. T. Cheng, "Frequency and Voltage Stabilization with Polynomial Petri Fuzzy Neural Network Based Control Strategy for Microgrid Clusters," IEEE Systems Journal, vol. 19, no. 3, pp. 801-812, Sep. 2025. (SCIE, IF 3.987, 31/156) NSTC 113-2218-E-008-016

[9] F. J. Lin, K. H. Tan, Z. Y. Kuan, and C. Y. Wang, "Droop Controlled Microgrid with Intelligent PV-DSTATCOM for Power Quality Improvement," IEEE Trans. Power Electronics, vol. 40, no. 9, pp. 12754-12769, Sep. 2025. (SCIE, IF 6.373, 22/266) NSTC 113-2218-E-008-016.

[10] F. J. Lin, S. Y. Chen, I. M. Hsu, and C. H. Hsu, "Robust Deadbeat Predict Current Control Using Intelligent Integral Sliding Mode Control for Interior Permanent Magnet Synchronous Motor Drive," IEEE Transactions on Transportation Electrification, vol. 11, no. 3, pp. 8282-8293, June 2025. (SCIE, IF 6.519, 28/235) MOST 109-2221-E-008 -024 -MY3.

[11] F. J. Lin, F. H. Deng, and P. Y. Huang, "Intelligent Backstepping Control of Nonlinear Time-Varying System with Interval Type-2 Recurrent Fuzzy Neural Network Estimator," IEEE Access, vol. 12, pp. 135873-135885, 2024. (SCIE, IF 3.745, 35/156) MOST 112-2221-E-008-010-MY3

[12] F. J. Lin, S. Y. Lu, M. C. Hu, and Y. H. Chen, "Stochastic Optimal Strategies and Management of Electric Vehicles and Microgrids," Energies, 2024, 17, 3726. (SCIE, IF 3.0, 63/112)

[13] F. J. Lin, K. H. Tan, X. Y. Weng, and Y. R. Li, "An Improved Droop Control

of Microgrid Using Intelligent Variable Droop Coefficient Estimation," IEEE Journal of Emerging and Selected Topics in Power Electronics, vol. 12, no. 4, pp. 4117-4132, Aug. 2024. (SCIE, IF 5.5, 58/275) NSTC 112-2218-E-008-011

[14] F. J. Lin, P. L. Wang, and I. M. Hsu, "Intelligent Nonsingular Terminal Sliding Mode Controlled Nonlinear Time-Varying System Using RPPFNN-AMF," IEEE Trans. Fuzzy Systems, vol. 32, no. 3, pp. 1036 -1049, 2024. (SCIE, IF 9.518, 10/266) MOST 109-2221-E-008-024-MY3

[15] Y. H. Liao, F. J. Lin, Y. Zhou, W. R. Lai, and X. S. Huang, "A Bidirectional Grid-Tied ZVS Three-Phase Converter Based on DPWM and Digital Control," Energies, 2023, 16, 6453. (SCIE, IF 3.2, 27/151)

[16] S. Y. Chen, F. J. Lin, and T. A. Pu, "Hierarchical Power Management System for a Fuel Cell/Battery Hybrid Electric Scooter," IEEE Trans. Transportation Electrification, vol. 10, no. 2, pp. 4583-4593, June 2024. (SCIE, IF 6.519, 28/235)

[17] F. J. Lin, M. S. Huang, Y. C. Chien, and S. G. Chen, "Intelligent Backstepping Control of Permanent Magnet Assisted Synchronous Reluctance Motor Position Servo Drive with Recurrent Wavelet Fuzzy Neural Network," Energies, 2023, 16, 5389. (SCIE, IF 3.2, 27/151) MOST 110-2221-E-008-054-MY3

[18] F. J. Lin, C. F. Chang, Y. C. Huang, and T. M. Su, "A Deep Reinforcement Learning Method for Economic Power Dispatch of Microgrid in OPAL-RT Environment," Technologies, 2023, 11, 96. (SCIE, IF 3.6, 21/103) MOST 111-3116-F-008-003

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B. 專書與研究成果報告

1. 林法正 2025. "微電網之智慧型功率控制與最佳化經濟調度(1/3)"，科技部研究成果報告。
2. 陳正一(林法正) 2025. "用戶側韌性強化之模組化聚落式微電網解決方案(2/2)"，科技部研究成果報告。
3. 廖益宏(林法正) 2025. "利用智慧型控制之高性能永磁輔助同步磁阻馬達驅動系統(2/3)"，科技部研究成果報告。
4. 林法正 2024. "用戶側韌性強化之模組化聚落式微電網解決方案(1/2)"，科技部研究成果報告。
5. 林法正 2024. "高性能同步磁阻馬達之智慧型廣域速度驅動系統(3/3)"，科技部研究成果報告。
6. 林法正 2024. "利用智慧型控制之高性能永磁輔助同步磁阻馬達驅動系統(1/3)"，科技部研究成果報告。
7. 林法正 2023. "智慧型高效能內藏式永磁同步馬達驅動系統(3/3)"，科技部研究成果報告。
8. 林法正 2023. "高性能同步磁阻馬達之智慧型廣域速度驅動系統(2/3)"，科技部研究成果報告。
9. 林法正 2022. " 智慧型多層微電網電力調節研究與場域建置(2/2)"，科技部研究成果報告。
10. 林法正 2022. "智慧型高效能內藏式永磁同步馬達驅動系統(2/3)"，科技部研究成果報告。
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五、研究成果說明

在學術研究方面

- **模糊類神經網路智慧型控制技術之建立和應用於馬達驅動控制**

為克服馬達驅動系統在運轉時之參數變化與外力干擾，候選人在交流馬達伺服驅動智慧型控制系統與壓電式超音波馬達之驅動與智慧型控制技術發展上有多項具原創性之研究成果；其中以各式人工智慧(Artificial Intelligence, AI)線上機器學習(Online Machine Learning)模糊類神經網路控制器之發展，使線性馬達及各式精密定位平台之定位精度、控制強健度與動態響應等性能，均有很大之提昇。依據 IEEE Xplore及Thomson Reuters ISI Web of Science資料庫顯示，候選人是國際上第一位將模糊類神經網路之智慧型即時控制(Real-Time Control)與交流伺服馬達驅動(Servo Motor Drive)技術結合的學者專家，研究成果多發表在IEEE Trans. Fuzzy Syst.與IEEE Trans. Ind. Electro., IEEE Trans. Power Electro.等頂級期刊上。由於候選人在伺服馬達驅動智慧型控制技術具原創性之貢獻，IEEE Systems, Man, & Cybernetics (SMC) Magazine在2018年10月號，特別邀請候選人針對伺服馬達驅動之智慧型控制技術發表“Online Autotuning of a Servo Drive Using Wavelet Fuzzy Neural Network to Search for the Optimal Bandwidth”，足見候選人之研發成果非常具有學術創新價值，並已建立其國際學術地位及國際影響力。由於候選人在伺服馬達驅動智慧型控制技術上多項具原創性之傑出貢獻，因此獲得The Institute of Electrical and Electronics Engineers (IEEE) “*For contributions to intelligent control systems for motor drives and motion control*”之肯定，於2017年晉升為會士(Fellow)。

- **以智慧型控制技術提高再生能源系統之供電穩定度**

為因應未來大量的風電與太陽光電發電(PV)系統併聯於電力系統時並維持電力品質所需之控制技術，候選人亦投入智慧電網與再生能源智慧型控制技術之研究且有傑出之貢獻，可大幅提高再生能源系統之供電穩定度與再生能源之滲透率。包含新式主動式孤島偵測法、新型磷酸鋰鐵電池儲能系統、三相鼠籠式感應風力發電系統、主動式濾波器演算法，與智慧型具低電壓穿透(Low Voltage Ride Through, LVRT)能力之太陽光發電系統。候選人是國際學術界第一位提出以模糊類神經網路為基礎之智慧型控制器以實現併網型太陽光電系統與微電網的控制，達成在電網故障期間調控PV系統實虛功以符合低壓穿越的規範並確保三相變流器的輸出電流不會超越電流安全值，研究成果多發表在IEEE Trans. Ind. Electro.與IEEE Trans. Power Electro.頂級期刊上，並兩次應科技部臺灣研究亮點邀稿報導研究成果(結合虛擬慣量併網型微電網之智慧型控制-工程技術_臺灣研究亮點，2020年03月20日；利用智慧型控制微電網以提升再生能源滲透率-工程技術_臺灣研究亮點，2021年11月16日)。另一方面，候選人過去8

年(2017-2024)主持科技部研究與推動計畫共17項(含兩期特約研究計畫)，累計計畫經費達8000萬元。

- **持續累積研究成果，拓展國際學術能見度**

候選人歷年研究成果發表於SCIE國際期刊論文250餘篇，絕大部分是候選人為第一作者或通訊作者的full paper，其中IEEE期刊論文共120篇，另有會議論文152篇，並獲得19項發明專利，包含兩項美國發明專利。由Google Scholar顯示(Nov. 2024)，其論文總引用次數14241次，H-index 67 (Faa-Jeng Lin) 。在交流伺服馬達驅動與雙軸馬達之模糊類神經網路智慧型控制方面，代表著作5，參考著作209, 189, 121及代表著作2及3，在Google Scholar上分別被引用316, 254, 231, 211, 217, 191次。在太陽光電併網發電、鋰離子電池充電及風力發電感應發電機之智慧型控制上，代表著作1及參考著作68, 89，在Google Scholar上也分別被引用165, 118, 102次。

候選人曾獲得由Elsevier主辦之Shanghai Ranking's 2016全球電機電子工程學科高被引學者，及在史丹佛大學根據Scopus的論文影響力數據發布之終身科學影響力排行榜World's Top 2% Scientists 2020 (https://www.elsevier.com/zh-tw/solutions/scopus/worlds-top-2-percent-scientists-2020-taiwan)，於全球近8百萬學者專家中排名第16,699 (Lin, Faa Jeng)，在Electrical & Electronic Engineering次領域的排名是41/105,029，候選人在全球電機電子工程學科超過十萬名專家學者中排名是41，實為國際上該學科高被引用學者。候選人(Lin, Faa Jeng)在該資料庫之2022年終身科學影響力排行榜(https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/6)中仍排名第18,074，在Electrical & Electronic Engineering次領域候選人在全球電機電子工程學科超過11萬名專家學者中排名是46。

由於候選人近年來在伺服馬達驅動控制、再生能源併網控制領域學理之創新與應用技術之創見上成果輝煌，因此於2004, 2010及2013年分別獲得三次國科會傑出研究獎與國立中央大學四次績優專利獎及2018, 2020年績優技術移轉獎，且於2002年獲英國電機工程學會(IEE) Electric Power Applications最佳論文獎Crompton Premium，於2005年獲中國電機工程學會傑出電機工程教授獎，於2007年獲英國The Institution of Engineering and Technology (IET)會士(Fellow)，於2011年獲中華民國自動控制學會傑出自動控制工程獎，於2013年獲中華民國電力工程研討會電力學門貢獻獎，於2016年獲中國工程學會傑出工程教授獎，並榮獲國立中央大學99, 102, 105及108學年度講座教授，及擔任國立勤益科技大學108學年榮譽講座教授，且榮獲科技部110年度傑出特約研究員。由於候選人長期致力於交流馬達伺服驅動智慧型控制系統，及智慧電網與再生能源智慧型

控制技術發展，對台灣智慧電網技術研發及產業發展之推動貢獻卓著，榮獲2022年第二十九屆機械/能源/環境科技領域東元獎及中國電機工程學會111年度會士，並榮獲2023年中華民國電力電子協會電力電子傑出貢獻獎與中國電機工程學會113年「電機工程獎章」及榮獲教育部第69屆學術獎。

在工程技術實務方面

- **協助產業提升研發能量，增進伺服馬達驅動系統之控制性能**

候選人曾經擔任工研院機械所特約研究員與能資所技術諮詢顧問、泰甫股份有限公司霍爾(Hall)電流感測器系列產品之研發顧問，及指導伸昌電機公司完成應用於電漿製程之High Power Switching Power Supply與Pulse Power Supply之技轉，與技轉宏銳電子股份有限公司風力發電系統等之設計。候選人亦曾擔任能源國家型產學合作計畫-高效率垂直軸風力發電與風光互補能源技術發展總計畫主持人，2010年研究經費約1270萬，並協助均豪精密工業股份有限公司風力發電系統與風光互補能源技術等之研發。相關交流馬達伺服驅動技術"高頻信號注入法結合凸極式反電動勢之速度估測法則"發明專利亦已於2013年技轉世紀民生股份有限公司。

模糊類神經網路之即時智慧型控制與交流伺服馬達驅動技術結合的相關技術已於2018年技轉六俊電機公司之新型永磁同步馬達伺服驅動器上，並於2021年技轉台達電子工業股份有限公司。其中六俊電機公司利用智慧型模糊類神經網路控制器即時調整馬達伺服驅動器之參數，使永磁同步馬達控制系統在參數變化和外來干擾的影響下能具備強健之控制性能，並以即時增益自動調整(Online Gain Autotuning) 提升馬達控制精度，並增進永磁同步馬達伺服驅動系統之控制性能。

- **技轉太陽光發電與儲能之能源管理系統，大幅提高再生能源之滲透率**

智慧電網與再生能源智慧型控制技術之部份研究成果已於2017年技轉中興電工機械股份有限公司與健格科技股份有限公司，並於2019年技轉科技部計畫"高效能交流微電網運轉與電力調節研究"之研究成果「太陽光發電與儲能之能源管理系統」至聯齊科技股份有限公司，技轉金新台幣122萬元整，除可有效地調度太陽光電外，又可平滑太陽光電之間歇性，因此可大幅提高再生能源之滲透率。候選人亦於2022年技轉該技術至華城電機股份有限公司，並於2023、2024年技轉國家科學及技術委員會計畫"用戶側韌性強化之模組化聚落式微電網解決方案"之研究成果「配電型靜態同步補償器」與「基於太陽能光電系統之配電型靜態同步補償器」至華城電機股份有限公司，技轉金共新台幣150萬元。配電

型靜態同步補償器可提供分散式電源所需之虛功及諧波補償，因此可大幅提高再生能源系統之供電穩定度與再生能源之滲透率。

- **技轉微電網能源管理系統，協助產業參與台電公司電力交易平台**

候選人曾擔任科技部「綠能科技聯合研發計畫」整合型計畫「智慧型多層微電網電力調節研究與場域建置」總計畫主持人，該計畫執行期限共2年(2021年-2022年)，2年研究經費共約2500萬，企業配合款合計600萬(2021年350萬、2022年250萬，含先期技轉金)。本計畫之目的主要建構互聯交流微電網相關運轉控制技術，針對再生能源轉換器負載分配、微電網降卸載策略、運轉成本最佳化、能源管理與電力調度及再生能源發電預測等技術進行效能之改善及實際場域驗證。本計畫在國立中央大學設計並建造了一個100千瓦的智慧多層微電網示範站。該示範站可以在併網模式和孤島模式下運行，並且全部使用100%可再生能源，包括70千瓦的太陽能、35千瓦的燃料電池以及110千瓦時的儲能系統。本計畫已於2022年技轉「互聯微電網之發電調派排程與故障偵測技術」至臺泥資訊股份有限公司，及技轉「基於邊緣計算之互聯微電網電力控制技術」至聯齊科技股份有限公司。台泥資訊公司已應用本計畫之研究成果於台泥集團之儲能系統上，參加台灣電力公司電力交易平台上之調頻備轉輔助服務(Ancillary Service)，聯齊科技公司亦應用本計畫之成果於電力交易平台之用戶群代表(Aggregator)之技術上，以進行需量反應(Demand Response)；業界估計調頻備轉及需量反應以上兩種技術之市場潛力每年達數十億新台幣。候選人過去8年(2017-2024)累計企業配合款(含先期技轉金)及技轉金額已超過新台幣1000萬元。此外，本計畫微電網能源管理系統的技術已於2024年轉移至緯創資通，協助該公司建立智慧電網調度系統，以涵蓋能源的資訊/通信/控制等技術。技術轉移費用為950萬元新台幣，候選人為共同主持人。

<u>在主持大型研究計畫經歷方面</u>

- **「智慧型輕量化移動載具前瞻技術」跨領域研究計畫**

候選人擔任國科會工程處「智慧型輕量化移動載具前瞻技術」跨領域研究專案整合型計畫“主機板式智慧型輕量化移動載具前瞻技術”總計畫主持人，該計畫執行期限共三年(2009年-2011年)，三年研究經費約共2500萬。本計畫之目的即為發展一主機板式智慧型輕量化移動載具前瞻技術，藉由整合包括行車控制器主機板模組、輪內馬達設計、輪內馬達驅動與控制、智能型電池管理技術、行車動態控制系統、載具外觀與內裝設計及輕量化移動載具規格之研究等技術，提升台灣於輕型電動車(LEV)之技術競爭力。本計畫之最大特色為採用個人電腦之「主機板式」概念，車輛中各模組將透過CAN Bus及USB兩種介面與行

車控制器主機板模組進行連結。使用者可依需求與喜好輕易地組裝、更換或修復，獲得更佳之彈性與方便性。另外智慧型自動診斷系統與智慧型自動停車功能使本計畫所提之LEV具備創新與前瞻技術，預期將成為未來交通運輸新主流。

- **能源國家型科技計畫台美國際合作計畫**

101年度起擔任能源國家型科技計畫台美國際合作計畫-與美國加州理工學院能源科技研究合作 (熱電材料、二氧化碳捕捉與轉化、智慧電網、燃料電池、太陽能電池、生質燃料) 計畫總計畫主持人，執行期限共三年(2012年-2014年)，研究經費約共1億5千7百萬元。為推動能源科技研究發展與促進台灣頂尖大學與研究中心計畫聯盟，由國立中央大學代表與國際知名大學美國加州理工學院之能源科技合作三年期計畫，每年投入研究經費約五千兩百萬元，由候選人擔任總計畫主持人。本計畫分六大能源領域進行: (1)由清華大學材料系陳信文教授主持之熱電材料--應用重要性的Skutterudite材料系統相平衡與微結構探討；(2)由交通大學材料系陳三元教授主持之高溫CO2捕捉與轉化--新穎複合奈米材料模擬及研發；(3)由中央大學電機系林法正教授主持之智慧電網--減緩再生能源整合之不確定性；(4)由成功大學材料系方冠榮教授主持之燃料電池--開發高性能複合陰極材料於SOFC之應用；(5)由交通大學光電系蔡娟娟教授主持之太陽能電池--太陽電池之光學特性增強、表面鈍化與載子傳輸機制之研究；(6)由中央研究院趙裕展研究員主持之生質燃料--纖維水解酵素之生化特性與結構分析及功能改良。本計畫透過各子計畫雙邊定期之視訊工作會議、人員交換之移地研究方式(包含教授、博士後與研究生)、每年九月分別在台灣與美國兩地舉辦之研究成果發表座談會執行能源科技研究合作，進而尋求未來不同能源領域間相互合作的可能性，以達最大之能源發展效益。本計畫加州理工學院合作之成員Dr. Frances Arnold獲得2018年諾貝爾化學獎，她的重要貢獻是利用遺傳演化法來改良蛋白酵素，其研究成果已經應用到全世界好幾百個研究室，包括中央研究院應用於本計畫生質燃料中纖維水解酵素之生化特性與結構分析及功能改良，同時也被應用在許多商業產品中。

<u>在學術服務經歷方面</u>

- **持續推動各項智慧電網計畫，以利節能減碳**

候選人曾擔任能源國家型科技計畫智慧電網主軸中心召集人與目前擔任台灣智慧型電網產業協會名譽理事長及台灣電力公司常務董事，協助政府規劃台灣智慧電網技術研究方向與產業發展方向，利用智慧電網技術除可有效節省用電外，大幅提高再生能源系統之滲透率。智慧電網主軸計畫第一期(2010~2013年)已完成交直流微電網、先進讀表技術(AMI)、先進配電自動化、智慧家庭(建

築)電能管理等8項先導型計畫之關鍵技術開發及智慧電網與讀表相關規範之制定。參與計畫單位除國內各大學外，亦包括核能研究所、資策會網多所、工業技術研究院、中華電信與台灣電力公司等，並整合國內十家業者。在候選人之帶領下，第一期已有75家次投入先期技轉金6215萬元於智慧電網主軸下各計畫；且各公司在智慧電網研發之總投資金額達3億元。根據台灣智慧型電網產業協會統計顯示智慧型電網產品總銷售金額由2009年之新台幣21.09億元，成長至2017年之新台幣290.6億元，智慧電網相關產品銷售總額以年複合成長率38.8%逐年成長。智慧電網主軸計畫第二期(2014~2018年)持續推動各項智慧電網示範計畫，並持續協助台灣電力公司進行智慧電網相關建置等工作。到2018年底，產業已有197家次投入先期技轉金1.97億元於智慧電網主軸中心下各計畫，且各公司在智慧電網開發之總投資金額已達16.69億元。根據台灣智慧型電網產業協會統計國內智慧電網產值2018年達400億，且台電自2016年起已著手佈建智慧電網，舉凡低壓智慧電表、微電網、太陽光電電廠、智慧變電站等之招標均為國內廠商得標，國內產值每年已提升至數百億以上。特別的是，2022年新加坡電力集團以智慧電網發展指標(Smart Grid Index)評比全球94家電力公司，台電公司已名列世界第二。

- **提倡智慧電網建置，以達成再生能源高滲透率**

由於候選人在台灣智慧電網技術與產業發展之策略規劃與推動卓有成效，獲邀於2011總統府科技論壇第3次能源專題會議擔任講員，主題為臺灣智慧電網技術研發方向；獲邀於2012 Asia Pacific Sustainability Leadership Forum(APSLF)於新加坡舉行，擔任Invited Speaker，主題為 Development of Smart Grid in Taiwan；獲邀於2014國際能源論壇(李登輝基金會主辦)擔任Panel Speaker，主題為智慧電網國際發展趨勢與台灣推動現況；獲邀於2015 Conference on Next Generation Power in Asia (American Institute in Taiwan主辦)擔任Keynote Speaker，主題為Development of Smart Grid in Taiwan and Its Challenges；獲邀於2015 Climate Parliament Forum(於Paris舉行)擔任Panel Speaker，主題為Build the Green Grid: Development of Smart Grid in Taiwan。2017年中國電機工程師學會之年會，亦邀請候選人擔任Keynote Speaker，講題為台灣智慧電網技術發展現況與未來佈局；2022年中國電機工程師學會之年會，再度邀請林教授擔任Keynote Speaker，講題為台灣再生能源滲透率提升之推進策略。亦獲得IEEE Smart Grid Magazine之邀請，報導台灣智慧型電網技術與產業發展之策略與現況(Smart Grid Technology Development Strategy of Taiwan, Aug. 2015)。

候選人目前擔任國家實驗研究院院長與經濟部智慧電網推動小組委員，且曾擔任行政院科技會報科技政策諮詢委員，其主要任務係提供國家中長程淨零

排放及智慧電網科技發展政策與方案策略建議，並於2021年兩次獲邀赴民進黨中常會向蔡英文總統分別報告「台灣推動非核家園與能源轉型之必要性-核安、減碳、綠電供應鏈」及「台電燃氣複循環機組邁向淨零排放之展望」之專題，主要報告如何利用智慧電網技術使台灣未來再生能源滲透率能大幅提升，以利達成淨零排放之目標。

- **參與國內外學術服務，推動智慧電網及淨零科技技術之發展**

候選人曾擔任中華民國電力電子協會資訊服務委員會主任委員、常務理事及電力電子雙月刊總編輯、國科會電力學門召集人、IEEE IE13/PEL35台北分會主席、IEEE台北分會理事、中華民國自動控制學會理事、中國電機工程學會學術研究委員會委員、經濟部技審會委員、IEEE CIS11台北分會主席、Regional Editor – Asia Pacific, IET Electrical Power Applications、Associate Editor, IEEE Trans. Fuzzy Systems及行政院科技計畫首席評議專家。目前擔任中華民國電力電子協會常務監事、台灣智慧型電網產業協會理事、Technical Committee Member, Fuzzy Systems Technical Committee, IEEE Computational Intelligence Society、Associate Editor, IEEE Trans. Power Electronics、經濟部能源策略規劃小組委員與經濟部智慧電網推動小組委員。

候選人亦曾擔任國家實驗研究院院長，任內秉持「前瞻創新、民主包容、韌性永續」的精神，帶領國研院持續穩健發展與茁壯，並協助政府推動科技計畫，三大推動主軸之成效如下：一、擔任科技幕僚角色外，充分發揮國研院跨領域研究之特色，協助國科會執行「淨零科技計畫」加速前瞻淨零科技布局與落地應用，與執行「晶創計畫」發展與推動生成式AI、前瞻半導體製程與先進IC設計等科技計畫，扮演支援學術研發與促進新產業的角色；二、推動組織精進計畫，優化國研院人力素質、精進各項管理機制以及數位轉型，並強化留才攬才機制，打造國研院為敏捷團隊；三、發行國研院第一本永續報告書，揭示國研院各項ESG、SDGs永續議題之管理績效，展現對永續經營的重視與決心。

<u>在人才培育方面</u>

- **持續培育電力電子、智慧電網與綠能等高科技產業研究人才**

候選人所帶領指導之研發究隊，三十餘年來總共畢業17位博士、136位碩士。在候選人嚴謹指導訓練下，學生的研究基礎相當扎實，除與學生共同發表230篇SCI國際期刊論文外，學生亦多次獲得國內外許多榮譽獎項，如工業技術研究院機械與系統研究所一百零二年最佳論文獎與Texas Instruments innovation challenge DSP/MPU Design Contest 2014, Taiwan第二名等，及多次獲得台灣電力電子研討會與電力工程研討會優秀論文獎、國科會未來科技獎與國立中央大學

校長獎學金。畢業學生任職於國內外學術單位（台灣科技大學、台灣師範大學、聯合大學、國防大學等）、研發單位（工研院、台經院、中科院、中華電信研究院等）以及業界，為國內高科技產業之發展培養研發人力。

候選人擔任能源國家型科技計畫智慧電網主軸中心召集人期間非常重視人才培育，第二期計畫(2014~2018年)除持續推動各項智慧電網示範計畫及協助台灣電力公司進行智慧電網相關建置等工作外，參與計畫之國內各大學博士生共189人年、碩士生共869人年(參考第二期能源國家型科技計畫全程結案總計畫成果效益報告)，目前多任職於國內各大智慧電網與綠能相關產業、法人及國營事業。

- **提升高教教育品質，培育業界雙語人才**

在國內大專院校教育評鑑與認證部分，候選人長期擔任中華工程教育學會「工程及科技教育認證執行委員會」認證委員及認證團主席，並擔任教育部104學年度技術學院綜合評鑑電機類召集委員與再造技優計畫第二期電子電機領域召集人，亦長期擔任「台灣評鑑學會」之評鑑委員。候選人並以國立中央大學資電學院院長身分擔任教育部「大專校院學生雙語化學習計畫」主持人，本計畫主要是大專校院學生雙語化學習計畫，推動國立中央大學資電學院院大學部使用全英文授課，提升學生英文能力，以滿足產業界所需，藉此提高資電學院師生國際競爭優勢，也能吸引更多國際學生前來就讀。

近五年之主要五項研究成果

- **智慧電網與再生能源智慧型控制技術(Intelligent Control Technologies of Smart Grid and Renewable Energy Sources)**

智慧電網與再生能源智慧型控制技術可大幅提升再生能源之滲透率，本研究之智慧電網運轉與智慧型控制技術包含新式主動式孤島偵測法、新型磷酸鋰鐵電池儲能系統(BESS)、與智慧型具低電壓穿透(Low Voltage Ride Through, LVRT)能力之太陽光發電(PV)系統以因應電網三相不平衡及弱電網，而智慧型再生能源併網技術可抑制電力系統因分散式電源所造成頻率與電壓變動之問題[1]-[4]。本研究已經提出多種基於模糊神經網絡（FNNs）之智慧型控制技術，通過交流-直流（AC-DC）和直流-交流（DC-AC）功率變換器以用於孤島運轉或併網電力應用。本研究且推導出基於反向傳播(Back-propagation)的線上訓練演算法，用以實時訓練FNNs的連接權重、均值和標準差。微電網技術是提升再生能源滲透率的最佳方法，本研究利用OPAL-RT即時模擬系統與硬體迴圈(Hardware in the loop, HIL)功能建置以七美島電力系統為原型之離島微電網[2] ，如下圖所示。本研究微電網由一BESS、PV發電系統、風力發電系統與負

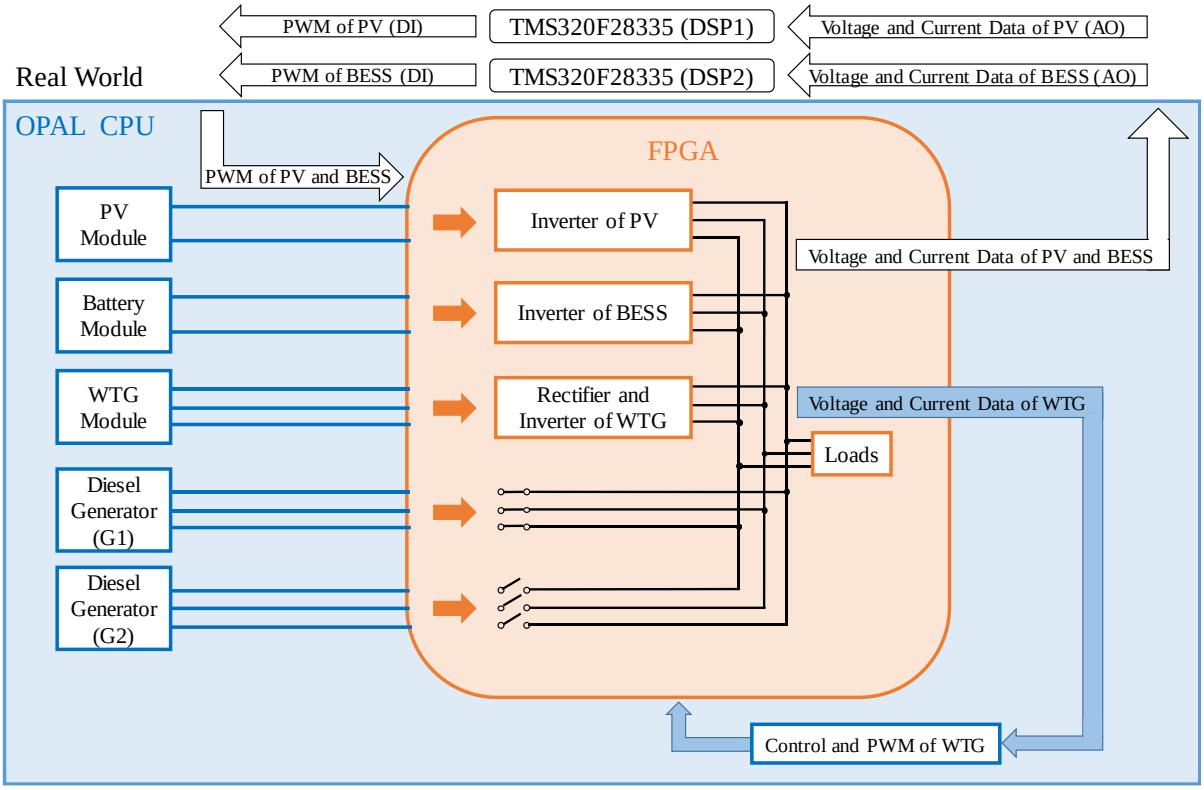
載，以儲能系統當作控制主機(Master)，而PV發電系統及風力發電系統則定位為從屬(Slave)部分。為了改善在併網時的實虛功率控制、併網轉孤島模式時的模式切換以及孤島狀態下時因日照或負載變化所造成之電壓暫態響應，本文除了以FNN取代傳統比例積分控制器外，也提出一線上訓練的非對稱歸屬函數之小波派翠模糊類神經網路(Asymmetric Membership Function Based Wavelet Petri Fuzzy Neural Network, AMFWPFNN)將其取代，以降低對電壓保護電驛之影響，並滿足IEC Std. 60255[2]。PV發電系統與BESS的智慧型控制法則，分別使用兩個TMS320F28335 DSP實現，如下圖所示。近五年已發表於國際重要期刊且具代表性之相關研究成果如下：

[1] F. J. Lin, K. H. Tan, W. C. Luo, and G. D. Xiao,"Improved LVRT Performance of PV Power Plant Using Recurrent Wavelet Fuzzy Neural Network Control for Weak Grid Condition," IEEE Access, vol. 8, pp. 69346-69358, 2020.

[2] F. J. Lin, C. I. Chen, G. D. Xiao, and P. R. Chen,"Voltage Stabilization Control for Microgrid with Asymmetric Membership Function Based Wavelet Petri Fuzzy Neural Network," IEEE Trans. Smart Grid, vol. 12, no. 5, pp. 3731-3741, 2021. (利用智慧型控制微電網以提升再生能源滲透率-工程技術_臺灣研究亮點，2021年11月16日)

[3] F. J. Lin, J. C. Liao, C. I. Chen and P. R. Chen, "Voltage Restoration Control for Microgrid with Recurrent Wavelet Petri Fuzzy Neural Network," IEEE Access, vol. 10, pp. 12510-12529, 2022.

[4] F. J. Lin, J. C. Liao, Y. M. Zhang, and Y. C. Huang, "Optimal Economic Dispatch and Power Generation for Microgrid Using Lagrange Multipliers-based Method with HIL Verification," IEEE Systems Journal, vol. 17, no. 3, pp. 4533-4544, 2023.



Structure of OPAL-RT and peripherals for power control [2]

● 應用智慧型模糊神經網絡控制器於內嵌式永磁同步馬達伺服驅動系統 (Intelligent Fuzzy Neural Networks Controllers with for IPMSM Servo Drive System)

本研究旨在創立基於模糊神經網絡（FNNs）的智慧型控制系統，利用智慧型控制法則來改變內嵌永磁同步馬達（Interior Permanent Magnet Synchronous Motor, IPMSM）驅動系統在實際應用中的非線性和時變控制特性[5]-[8]。同時提出了一種基於功率擾動的場定向控制（Field-Oriented Control, FOC）IPMSM驅動系統的最大扭矩每安培（Maximum Torque Per Ampere, MTPA）新方法，此外還有效地消除了電流和電壓諧波對MTPA控制的影響。在[7]中，本研究提出了智慧型非奇異終端滑模控制Petri概率模糊神經網絡（Intelligent Nonsingular Terminal Sliding Mode Control Recurrent Petri Probabilistic Fuzzy Neural Network, INTSMCRPPFNN），用於IPMSM伺服驅動系統，如下圖所示。首先，在[7]中設計了非奇異終端滑模控制（Nonsingular Terminal Sliding Mode Control, NTSMC）系統，用以跟蹤非線性時變系統的狀態(States)。而實際應用時，建立一個有效的NTSMC系統相當複雜，因為詳細的系統動態，包括受控體的不可預測性，事先無法獲得。因此在[7]中提出了一種具有非對稱隸屬函數的Petri概率模糊神經網絡（RPPFNN-AMF），可以作為理想NTSMC的替代方案來解決其現有的複雜性。此外通過使用Lyapunov穩定性方法來確保漸進穩定性，並以該方法產生

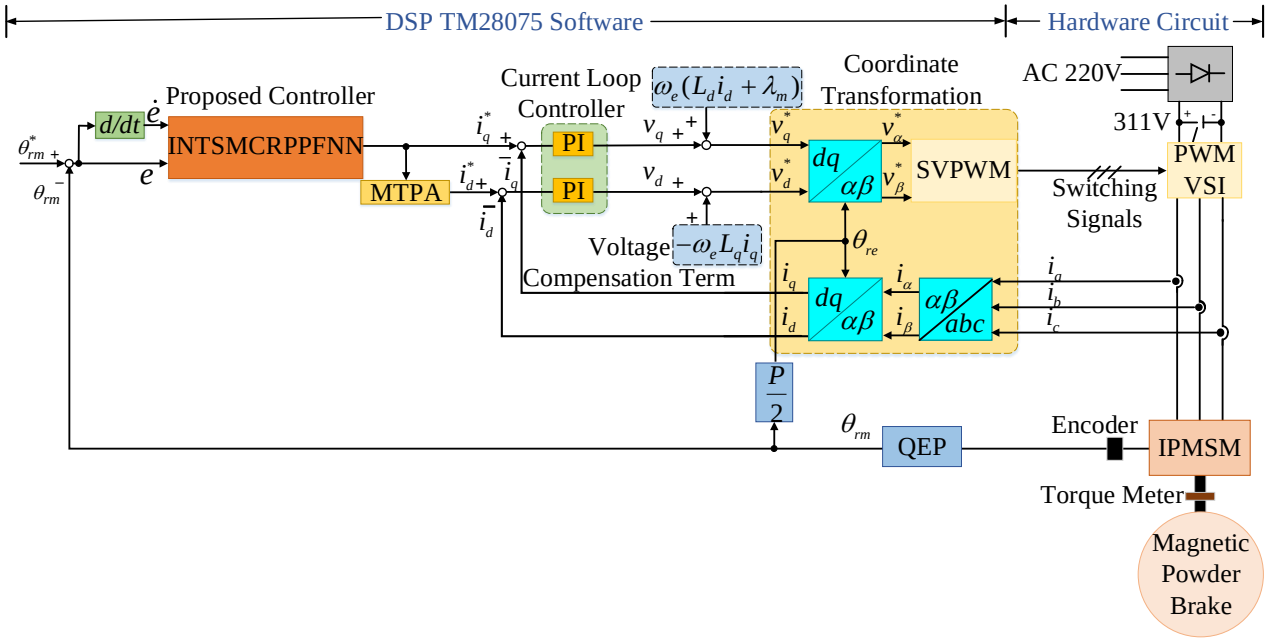
RPPFNN-AMF的線上訓練演算法。所提控制算法實現於TMS320F28075 32位DSP，工作頻率為120MHz，如下圖所示[7]。近五年已發表於國際重要期刊且具代表性之相關研究成果如下：

[5] F. J. Lin, S. G. Chen, S. Li, H. T. Chou, and J. R. Lin, "Online Auto-Tuning Technique for IPMSM Servo Drive by Intelligent Identification of Moment of Inertia," IEEE Trans. Industrial Informatics, vol. 16, no. 12, pp. 7579-7590, 2020.

[6] F. J. Lin, C. W. Liu, and P. L. Wang, "Voltage Control of IPMSM Servo Drive in Constant Power Region with Intelligent Parameter Estimation," IEEE Access, vol. 10, pp. 99243-99256, 2022.

[7] F. J. Lin, P. L. Wang, and I. M. Hsu, "Intelligent Nonsingular Terminal Sliding Mode Controlled Nonlinear Time-Varying System Using RPPFNN-AMF," IEEE Trans. Fuzzy Systems, vol. 32, no. 3, pp. 1036 -1049, 2024.

[8] F. J. Lin, F. H. Deng, and P. Y. Huang, "Intelligent Backstepping Control of Nonlinear Time-Varying System with Interval Type-2 Recurrent Fuzzy Neural Network Estimator," IEEE Access, vol. 12, pp. 135873-135885, 2024.



Control block diagram of intelligent control DSP-based IPMSM position servo drive [7]

● 智慧型控制高效能同步磁阻馬達驅動系統(High-performance Synchronous Reluctance Motor Drive System Using Intelligent Control)

本研究之目標為發展同步磁阻馬達(SynRM)之高效能變頻器與控制方法，使不需稀土磁石之同步磁阻馬達能同時具有高效率及高性能等特性，並發展以數位訊號處理器為基礎之位置及速度控制器來控制高效能同步磁阻馬達系統，硬體的處理核心是採用德州儀器TMS320F28075數位訊號處理器(DSP)，以C語言實現所提出之各種控制法則，並利用DSP周邊擴充電路之編碼器介面電路與

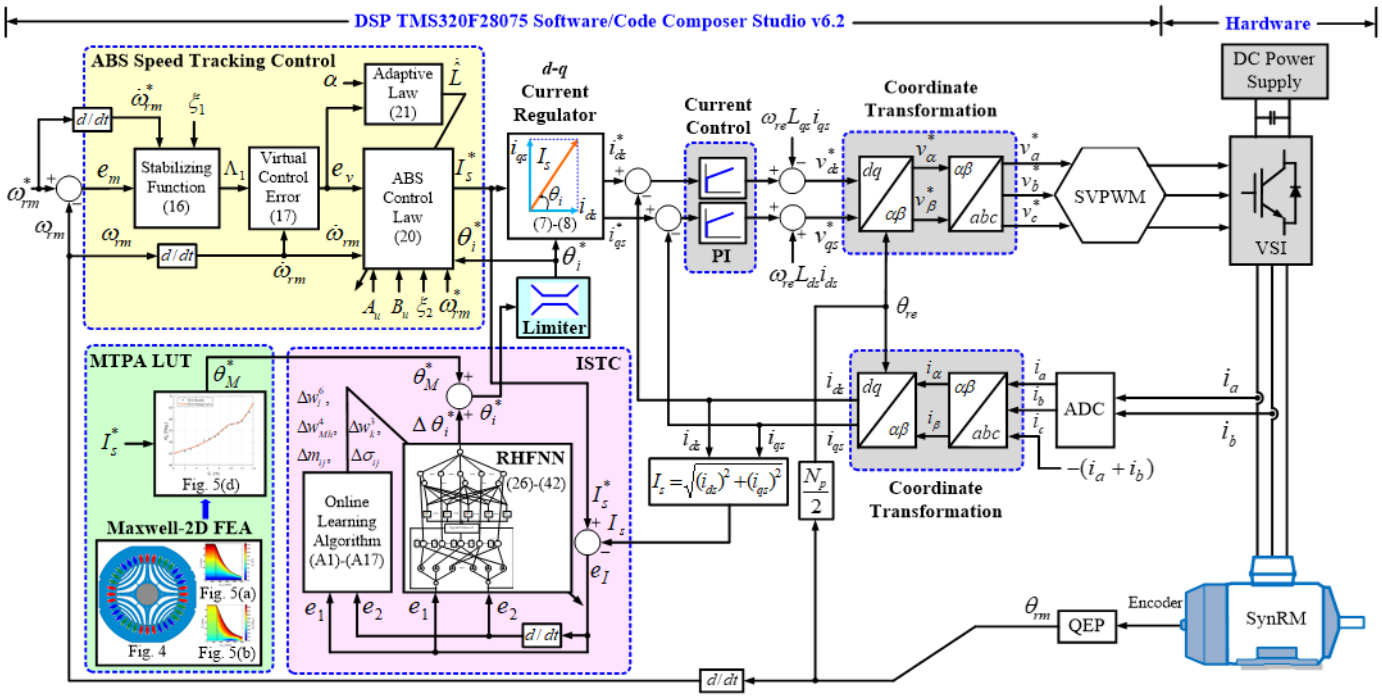
類比數位轉換電路讀取光學編碼器所量測之轉子位置及轉速，以及由電流感測器所量測之相電流訊號，接著再配合磁場導向控制用以驅動同步磁阻馬達[9-12]。在控制器設計方面，發展智慧型步階迴歸控制(Intelligent Backstepping Control, IBSC)、適應性計算電流(Adaptive Computed Current, ACC)[12]速度控制、遞迴式特徵選擇模糊類神經網路(Recurrent Feature Selection Fuzzy Neural Network, RFSFNN)與遞迴式勒壤得模糊類神經網路(Recurrent Legendre Fuzzy Neural Network, RLFNN)等控制器，用來提升同步磁阻馬達的定位性能以及達到每安培最大轉矩控制與定子銅損最小化之目標。本研究並持續發展同步磁阻馬達之智慧型電流角度控制、智慧型最大功因控制及直軸電流控制。近五年已發表於國際重要期刊且具代表性之相關研究成果如下：

[9] F. J. Lin, M. S. Huang, S. G. Chen, C. W. Hsu, and C. H. Liang “Adaptive Backstepping Control for Synchronous Reluctance Motor Based on Intelligent Current Angle Control,” IEEE Trans. Power Electronics, vol. 35, no. 7, pp. 7465–7479, 2020.

[10] S. G. Chen, F. J. Lin, C. H. Liang, and C. H. Liao, “Intelligent Maximum Power Factor Searching Control Using Recurrent Chebyshev Fuzzy Neural Network Current Angle Controller for SynRM Drive System,” IEEE Trans. Power Electronics, vol. 36, no. 3, pp. 3496-3511, 2021.

[11] F. J. Lin, S. G. Chen, M. S. Huang, C. H. Liang, and C. H. Liao, “Adaptive Complementary Sliding Mode Control for Synchronous Reluctance Motor Based on Direct-Axis Current Control,” IEEE Trans. Industrial Electronics, vol. 69, no. 1, pp. 141-150, 2022.

[12] S. G. Chen, F. J. Lin, M. S. Huang, S. P. Yeh and T. S. Sun, “Proximate Maximum Efficiency Control for Synchronous Reluctance Motor via MRCT and MTPA Control,” IEEE/ASME Trans. Mechatronics, vol. 28, no. 3, pp. 1404 -1414, 2023.



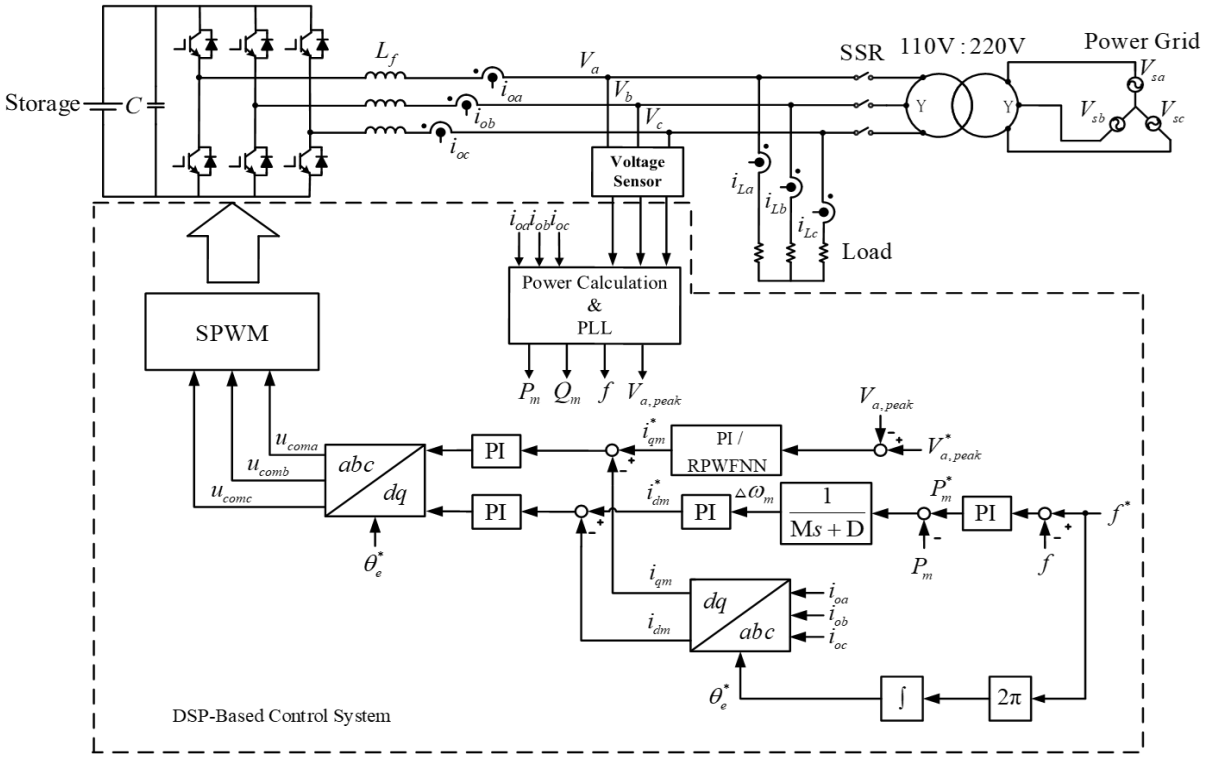
High-performance Synchronous Reluctance Motor Drive System Using Intelligent Control [9]

● 結合虛擬慣量併網型微電網之智慧型控制 (Intelligent Control of Grid-Connected Microgrid with Virtual Inertia)

本研究並提出一種併網型微電網結合虛擬慣量利用主、從控制法則克服一般傳統分散式電源基於功率開關元件變流器之缺點，例如缺乏傳統發電機的慣量特性與獨立電網形成能力[13-15]。本研究的微電網系統控制方法採用主、從控制法則，並且由一儲能系統、太陽光發電系統與一個三相可變電阻負載所組成。其中以儲能系統當作微電網控制主機(Master)，而太陽光發電系統則定位為從屬(Slave)部分。此外為了改善儲能系統在併網模式時的虛功控制以及微電網在併網與孤島模式之間切換的暫態響應，本研究提出一線上訓練的遞迴式機率小波模糊類神經網路(Recurrent Probabilistic Wavelet Fuzzy Neural Network, RPWFNN)取代傳統比例積分控制器，如下圖所示[13]。當微電網在孤島模式運轉時，負載的變化將會造成微電網電壓嚴重地波動，因此本研究所提出的RPWFNN也可用來改善因負載變動所造成的微電網電壓波動。利用所發展之微電網運轉與智慧型控制技術在再生能源間歇性(intermittency)下仍可以達到穩定供電。近五年已發表於國際重要期刊且具代表性之相關研究成果如下：

[13] K. H. Tan, F. J. Lin, C. M. Shih, and C. N. Kuo, "Intelligent Control of Microgrid with Virtual Inertia Using Recurrent Probabilistic Wavelet Fuzzy Neural Network," IEEE Trans. Power Electronics, vol. 35, no. 7, pp. 7451-7464, 2020. (結合虛擬慣量併網型微電網之智慧型控制-工程技術_臺灣研究亮點，2020年03月20日)

[14] F. J. Lin, K. H. Tan, T. Y. Tseng, and M. Y. Lee, “Intelligent Controlled Microgrid for Power Sharing and Load Shedding Improvements,” IEEE Trans. Power Electronics, vol. 37, no. 7, pp. 7928 - 7940, 2022.
[15] F. J. Lin, K. H. Tan, X. Y. Weng, and Y. R. Li, “An Improved Droop Control of Microgrid Using Intelligent Variable Droop Coefficient Estimation,” IEEE Journal of Emerging and Selected Topics in Power Electronics, vol. 12, no. 4, pp. 4117-4132, Aug. 2024.

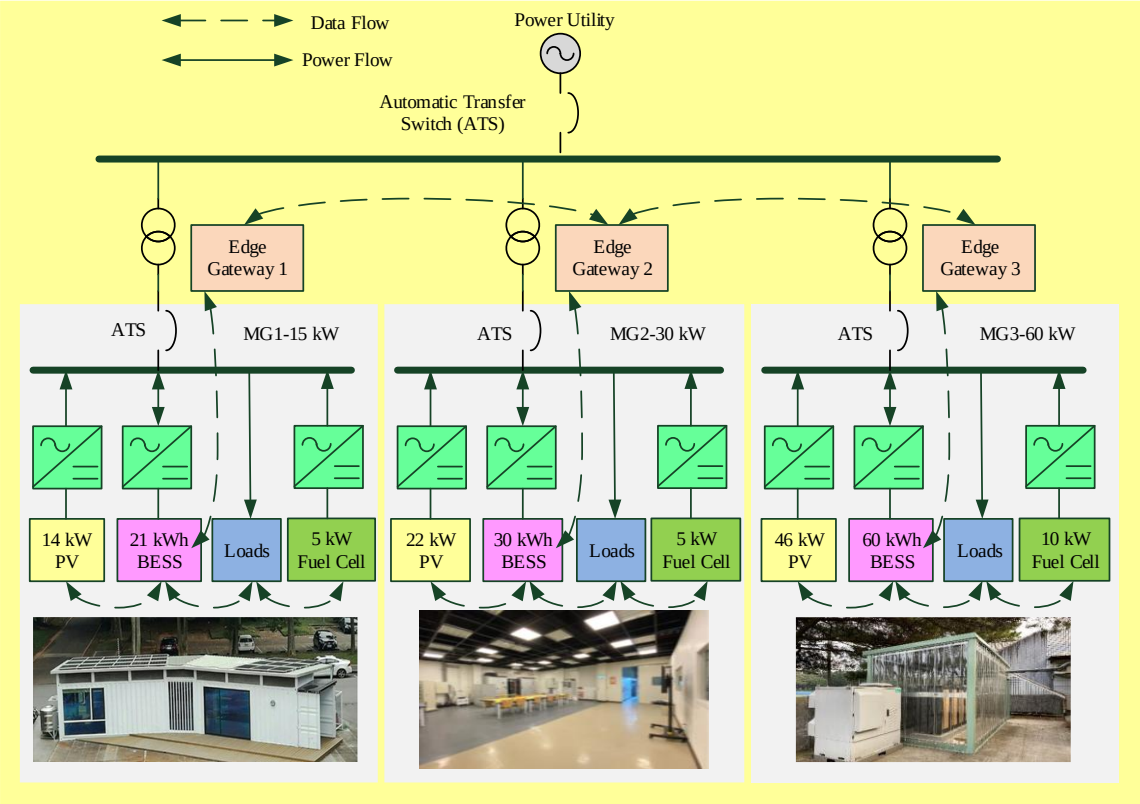


Control Block of Intelligent Control of Grid-Connected Microgrid with Virtual Inertia [13]

● 智慧型多層微電網電力調節研究與場域建置(Field Implementation for Smart Multi-level Microgrid)

本計畫在國立中央大學設計並建造了一個100千瓦的智慧多層微電網示範站。該示範站可以在併網模式和孤島模式下運行，並且全部使用100%可再生能源，包括70千瓦的太陽能、35千瓦的燃料電池以及110千瓦時的儲能系統，場域建置及現場照片如下圖所示。互聯微電網系統可以互相進行微電網間之電力支持，無調度規劃之能源亦可作為備用電源，進而讓能源利用率達到最佳化。本計畫主要研究關鍵技術包括：(1)具電力分享功能之電能轉換器架構及控制技術，(2)微電網內部再生能源協調控制與降卸載策略，(3)微電網能源管理與運轉成本最佳化，(4)互聯微電網電力調控技術，(5)互聯微電網最佳化能源輸配控制，(6)微電網燃料電池模型與動態控制策略，及(7)微電網再生能源發電預測技術。本計畫已於2022年技轉「互聯微電網之發電調派排程與故障偵測技術」至臺泥資訊股份有限公司，及技轉「基於邊緣計算之互聯微電網電力控制技術」

至聯齊科技股份有限公司。台泥資訊公司已應用本計畫之研究成果於台泥集團之儲能系統上，參加台灣電力公司電力交易平台上之調頻備轉輔助服務(Ancillary Service)，聯齊科技公司亦應用本計畫之成果於電力交易平台之用戶群代表(Aggregator)之技術上，以進行需量反應(Demand Response)。此外本計畫微電網能源管理系統的技術已於2024年轉移至緯創資通，協助該公司建立智慧電網調度系統，以涵蓋能源的資訊/通信/控制等技術。



Field Implementation of 100-kW Smart Multi-Level Microgrid in NCU



Switches of Solar Panel of MG2 and MG3 | Installation of Solar Panel | Storage Systems of MG2 and MG3



Switches of Interconnected System | Hydrogen Fuel Cell | MG1 System

Photos of 100-kW Smart Multi-Level Microgrid in NCU

六、主持研究計畫項目

補助機構與日期	補助金額	計畫題目
國科會計畫 113/08-116/07	4,238,000	微電網之智慧型功率控制與最佳化經濟調度
國科會計畫 112/07-113/06	6,010,000	用戶側韌性強化之模組化聚落式微電網解決方案(1/2)
國科會計畫 112/08-115/07	4,114,000	利用智慧型控制之高性能永磁輔助同步磁阻馬達驅動系統
科技部計畫 111/06-112/03	12,000,000	智慧型多層微電網電力調節研究與場域建置(2/2)
科技部計畫 110/07-111/05	13,128,000	智慧型多層微電網電力調節研究與場域建置(1/2)
科技部計畫 110/08-113/07	3,466,000	高性能同步磁阻馬達之智慧型廣域速度驅動系統
科技部計畫 (特約研究計畫) 109/8-112/07	4,548,000	智慧型高效能內藏式永磁同步馬達驅動系統
科技部計畫 109/01-110/03	4,850,000	高效能交流微電網運轉與電力調節研究(2/2)
科技部計畫 108/4-108/12	4,450,000	高效能交流微電網運轉與電力調節研究(1/2)
科技部計畫 109/01/01~109/12/31	770,000	108年度【臺俄(RU)國合計畫－智慧電網技術領域問題探討：台俄智慧電網技術之比較與研究(3/3)】
科技部計畫 108/01/01~108/12/31	770,000	108年度【臺俄(RU)國合計畫－智慧電網技術領域問題探討：台俄智慧電網技術之比較與研究(2/3)】
科技部計畫 107/01/01~107/12/31	770,000	107年度【臺俄(RU)國合計畫－智慧電網技術領域問題探討：台俄智慧電網技術之比較與研究(1/3)】
科技部計畫 107/8-110/7	3,016,000	以數位訊號處理器為基礎之高效能同步磁阻馬達驅動系統
科技部計畫 107/1-108/3	7,056,000	107年度第二期能源國家型科技計畫智慧電網主軸中心之推動及管理計畫(V)
科技部計畫 (特約研究計畫) 106/8-109/7	3,789,000	具低電壓穿越能力之單級智慧型太陽能光電系統
科技部計畫 106/1-106/12	6,240,000	106年度第二期能源國家型科技計畫智慧電網主軸中心之推動及管理計畫(IV)
科技部計畫 106/08/07~106/08/12	846,000	106年度科技部補助【台俄綠能暨智慧電網研討會】
科技部計畫 105/1-105/12	6,230,000	105年度第二期能源國家型科技計畫智慧電網主軸中心之推動及管理計畫(III)
行政院原子能委	610,000	利用智慧型控制改善三相不平衡負載之電力品質調控

員會核能研究所 105/2-105/11		
科技部計畫 104/1-104/12	5,550,000	104年度第二期能源國家型科技計畫智慧電網主軸中心之推動及管理計畫(II)
行政院原子能委員會核能研究所 104/4-104/12	1,850,000	利用智慧型控制之微電網電力品質提升研析
科技部計畫 104/8-107/7	3,780,000	應用於三相式併網型太陽光電系統故障期間之智慧型功率控制
科技部計畫 104/8-107/7	3,580,000	應用智慧型控制六相永磁同步馬達驅動系統之電動轉向系統
科技部計畫 103/1-103/12	5,746,000	103年度第二期能源國家型科技計畫智慧電網主軸中心之推動及管理計畫(I)
科技部計畫 103/1-103/12	52,600,000	102年度能源國家型科技計畫台美國際合作計畫－與美國加州理工學院Caltech能源科技研究合作(熱電材料、二氧化碳捕捉與轉化、智慧電網、燃料電池、太陽能電池、生質燃料等)(3/3)
行政院原子能委員會核能研究所 103/2-103/12	900,000	分散型電力系統即時模擬分析及特殊保護技術建立
國科會計畫 102/1-102/12	52,629,100	102年度能源國家型科技計畫台美國際合作計畫－與美國加州理工學院Caltech能源科技研究合作(熱電材料、二氧化碳捕捉與轉化、智慧電網、燃料電池、太陽能電池、生質燃料等)(2/3)
行政院原子能委員會核能研究所 102/3-102/12	920,000	微電網智慧電能控制與管理
國科會計畫 101/8-104/7	2,603,000	三軸壓電致動平台之智慧型精密運動控制系統研製
國科會計畫 101/8-104/7	3,758,000	以數位訊號處理器為基礎之錯誤容忍控制六相永磁同步馬達驅動系統
國科會計畫 101/1-101/12	52,315,200	101年度能源國家型科技計畫台美國際合作計畫－與美國加州理工學院Caltech能源科技研究合作(熱電材料、二氧化碳捕捉與轉化、智慧電網、燃料電池、太陽能電池、生質燃料等)(1/3)
國科會計畫 102/1-102/12	5,900,000	102年度能源國家型科技計畫智慧電網主軸專案計畫總計畫暨智慧電網與智慧讀表子項102年策略規劃(III)
國科會計畫 101/1-101/12	5,600,000	101年度能源國家型科技計畫智慧電網主軸專案計畫總計畫暨智慧電網與智慧讀表子項計畫推動及管理計畫(II)
國科會計畫 100/1-100/12	4,807,000	能源國家型科技計畫智慧電網與先進讀表主軸專案計畫總計畫暨智慧電網與讀表子項計畫100年策略規劃(I)

行政院原子能委員會核能研究所 101/1-101/12	1,500,000	微型電網智慧監視與控制計畫
行政院原子能委員會核能研究所 100/1-100/12	700,000	再生能源自主性開關之無縫併聯演算法開發
國科會計畫 99/5-100/4	1,082,000	99年度推動能源國家型科技計畫智慧電網與先進讀表主軸計畫整體策略規劃計畫
國科會整合型計畫 99/10-100/9	8,163,000	主機板式智慧型輕量化移動載具前瞻技術(2/2)
行政院原子能委員會核能研究所 99/02-99/12	630,000	微型電網專用之智慧型電力調控系統研製
國科會產學合作計畫 98/12-99/12	12,721,808	高效率垂直軸風力發電與風光互補能源技術發展
國科會計畫 100/8-101/7	850,000	五軸主動式磁浮軸承驅動與智慧型控制系統之發展(3/3)
國科會計畫 99/8-100/7	923,000	五軸主動式磁浮軸承驅動與智慧型控制系統之發展(2/3)
國科會計畫 98/8-99/7	1,038,000	五軸主動式磁浮軸承驅動與智慧型控制系統之發展(1/3)
科學工業園區創新技術研究發展計畫 98/7-99/6	6,00,000	5kW垂直翼風光互補發電系統研究發展計畫
國科會整合型計畫 98/10-99/9	8,293,000	主機板式智慧型輕量化移動載具前瞻技術(1/2)
國科會整合型計畫 97/12-98/11	8,505,000	主機板式智慧型輕量化移動載具前瞻技術(I)
國科會計畫 (傑出學者研究計畫) 99/08-100/07	1,346,000	永磁線性同步馬達龍門式精密定位平台驅動與智慧型控制系統之發展(3/3)
國科會計畫 (傑出學者研究計畫) 98/08-99/07	1,495,000	永磁線性同步馬達龍門式精密定位平台驅動與智慧型控制系統之發展(2/3)
國科會計畫 (傑出學者研究計畫) 97/08-98/07	1,186,000	永磁線性同步馬達龍門式精密定位平台驅動與智慧型控制系統之發展(1/3)
國科會計畫	1176000	電力工程學門研究發展規劃(1/3)

95/12-98/12	1235000 1363000	電力工程學門研究發展規劃(2/3) 電力工程學門研究發展規劃(3/3)
國科會計畫 97/08-98/07	915,000	線性超音波馬達三軸精密定位平台驅動控制系統(3/3)
國科會計畫 96/08-97/07	777,000	線性超音波馬達三軸精密定位平台驅動控制系統(2/3)
國科會計畫 95/08-96/07	910,000	線性超音波馬達三軸精密定位平台驅動控制系統(1/3)
國科會子計畫 96/08-97/07	802,000	先進能源發電系統之研製－子計畫一：智慧型控制之風力驅動感應發電系統之研製(3/3)
國科會子計畫 95/08-96/07	848,000	先進能源發電系統之研製－子計畫一：智慧型控制之風力驅動感應發電系統之研製(2/3)
國科會子計畫 94/08-95/07	1,074,000	先進能源發電系統之研製－子計畫一：智慧型控制之風力驅動感應發電系統之研製(1/3)
教育部計畫 96/01-96/12	3,367,282	東區奈米科技K-12教育發展中心計畫(5)
教育部計畫 95/01-95/12	3,405,408	東區奈米科技K-12教育發展中心計畫(4)
國科會子計畫 94/08-95/07	490,000	子計畫四: 以FPGA為基礎之適應性步階回歸與模糊滑動模式控制線型感應馬運動控制系統(3/3)
教育部計畫 94/01-94/12	6300,000	東區奈米科技K-12教育發展中心計畫(3)
國科會產學計畫 93/11-94/10	560,862	利用Visual Basic之智慧型控制高性能交流馬達伺服驅動系統
國科會計畫 93/08-94/07	884,500	以浮點運算數位信號處理器為基礎之雙軸永磁線型同步馬達驅動與運動控制系統(3/3)
國科會子計畫 93/08-94/07	988,400	子計畫四: 以FPGA為基礎之適應性步階回歸與模糊滑動模式控制線型感應馬運動控制系統(2/3)
教育部計畫 93/01-93/12	2700,000	東區奈米科技K-12教育發展中心計畫(2)
國科會計畫 92/08-93/07	816,600	以浮點運算數位信號處理器為基礎之雙軸永磁線型同步馬達驅動與運動控制系統(2/3)
國科會子計畫 92/08-93/07	900,700	子計畫五: 以FPGA為基礎之適應性步階回歸與模糊滑動模式控制線型感應馬運動控制系統(1/3)
教育部計畫 92/08-92/12	350,000	東區奈米科技K-12教育發展中心計畫(1)
工研院計畫 92/04-92/12	500,000	頻率控制式感應發電機發電系統之研製
國科會計畫 91/08-92/07	1,065,000	以浮點運算數位信號處理器為基礎之雙軸永磁線型同步馬達驅動與運動控制系統(1/3)
國科會子計畫 91/08-92/07	572,400	子計畫三: 以步階回歸與智慧型控制為基礎之線型感應馬達控制器參數自動調適系統
工研院計畫 91/04-91/12	500,000	線性超音波馬達共振式驅動電路之研究

國科會計畫 90/08-91/07	719,200	具智慧型控制器增益自調之無量測器永磁同步馬達驅動系統之研發(III)
國科會子計畫 90/08-91/07	645,800	高性能感應馬達驅動系統上之研製-子計畫六: 無轉速計感應主軸馬達高頻驅動系統上之研發(III)
中原大學研究傑出教授獎助 89/08-91/07	1000,000	以線性永磁同步馬達為基礎之雙軸平台精密控制與驅動系統之研發
國科會計畫 89/08-90/07	578,100	具智慧型控制器增益自調之無量測器永磁同步馬達驅動系統之研發(II)
國科會子計畫 89/08-90/07	676,200	高性能感應馬達驅動系統上之研製-子計畫六: 無轉速計感應主軸馬達高頻驅動系統上之研發(II)
國科會計畫 88/08-89/07	578,700	具智慧型控制器增益自調之無量測器永磁同步馬達驅動系統之研發(I)
國科會子計畫 88/08-89/07	633,800	高性能感應馬達驅動系統上之研製-子計畫六: 無轉速計感應主軸馬達高頻驅動系統上之研發(I)
台電產業計畫 88/02-88/06	385,500	高效率及高功率因素之三相整流器
中原大學工學院研究群 87/12-89/07	1200,000	線型感應馬達之驅動與精密控制
國科會子計畫 87/08-88/07	500,300	電力電子推動小組：切換式電源供應器關鍵性技術之研發-子計畫四：串並聯共振式反流器之應用(III)
國科會計畫 87/07-88/06	594,000	以數位訊號處理器為基礎之交流感應馬達驅動器
國科會子計畫 86/08-87/07	644,400	電力電子推動小組：切換式電源供應器關鍵性技術之研發-子計畫三：串並聯共振式反流器之應用(II)
國科會子計畫 86/08-87/07	535,300	高性能電力轉換，控制與應用技術之研究-子計畫三：應用於直接磁場導向感應馬達驅動系統上之非線性速度，磁通及轉矩觀測器(III)
中科院計畫 86/07-87/06	841,500	大負載磁場導向交流馬達驅動器之研製
中原大學研究群 86/04-88/03	780,000	機電整合—同步馬達驅動非線性機構之滑動模式控制
國科會子計畫 85/08-86/07	485,000	電力電子推動小組：切換式電源供應器關鍵性技術之研發-子計畫三：串並聯共振式反流器之應用(I)
國科會子計畫 85/08-86/07	445,000	高性能電力轉換，控制與應用技術之研究-子計畫三：應用於直接磁場導向感應馬達驅動系統上之非線性速度，磁通及轉矩觀測器(II)
中原大學工學院研究群 84/08-86/07	650,000	超音波馬達之驅動與運動控制
國科會子計畫 84/08-85/07	435,700	高性能電力轉換，控制與應用技術之研究-子計畫三：應用於直接磁場導向感應馬達驅動系統上之非線性速度，磁通及轉矩觀測器(I)

教育部專題製作 84/08-85/05	200,000	數位控制交流伺服驅動
國科會計畫 83/03-84/02	441,000	工程科系自動化實驗整合研究
國科會計畫 83/02-84/07	603,000	延伸卡門濾波器與類神經網路於感應馬達驅動系統上之應用
工研院計畫 83/01-83/07	362,200	電動機車能源效率及操作特性之分析與模擬

七、國內外邀請演講

1. AUPEC’08 (2008澳大利亞大學電力工程研討會), 於澳洲Sydney舉行，擔任Keynote Speech Speaker，主題為Drive and Control of Wind Turbine Systems。
2. 中華民國電力工程研討會2011-2012，均擔任 Invited Speaker。
3. 2011 總統府科技論壇第3次能源專題會議，擔任講員，主題為臺灣智慧電網技術研發方向。
4. 2012 Asia Pacific Sustainability Leadership Forum (APSLF)，於新加坡舉行，擔任Invited Speaker ，主題為 Development of Smart Grid in Taiwan。
5. 2013 IET Distinguished Lecture, IET Taipei Interim Local Network, 於台北舉行，主題為 Intelligent Sliding-Mode Control for Five-DOF Active Magnetic Bearing Control System。
6. 第七屆智慧型系統工程應用研討會2013，於台南舉行，擔任Keynote Speaker，主題為永磁線性同步馬達龍門式精密定位平台驅動與智慧型控制系統之發展。
7. 2013 International Symposium on Smart Grids，於台北舉行，擔任Keynote Speaker，主題為Development of Smart Grid Project in Taiwan。
8. 2014能源資通訊系統應用技術推廣研討會，於台北舉行，擔任Keynote Speaker，主題為我國虛擬電廠與需量反應發展現況。
9. 2014中華民國第三十五屆電力工程研討會，擔任Keynote Speaker，主題為台灣智慧電網技術發展現況-虛擬電廠與自動需量反應。
10. 2014國際能源論壇(李登輝基金會主辦)，於台北舉行，擔任Panel Speaker，主題為智慧電網國際發展趨勢與台灣推動現況。
11. 2014, July 8, 特邀學術報告，於北京清華大學舉行，主題為Intelligent Fault Tolerant Control of Six-Phase PMSM Drive System for Light Electric Vehicle。
12. 2015 Conference on Next Generation Power in Asia (Bureau of Energy, Taiwan and American Institute in Taiwan)，於台北舉行，擔任Keynote Speaker，主題為Development of Smart Grid in Taiwan and Its Challenges。
13. 2015第17屆海峽兩岸資訊技術(CSIT)研討會，於桃園舉行，擔任Keynote Speaker，主題為台灣智慧電網與再生能源之發展。
14. 2015 AMI應用與需量反應創新作法研討會，於台北舉行，擔任Invited

Speaker，主題為能源國家型科技計畫第二期與台灣電力公司合作現況。

15. 2015 Climate Parliament Forum，於法國Paris舉行，擔任Panel Speaker，主題為Build the Green Grid: Development of Smart Grid in Taiwan - 2015。
16. 2016 3rd International Smart Grid Workshop，於土耳其Istanbul舉行，擔任Invited Speaker，主題為Policy and Development of Smart Grid in Taiwan – 2016。
17. 2017 The Fifth Czech-Taiwan Technology Days，於台北舉行，擔任Invited Speaker，主題為The Microgrid Technology Development in Taiwan。
18. 2017 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2017)，於義大利Naples舉行，擔任Panelist，主題為Intelligent Power Control System of Three-Phase Grid-Connected PV System。
19. 2017, April 8, IEEE Fellow 特邀學術報告，於成都四川大學舉行，主題為Intelligent Control of Servo Motor Drives。
20. 2017, Dec., 中國電機工程師學會年會，於台北市台灣電力公司舉行，講題為台灣智慧電網技術發展現況與未來佈局。
21. 2018, Jan. 10, IEEE Fellow特邀學術報告，於哈爾濱工程大學舉行，主題為Intelligent Control of Servo Motor Drives。
22. 2018, Jan. 12, IEEE Fellow特邀學術報告，於哈爾濱工業大學舉行，主題為Intelligent Control of Servo Motor Drives。
23. The 2018 IEEE International Conference on Intelligent Green Building and Smart Grid (IEEE IGBSG)，於宜蘭舉行，擔任Keynote Speaker，主題為Energy and Smart Grid Development Perspective of Taiwan。
24. 2018, May 28, IEEE Fellow 特邀學術報告，於西安西北工業大學舉行，主題為Development of Smart Grid in Taiwan。
25. 2018, May 31, IEEE Fellow 特邀學術報告，於南京航空航天大學舉行，主題為Development of Smart Grid in Taiwan。
26. 2018, Nov. 12, IEEE SMC Beijing Capital Region Chapter Seminar，於北京科技大學舉行，主題為Intelligent control of servo motor drives。
27. 2019, Apr. 10, 能源驅動，未來轉動 - 台電智慧電網資料應用交流論壇，於台北舉行，擔任Keynote Speaker，主題為智慧電網資料應用趨勢與案例研究。
28. 2019, Apr. 20, 2019前瞻智慧綠能論壇台南登場 - 探討綠能產業發展，於台南舉行，擔任Keynote Speaker，主題為展望智慧電網的應用與挑戰。
29. The 2019 IEEE International Conference on Intelligent Green Building and Smart Grid (IEEE IGBSG)，於China Three Gorges University舉行，擔任Keynote Speaker，主題為Energy and Smart Grid Development Perspective of Taiwan。
30. 2019, Sep. 23, 2019年海峽兩岸氣候變遷與能源永續發展論壇，於台北舉行，擔任Keynote Speaker，主題為台灣智慧電網技術推動現況。
31. 2019, Oct. 17, 2019能源科技產品暨檢測技術論文研討會，於台北舉行，擔任Keynote Speaker，主題為三相併網型太陽光電系統之智慧型功率控制。

32. 2020, Aug. 18, 2020台灣未來智慧電網情境研討會議，於台北舉行，擔任Keynote Speaker，主題為再生能源總體趨勢發展：區域能源整合發展與併網型儲能發展。
33. 2021, Mar. 12, Taiwan GET！國際論壇暨成果發表會，於沙崙智慧綠能科學城C區聯合研究大樓舉行，擔任Keynote Speaker，主題為臺灣智慧綠能發策略。
34. 2022, ILT2022智慧生活科技研討會，於國立勤益科技大學舉行，擔任Keynote Speaker，主題為以智慧電網達成綠能高滲透率。
35. 2022, April 22, 台北富邦銀行世界地球日舉辦「Think ESG大師論壇」主講「台灣能源政策及永續發展策略」。
36. 2022, June 13, 新境界智庫(NFF)主講「台灣能源政策及永續發展策略」。
37. 2022, Oct. 14, 2022未來科技館-科技助攻2050淨零轉型 Panelist。
38. 2022, Oct. 18, 2022台日能源高峰會主講「台灣再生能源滲透率提升之推進策略」。
39. 2022, Dec. 16, 中國電機工程師學會年會，於台北市中華電信公司舉行，講題為「台灣再生能源滲透率提升之推進策略」。
40. 2023, July 8, 2023瑪麗居禮科學營主講「台電的碳中和策略」。
41. 2023, Sep. 26, 2023海峽兩岸氣候變遷與能源永續發展論壇，於臺灣海洋大學舉行，主講「結合虛擬慣量併網型微電網之智慧型控制」。
42. 2024, Nov. 22, 台灣電力電子研討會暨中華民國電力工程研討會，於成功大學舉行，主講「微電網之智慧型功率控制與最佳化經濟調度」。
43. 2025, Feb. 14, 華城電機華城大學, 主講「微電網之智慧型功率控制與最佳化經濟調度」。
44. 2025, July 25, 東元電機, 主講「微電網之智慧型功率控制與最佳化經濟調度」。
45. 2025, Sep. 5, 永豐創投綠色能源講座, 主講「從智慧電網到虛擬電廠」。
46. IET International Conference on Engineering Technologies and Applications (ICETA) 2025，於Taoyuan, Taiwan舉行，擔任Keynote Speaker，主題為Voltage Restoration Control for Microgrid Using AI Controller with Recurrent Wavelet Petri Fuzzy Neural Network。
47. 2025, Nov. 14-15, 台灣電力電子研討會暨中華民國電力工程研討會，於國立彰化師範大學舉行，主講「全時多元無碳強韌電力系統發展趨勢」。
48. 2026, Jan. 22, 總統府氣候變遷對策委員會第6次委員會，主講「公民社會淨零沙盒實驗」之執行經驗與成果。
49. 2026, May 1, 明緯「永續科技電力應用」專題講座，於國立台北科大舉行，主講「微電網之智慧型功率控制」。
50. 2026, May 5, 今周刊電力能源論壇，於政大公企中心舉行，「系統安全與電力供需配套的電力挑戰」主持人
51. 2026, May 5, 台北友泉扶輪社第4次例會專題演講，於台北花園大酒店3樓舉

行，主講「從智慧電網到虛擬電廠」。
52. 2026, June 5, 第22屆台灣金根獎暨AI科技論壇，主講「AI卓越中心(AICoE)及AI基本法施行規劃」。
53. 2026, July 15,台大產學聯盟, 台大管理學院一館，主講「智慧電網與離岸風電調度」。
54. 2026, July 31, 能源高峰會暨TAEDT VPPIA會員大會，張榮發基金會，主講「綠能高滲透率與虛擬電廠」。
55. 2026, July 31, 2026年台灣風力發電產業協會會員大會，臺大醫院國際會議中心，主講「智慧電網與離岸風電調度」。
56. 2026, Aug. 4, 2026吳大猷科學營講座，新竹縣麻布山林，主講「智慧電網與離岸風電調度」。

八、學術會議之辦理

1. 擔任 2018 年 International Automatic Control Conference (CACS 2018), Taoyuan City, Taiwan, General Co-Chair。
2. 擔任 2018 年 International Conference “Green Energy and Smart Grids” August 6-10, 2018, Irkutsk, Russia, General Co-Chair。
3. 擔任 2017 年 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2017)之 Program Committee Member。
4. 擔任 2017 年台俄綠能暨智慧電網研討會 (SBRAS-MOST Joint Symposia, 2017 GREEN ENERGY: SMART GRID) Chair。
5. 擔任 2017 年 IEEE International Future Energy Electronics Conference (IFEEC) – ECCE Asia 之 Honorary General Co-Chair。
6. 擔任2016年台俄能源與環境永續發展研討會(SBRAS-MOST Joint Symposia, 2016 Interdisciplinary Research for Sustainable Development of Energy and Environment) Chair。
7. 擔任 2015 年 IEEE International Future Energy Electronics Conference (IFEEC) 之 Honorary Technical Program Chair。
8. 擔任 2015 年 International Conference on Fuzzy Theory and Its Applications 之 Program Co-Chair。
9. 擔任 2014 年 IEEE International Conference on Fuzzy System 之 Program Technical Co-Chair。
10. 擔任 2013 年 International Conference on Fuzzy Theory and Its Applications 之 Program Co-Chair。
11. 擔任 2013 年 IEEE International Future Energy Electronics Conference (IFEEC) 之 Honorary Technical Program Chair。
12. 2003 年起擔任 IET LDIA (線性驅動與控制國際研討會) International Steering

Committee Member。

13. 協辦並擔任 2013 年 International Conference on Fuzzy Theory and Its Applications 之大會副主席
14. 協辦並擔任 2013 年 IEEE International Future Energy Electronics Conference 之議程榮譽主席
15. 擔任 Fuzzy Systems on Renewable Energy, Special Session in FUZZ-IEEE 2011, 2012, 2013, 2014 主席。
16. 協辦並擔任 2011 年 IEEE International Conference on Fuzzy System 之學生活動與獎勵委員會主席。
17. 協辦並擔任 2010 年 International Conference on System Science and Engineering 之展覽委員會主席。
18. 協辦並擔任 2009 年 IEEE 電力電子與驅動系統研討會(PEDS)之議程委員會副主席。
19. 主辦並擔任 2009 年能源資通訊節能科技研討會大會主席。
20. 主辦並擔任 2009 年台灣智慧型電網技術論壇研討會大會副主席。
21. 協辦並擔任 2009 年台灣電力電子研討會之獎勵委員會主席(與 IEEE 台北分會合辦最佳學生論文獎)。
22. 協辦並擔任 2009 年中華民國電力工程研討會之獎勵委員會主席(與 IEEE 台北分會合辦最佳學生論文獎)。
23. 協辦並擔任 2006-2024 年中華民國電力工程研討會籌備委員會委員。
24. 協辦並擔任 2006-2024 年台灣電力電子研討會籌備委員會委員。
25. 協辦並擔任 95-97 學年度國科會工程處電力學門成果發表會大會副主席。
26. 91.12.18~21, Organizing Committee Chair, 2002 International Computer Symposium, Hualien, Taiwan

九、學術會議之參與

在出席國內會議方面，近年曾在下列會議發表論文：

1、中華民國模糊理論與其應用研討會2004，擔任Program Committee Member及Keynote Speaker。
2、中華民國模糊理論與其應用研討會2008，擔任榮譽共同主席及Keynote Speech主持人。
3、中華民國模糊理論與其應用研討會2009，擔任分組主持人。
4、中華民國電力電子研討會2002-2021，均擔任分組主持人。
5、中華民國電力工程研討會1994-2010, 2016-2021，均擔任分組主持人。
6、中華民國控制工程研討會1996, 2001-2005，均擔任分組主持人。
7、中華民國電力工程研討會2011-2016，均擔任專題演講Speaker。
8、第七屆智慧型系統工程應用研討會2013，擔任Keynote Speaker。

在出席國際會議方面，近年曾在下列會議發表論文：

1、 IEEE IFEEC 2021, 於台北舉行，獲科技部輔助。
2、 IEEE IFEEC 2019, 於Singapore舉行，獲科技部輔助。
3、 IEEE Fuzzy 2019, 於New Orleans, USA舉行，科技部獲輔助。
4、 International Conference “Green Energy and Smart Grids” 2018, 於Irkutsk, Russia舉行，科技部獲輔助。
5、 IEEE Fuzzy 2017, 於義大利Naples舉行，科技部獲輔助。
6、 IEEE IFEEC–ECCE Asia 2017, 於高雄舉行，擔任Honorary General Co-Chair ，獲科技部輔助。
7、 2016 3rd International Smart Grid Workshop，於土耳其Istanbul舉行，擔任Invited Speaker，獲科技部輔助。
8、 IEEE IFEEC 2015, 於台北舉行，擔任Honorary Technical Program Chair，獲科技部輔助。
9、 IEEE Fuzzy 2015, 於土耳其Istanbul舉行，科技部獲輔助。
10、IEEE WCCI 2014與IEEE Fuzzy 2014, 於北京舉行，擔任Program Technical Co-Chair及Special Session、Invited Lecture Session主持人，獲科技部輔助。
11、International Conference on Fuzzy Theory and Its Applications (iFUZZY) 板 2013, 於台北舉行，擔任Honorary Co-Chair，獲國科會輔助。
12、IEEE IFEEC 2013, 於台南舉行，擔任Honorary Technical Program Chair與分組(Session)主持人，獲國科會輔助。
13、IEEE Fuzzy 2013, 於印度Hyderabad舉行，擔任特別分組(Special Session)主持人，獲國科會輔助。
14、2012 Asia Pacific Sustainability Leadership Forum (APSLF)，於新加坡舉行，擔任Invited Speaker，獲國科會輔助。
15、IEEE WCCI 2012與IEEE Fuzzy 2012, 於澳大利亞布里斯班舉行，擔任特別分組(Special Session)主持人，獲國科會輔助。
16、IEEE Fuzzy 2011, 於台北舉行，擔任特別分組(Special Session)，獲國科會輔助。
17、IEEE ICEMS 2011, 於中國大陸北京舉行，擔任分組主持人，獲國科會輔助。
18、EVS25 2010, 於中國深圳舉行，獲國科會輔助
19、IEEE WCCI 2010與IEEE Fuzzy 2010, 於西班牙巴塞隆納舉行，獲國科會輔助。
20、IEEE IPEC 2010, 於札幌, 日本舉行，獲國科會輔助。
21、IEEE ISDA 2009, 於比薩, 義大利舉行，獲國科會輔助。
22、IEEE PEDS 2009, 於台北舉行，擔任Open Ceremony Speaker及分組主持人，獲國科會輔助。
23、AUPEC’08(2008澳大利亞大學電力工程研討會), 於澳洲Sydney舉行，擔任Keynote Speaker及分組主持人，獲國科會輔助。

24、IEEEE ICEMS 2008, 於中國大陸武漢舉行，擔任分組主持人，獲國科會輔助。
25、IET PEMD 2008, 於York, UK舉行，獲國科會輔助。
26、IEEE IECON 2007, 於台北舉行，擔任分組主持人。
27、IEEE IECON 2006, 於Paris, France舉行，獲國科會輔助。
28、IEE LDIA (線性驅動與控制國際研討會) 2005, 於Awaji, Japan舉行，獲國科會輔助，擔任International Steering Committee Member及分組主持人。
29、IEEE CIRA2005，於Helsinki, Finland舉行，獲國科會輔助。
30、IEEE IPEC2005，於Niigata, Japan舉行，獲國立東華大學輔助。
31、IEEE CIS and RAM，於新加坡舉行，獲國科會輔助。
32、IEE LDIA2003，於Birmingham, UK舉行，獲國科會輔助。
33、IEEE IECON 2002, 於Sevilla, Spain舉行，獲國科會輔助。
34、IEEE PESC 2001，於Vancouver, Canada舉行，獲國科會輔助。
35、IEEE Canada 2001，於Toronto, Canada舉行，獲教育部輔助。
36、IEEE CDC’2000，於澳洲Sydney舉行，獲中原大學輔助。本會議為全世界最重要之控制工程會議，除控制、自動化、機械人與視覺外，又包含馬達控制及其它控制應用相關領域。
37、IEEE IECON’2000，於日本名古屋舉行，獲國科會輔助。本會議為全世界最重要之電力電子及電機控制會議，除控制、自動化、機械人與視覺外，又包含馬達控制及其它電力電子相關領域。
38、International Power Electronics and Motion Control Conference (IPEMC’ 2000)，於北京舉行，獲教育部輔助。本會議為重要之電力電子會議。電機控制技術為會議內的主要議題。
39、IEEE CCA'99，於美國夏威夷舉行，獲國科會輔助。本會議為全世界最重要之控制理論應用與機電整合會議。
40、IEEE PESC'99，於美國查爾斯頓舉行，獲教育部輔助，擔任分組主持人。本會議為全世界最重要之電力電子會議。電機控制技術為會議內的主要議題。
41、ICAM’98，於日本岡山舉行，獲國科會輔助。ICAM會議之領域為控制、自動化、機械人與機電整合，所發表論文之領域與工廠自動化及機電整合息息相關。
42、ICMT’98，於新竹舉行，自費。ICMT會議之領域為機電整合、控制、自動化與機械人，所發表論文之領域與工廠自動化及機電整合息息相關。
43、IEEE PESC’98，於日本福岡舉行，獲育教部輔助。本會議為全世界最重要之電力電子會議。電力電子及電機控制技術為會議內的主要議題。
44、IEEE PES’97，於德國柏林舉行，獲國科會輔助。PES Meeting 為全世界電力界最重要之會議。電機控制技術為會議內的主要議題。
45、IEEE PEDS’97，於新加坡舉行，獲國科會輔助。PEDS為全世界電力電子界重要會議之一。論文內容主要可分為電源供應器及馬達驅動系統兩大類。

46、ICARCV’96，於新加坡舉行，獲教育部輔助，擔任分組主持人。ICARCV會議之領域為控制、自動化、機械人與視覺，所發表論文之領域與工廠自動化及機電整合息息相關。

47、IEEE PESC'96，於義大利舉行，獲國科會輔助。本會議為全世界最重要之電力電子會議。電機控制技術為會議內的主要議題。

48、IEEE IECON'96，於台北舉行，自費。本會議為全世界最重要之電力電子及電機控制會議，除控制、自動化、機械人與視覺外，又包含馬達控制及其它電力電子相關領域。

十、工業服務與諮詢

震雄機械公司顧問

83.9.1~ 84.2.28

全電式智慧型射出成型機電控部分之研發顧問。

工研院機械所物流部/半導體設備部特約研究員

85.1.1~ 88.12.31

伺服控制、馬達驅動、電力電子、電子電路等之設計指導。

工研院能資所電力電子研究室顧問

89.7.1~ 90.12.31

伺服控制、馬達驅動等之設計指導與前瞻性計畫之規劃。

佳煜科技公司研發顧問

89.6.1~90.12.31

類比HALL IC與HALL電流感測器之研發、電子電路等之設計指導。

伸昌電機公司研發顧問

90.6.15~93.6.14

High Power Switching Power Supply與Pulse Power Supply之研發、電力電子電路等之設計指導。

台灣仿真科技公司研發顧問

93.11.1~94.10.31

PC-based各式智慧控制法則之設計指導，已執行國科會產學計畫(93/11-94/10) ”利用Visual Basic之智慧型控制高性能交流馬達伺服驅動系統”完畢，並技轉PC-based各式馬達伺服驅動系統智慧控制法則，先期技轉金5萬元。

力億企業股份有限公司研發顧問

94.12.1~95.7.31

馬達驅動控制、電力電子電路等之設計指導，完成一電動高爾夫球車之馬達驅動系統。

泰甫股份有限公司研發顧問
96.9.1~97.7.15
馬達驅動控制、HALL電流感測器之研發、電子電路等之設計指導，完成多項霍爾電流感測器成品。

宏銳電子股份有限公司研發顧問
96.10.1~97.12.31
風力發電電源轉換器等技術之設計指導，合作執行能源國家型科技計畫產學合作研究計畫"高效率垂直軸風力發電與風光互補能源技術發展"。

均豪精密工業股份有限公司研發顧問
98.7.1~99.6.30
協助風力發電系統與風光互補能源等技術之研發，執行科學工業園區創新技術研究發展計畫(98/7-99/6)"5kW垂直翼風光互補發電系統研究發展計畫"。

世紀民生股份有限公司研發顧問
101.12.1~104.9.30
協助永磁同步馬達速度估測法則與控制等技術之研發與先期技轉"高頻信號注入法結合凸極式反電動勢之速度估測法則"發明專利，技轉金新台幣貳拾肆萬元。

中興電工機械股份有限公司
106.01.01~106.12.31
協助開發主動式濾波器演算法，本技術主要為利用主動式濾波器演算法，開發微電網系統電流之諧波補償器，以提昇微電網之電力品質，並將總諧波失真降到5%以下，技轉金新台幣20萬元。

健格科技股份有限公司
106.01.01~106.12.31
協助智慧型變頻器(smart inverter)技術之研發與技轉中華民國發明專利"太陽光能發電系統"，技轉金新台幣30萬元。

六俊電機儀具股份有限公司
107.12.01~108.12.31
技轉科技部計畫"以數位訊號處理器為基礎之高效能同步磁阻馬達驅動系統"（計畫編號：MOST 107-2221- E-008-078 -MY3）之研究成果"永磁同步馬達之智慧型慣量估測及控制器設計"，技轉金新台幣40萬元。

聯齊科技股份有限公司
108.9.10~109.12.31
技轉科技部計畫"高效能交流微電網運轉與電力調節研究"（計畫編號：MOST108-3116-F-008-001）之研究成果「太陽光發電與儲能之能源管理系統」，技轉金新台幣 122 萬元整。

台達電子工業股份有限公司
110.2.1~110.12.31
技轉科技部計畫"智慧型高效能內藏式永磁同步馬達驅動系統"（計畫編號：MOST 109-2221-E-008 -024 -MY3）之研究成果"內藏式永磁同步馬達驅動系統智慧型慣量估測及控制器設計"，技轉金新台幣40萬元。

臺泥資訊股份有限公司
110.7.1~112.3.31
技轉科技部計畫"智慧型多層微電網電力調節研究與場域建置"（計畫編號：MOST 110-3116-F-008-001）之研究成果"互聯微電網之發電調派排程與故障偵測技術"，企業配合款含先期技轉金新台幣200萬元。

聯齊科技股份有限公司
110.7.1~112.3.31
技轉科技部計畫"智慧型多層微電網電力調節研究與場域建置"（計畫編號：MOST 110-3116-F-008-001）之研究成果"基於邊緣計算之互聯微電網電力控制技術"，企業配合款含先期技轉金新台幣150萬元。

熙特爾新能源股份有限公司
111.6.1~112.3.31
技轉科技部計畫"智慧型多層微電網電力調節研究與場域建置"（計畫編號：MOST 111-3116-F-008-003）之研究成果，企業配合款含先期技轉金新台幣150萬元。

亞氫動力股份有限公司
111.6.1~112.3.31
技轉科技部計畫"智慧型多層微電網電力調節研究與場域建置"（計畫編號：MOST 111-3116-F-008-003）之研究成果，企業配合款含先期技轉金新台幣 100萬元。

華城電機股份有限公司
111.12.01~112.11.31
技轉科技部計畫"高效能交流微電網運轉與電力調節研究"（計畫編號：MOST108-3116-F-008-001）之研究成果「太陽光發電與儲能之能源管理系統」，

技轉金新台幣 50 萬元。

華城電機股份有限公司
112.12.01~113.11.31
技轉國家科學及技術委員會計畫"用戶側韌性強化之模組化聚落式微電網解決方案"（計畫編號：NSTC 112-2218-E-008-011）之研究成果"配電型靜態同步補償器"，技轉金新台幣 50 萬元。

緯創資通股份有限公司
113.2.01~114.1.31
技轉科技部計畫"智慧型多層微電網電力調節研究與場域建置"（計畫編號：MOST 111-3116-F-008-003）之研究成果"微電網能源管理系統"，產學合作款(含先期技轉金)新台幣 950 萬元。(共同主持)

華城電機股份有限公司
113.12.01~114.11.31
技轉國家科學及技術委員會計畫"用戶側韌性強化之模組化聚落式微電網解決方案"（計畫編號：NSTC 112-2218-E-008-011）之研究成果"基於太陽能光電系統之配電型靜態同步補償器"，技轉金新台幣 50 萬元。

華城電機股份有限公司
114.12.01~115.11.31
技轉"智慧型整合式電力品質調節器以改善直流鏈電壓與電力品質"之研究成果，技轉金新台幣 60 萬元。

十一、主要教學成果

執行教育部東區奈米科技K-12教育發展中心計畫

民國91年由行政院國家科學委員會所主導的「奈米國家型科技計畫」開始啟動，教育部顧問室負責執行的「奈米科技人才培育分項計畫」可以說是在相關政策當中極為重要的一環。國立東華大學於92年成立「東區奈米科技K-12教育發展中心」，開始推動「東區奈米科技K-12人才培育計畫」，藉由編撰一系列各國小、國中和高中職教師之奈米相關教材及舉辦教師研習營的方式，將奈米科技人才培育向下延伸至K-12教育階段。承續92年度東區奈米科技K-12人才培育先導計畫，93年度本計畫持續推動並擴大辦理，計畫推展之重點可分為四個部分，包括教師人才之培訓、教材與課程之設計、奈米教育之推廣，以及計畫成效之研究。95年度繼續針對此四方面推廣。具體言之，95年度之執行重點包括：一、在教師人才培育方面，重點在於將種籽教師培訓分級進行、加強大

學教師與K-12種籽教師之交流、鼓勵種籽教師跨校合作、定期拜訪合作學校之校長與相關主管以提高各校參與意願、對於表現優良之學校與教師提供獎勵；二、在教材與課程之設計方面，由本中心教授協助各級學校內種籽教師整理出統一版之高中、國中、國小版學生用多媒體教材、運用遠距教學對東區周邊K-12學校開放大學資源、透過K-12 AFM實作訓練及教案開發之籌設發展計畫專用之實驗室；三、在奈米教育之推廣方面，研製不同階段之演講Power Point內容主動到K-12學校中推廣奈米科技之新知、舉辦徵文比賽及種籽教師自製教材發表及討論會、加強邀請台東地區之大學與K-12教師參與研究與學習以彌補因偏遠所造成的奈米知識落差、加強與其他各區之種籽教師做意見之交流以達到資源之最妥善運用與整合；四、在計畫成效之研究方面，針對東部地區K-12教師與學生進行科學素養之相關調查與質性研究，做為未來持續發展之依據。各項重點工作並制訂相關數據指標，以作為追蹤考核與成效評估依據。

碩/博士論文指導(2003/1~)

碩士論文

畢業學年度	學生姓名	論文題目
91	孫于智 Yu-Chih Sun	利用網際網路遠端即時控制之智慧型感應馬達驅動系統
91	沈柏宏 Po-Hung Shen	利用李亞普諾夫穩定度證明之類神經網路控制永磁線型同步馬達伺服驅動系統
92	王誌謙 Chih-Chien Wang	頻率控制式感應發電機發電系統之研製
92	謝伯璜 Po-Huang Shieh	應用於數值控制工具機中 X-Y 平台之強健遞迴式類神經網路控制
93	李元芳 Yuan-Fang Li	利用智慧型控制之風力驅動三相感應發電機系統之模擬與實作
93	王東海 Tung-Hai Wang	以 FPGA 為基礎之模糊-順滑模態控制線型感應馬達驅動系統
93	林忠衡 Chung-Heng Lin	以 CPLD 及 DSP 實現永磁同步馬達驅動與全時間滑動模態位置控制器
94	黃賢德 Hsien-Te Huang	高效率 LLC 諧振式切換式電源供應器電路之設計與分析
94	張智凱 Chih-Kai Chang	以 FPGA 為基礎之適應性步階迴歸控制線型感應馬達驅動系統
94	楊松霖 Sung-Lin Yang	利用自構式模糊類神經網路控制永磁線型同步馬達伺服驅動系統
95	高裕翔 Yu-Hsiang Kao	高功率因數主動式箝位零電壓切換順向式轉換器之研製
95	周柏寰 Po-Huan Chou	利用強健性 Sugeno 型適應性模糊類神經網路控制之雙軸運動控制系統
95	陳政言	以 FPGA 為基礎之強健性放射狀基底函數網

	Cheng-Yen Chen	路控制線型感應馬達驅動系統
95	張謙信 Chien-Hsin Chang	花蓮地區監視控制系統模擬器之研究
96	朱珩 Hen Chu	利用改良型粒子群尋優法之類神經網路控制永磁線型同步馬達伺服驅動系統
96	洪英智 Ying-Chih Hung	以 FPGA 為基礎之類神經網路控制線型超音波馬達驅動系統
96	鄒制勝 Chih-Sheng Chou	電動車關鍵零組件霍爾電流感測器之設計
96	余孟勳 Meng-Hsiung Yu	以數位訊號控制器 dsPIC 為基礎之風力驅動永磁同步發電機系統之三相功率轉換器
96	周定進 Ting-Chin Chou	東台灣水力發電廠 SCADA 系統之研究
96	林宴任 Yen-Jen Lin	水泥廠使用遞減重量型硫酸亞鐵秤飼機之馬達驅動系統應用與測試
97	王煒銘 Wei-Ming Wang	以 FPGA 為基礎之強健性放射狀基底函數網路控制永磁線型同步馬達伺服驅動系統
97	游志祥 Jhih-Siang You	玻璃表面瑕疵檢測系統之開發
97	陳清芳 Chin-Fung Chen	石材加工設備之控制系統研究
97	陳政裕 Cheng-Yuh Chen	降低鐵塔接地電阻對輸電線路遭受雷擊之模擬與分析
97	林正文 Jeng-Wen Lin	三相永磁同步發電機風力發電系統之大功率電源轉換器
98	黃治瑋 Jhih-Wei Huang	應用於模組化輕型電動車之類神經網路控制六相永磁同步馬達驅動系統
98	呂宗翰 Zong-Han Lu	智慧型控制雙饋式感應風力發電系統之研製
98	張護繼 Hu-Chi Chang	無感測器直流變頻壓縮機驅動系統之研製
99	劉彥宏 Yen-Hung Liu	智慧型互補式滑動模態控制系統實現於 X-Y-θ 三軸線性超音波馬達運動平台
99	林于盛 Yu-Sheng Lin	智慧型同動控制之龍門式定位平台及應用
99	高子胤 Zi-Yin Kao	以反電動勢為基礎之比例積分微分類神經網路估測器之無感測器變頻壓縮機驅動系統開發
99	蔡瀚章 Han-Chang Tsai	智慧型控制數位化鋰錳電池充電器之研製
99	邱建興 Jian-Hsing Chiu	利用智慧型控制與主動式直軸訊號注入法之孤島偵測研究
100	許建隆 Jian-Lung Hsu	高效率 LLC 協振式電源供應器電路設計與分析
100	官啟玄 Chi-Hsuan Kuan	以 TSK 機率模糊類神經網路控制之磷酸鋰鐵電池儲能系統之研製

100	蔡孟庭 Meng-Ting Tsai	智慧型錯誤容忍控制六相永磁同步馬達驅動系統之開發
100	黃鼎富 Ting-Fu Huang	多重地網系統之人身安全驗證與模擬
100	方敦毅 Dun-Yi Fang	以小波模糊類神經網路控制之鼠籠式感應風力發電系統之研製
100	葉超明 Chao-Ming Yeh	以智慧型凸極式反電動勢估測器為基礎之無感測雙流器饋接型壓縮機驅動系統開發
101	曾麒峰 Chi-Feng Tseng	DVB-T 手持式數位電視之整機設計與實現
101	阮開駿 Kai-Chun Ruan	應用於電動轉向系統之智慧型控制六相永磁同步馬達驅動系統
101	王昇龍 Sheng-Long Wang	智慧型控制數位化串聯諧振轉換器之研製
101	陳家銘 Jia-Ming Chen	以單一直流鏈電流感測器結合低轉速轉矩補償之無轉軸位置感測器變頻壓縮機驅動系統開發
101	林祐諄 Yu-Chun Lin	考慮再在生能源之最佳化快速機率潮流以求解無效電力
101	柯廷翰 Ting-Han Ke	考慮配電系統三相故障之具低電壓穿越能力之智慧型太陽光電系統
101	黃衍晨 Yen-Chen Huang	具主動功因調節之 LED 驅動器研製
101	許嚴達 Yen-Ta Hsu	採用平板鐵氧體磁芯電感器之升壓式功率因數修正交直流轉換器設計
102	梁志誠 Chih-Cheng Liang	具智慧型控制之非接觸式鋰錳電池充電器
102	李軒宇 Hsuan-Yu Li	具低電壓穿越之單級智慧型太陽能光電電系統
102	楊凱木聿 Kai-Jie Yang	利用遞迴式模負類神經小腦模型網路之錯誤容忍控制六相永磁同步馬達定位驅動系統
103	王肇緯 Zhao-Wei Wang	高效能主動功因調節 LED 照明電源轉換器之研製
103	陳軒豪 Syuan-Hao Chen	機場地面燈光更新工程-以桃園國際機場南邊跑滑道為例
103	孫一侃 I-Fan Sun	利用遞迴式小波模糊類神經網路於電動轉向系統定位控制之研究
103	蔡居甫 Chi-Fu Tsai	應用於儲能系統之智慧型風場功率平滑化之控制
103	林士耀 Shi-Yao Lin	應用單晶片之無轉軸感測器切換式磁阻馬達驅動系統
103	蔡佳宏 Chia-Hung Tsai	利用智慧型控制之併網型鼠籠式感應風力發電系統
104	陳世剛 Shih-Gang Chen	利用函數連結放射狀基底函數網路於適應性步階迴歸控制六相永磁同步馬達定位驅動系

		統
104	陳仕堯 Shih -Yao Chen	採用功率擾動之每安培最大轉矩控制內藏式永磁同步馬達驅動器之研製
104	楊柏輝 Bo-Huei Yang	應用單級轉換器之太陽能光電系統實虛功控制策略
104	於迪萱 Ti-Hsuan Yu	以田口方法進行最佳機率負載潮流分析
105	趙若妤 Jo-Yu Chao	應用於儲能系統之智慧型太陽光電功率平滑化控制
105	劉映岑 Ying-Tsen Liu	應用於內藏式永磁同步馬達之智慧型速度控制及最佳伺服控制頻寬研製
105	陳俊豪 Jun-Hao Chen	利用智慧型控制之三相主動式電力濾波器的研製
105	黃泰寅 Tai-Yin Huang	新型每安培最大轉矩控制同步磁阻馬達驅動系統之開發
106	俞韋安 Wei-An Yu	應用於內藏式永磁同步馬達之智慧型最佳伺服頻寬調整及慣量估測
106	賴煜凱 Yu-Kai Lai	應用於三相不平衡負載電流補償之智慧型太陽光電發電系統
106	蔡詔揚 Chao-Yang Tsai	利用智慧型控制配電型靜態同步補償器改善電力品質及直流鏈電壓調控
107	許哲瑋 Che-Wei Hsu	同步磁阻馬達驅動系統之智慧型每安培最大轉矩追蹤控制
107	石承民 Cheng-Ming Shih	結合虛擬慣量併網型微電網之智慧型控制
107	周孝澤 Hsiao-Tse Chou	應用於內藏式永磁同步馬達之智慧型慣量估測及共振頻率偵測
107	羅文洲 Wen-Chou Luo	在弱電網情況下之智慧型控制太陽光發電系統的低電壓穿越控制
108	梁家輝 Chia-Hui Liang	利用適應性互補式滑動模態控制於同步磁阻馬達之寬速度控制
108	林俊儒 Jyun-Ru Lin	應用於內藏式永磁同步馬達驅動系統之智慧型高效能控制及小波共振頻率偵測
108	蕭果登 Guo-Deng Xiao	以 OPAL-RT 硬體迴圈實現微電網之智慧型控制
108	張恩維 En-Wei Chang	以超級電容為儲能元件之內藏式永磁同步馬達控制
108	郭哲男 Che-Nan Kuo	具智慧型太陽光電功率平滑化控制之微電網電能管理系統
109	廖宸晧 Chen-Hao Liao	智慧型最大功率因數搜尋控制之同步磁阻馬達驅動系統
109	林威廷 Wei-Ting Lin	內藏式永磁馬達之電流注入線上參數估測與智慧型電流迴路控制
109	陳品蓉 Pin-Rong Chen	以 OPAL-RT 硬體迴圈實現微電網之電壓回復控制

109	楊捷帆 Chieh-Fan Yang	結合儲電之電動車充電站能源管理系統
109	曾梓渝 Tzy-Yu Tseng	微電網虛擬同步發電機之智慧型控制
110	葉紹平 Shao-Ping Yeh	利用近似最大效率控制於高性能同步磁阻馬達驅動器之發展
110	洪崇祐 Chung-Yu Hung	利用遞迴式勒壤得模糊類神經網路於永磁輔助同步磁阻馬達驅動系統之智慧型計算轉矩控制
110	劉致緯 Chih-Wei Liu	內藏式永磁同步馬達伺服驅動系統之定功率區電壓控制及智慧型參數估測
110	張育銘 Yu-Ming Zhang	結合最佳化演算法與 OPAL-RT 硬體迴圈實現微電網之經濟調度
110	李孟洋 Meng-Yang Lee	利用智慧型靜態同步補償器以改善下垂式控制微電網之電力品質
110	葛蒂絲 Gadis Triandini	以 ISO 15118 為基礎的雙向充電樁充電策略於家用電動車充電系統之研究
111	孫子翔 Tzu-Shiang Sun	利用多項式派翠類神經網路於高效能同步磁阻馬達位置驅動系統之智慧型步階回歸控制
111	王伯綸 Po-Lun Wang	應用於內藏式永磁同步馬達位置驅動系統之智慧型非奇異點終端滑動模態控制
111	翁祥瑀 Xiang-Yu Weng	利用智慧型估測之可變係數下垂控制微電網
111	黃育城 Yu-Cheng Huang	以 OPAL-RT 硬體迴圈實現基於深度強化學習演算法與負載預測模型之微電網經濟調度
111	簡佑宸 Yu-Chen Chien	利用遞迴小波模糊類神經網路於永磁輔助同步磁阻馬達位置驅動系統之智慧型步階回歸控制
112	鄧福欣 Fu-Hsin Teng	使用區間二型遞迴模糊類神經網路估測器之非線性時變系統之智慧型步階回歸控制
112	徐義茗 I-Ming Hsu	基於智慧型積分滑模控制之內藏式永磁同步馬達驅動強健無差拍預測電流控制
112	蘇子銘 Tzu-Ming Su	基於共識性協調之智慧型控制策略於多聚落式微電網之韌性強化
112	李昀儒 Yun-Ru Li	智慧型控制動態電壓調節器改善負載電壓穩定性
112	管昭昀 Zhao-Yun Kuan	下垂控制微電網結合智慧型配電型靜態同步補償器改善電力品質
113	許承熙 Cheng-Xi Xu	基於適應性類神經網路滑膜觀測器之內藏式永磁同步馬達驅動器預測電流控制
113	黃柏喻 Bo-Yu Huang	使用適應性計算磁鏈控制結合提升暫態控制於高性能同步磁阻馬達驅動系統
113	邱偉倫 Wei-Lun Chiu	智慧型整合式電力品質調節器以改善直流鏈電壓與電力品質
113	王辰意	下垂控制微電網結合智慧型預同步以實現併

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113	鄭宜婷 Yi-Ting Cheng	基於KAN深度強化學習與韌性指標之模組化聚落式微電網拓樸優化配置以增強系統可靠度
114	許賀翔 He-Hsiang Hsu	基於強化學習與派翠機率模糊類神經網路之內藏式永磁同步馬達驅動器適應性非奇異快速終端滑動模態控制
114	魏文奎 Wen-Kuei Wei	下垂控制孤島微電網結合智慧型適應性虛擬阻抗改善功率分配
114	吳宇翔 Yu-Hsiang Wu	基於深度強化學習之模組化聚落式微電網拓撲優化以提升系統韌性與實現經濟調度
114	王新棟 Xin-Dong Wang	基於強化學習最佳化步階回歸控制之同步磁阻馬達智慧型位置追蹤
114	呂偉銘 Wei-Ming Lu	具虛功率分配之智慧型整合式電力品質調節器以改善直流鏈電壓與電力品質
114	陳彥銨 Yen-An Chen	智慧型控制反轉式整合型電力品質調節器以提升直流鏈電壓穩定性與電力品質

博士論文

畢業學年度	學生姓名	論文題目
88	魏榮宗 Rong-Jong Wai	超音波馬達之驅動與智慧型控制
90	林志鴻 Chih-Hong Lin	永磁線型同步馬達之驅動與智慧型控制
92	周旻德 Wen-Der Chou	利用基因演算法之滑動模式控制感應馬達伺服驅動系統
94	沈柏宏 Po-Hung Shen	以數位訊號處理器為基礎之智慧型控制雙軸運動控制系統
94	黃柏凱 Po-Kai Huang	利用智慧型控制之壓電致動器精密定位控制系統
95	謝伯璜 Po-Huang Shieh	利用智慧型控制之 X-Y-Θ 三軸線性超音波馬達運動系統
96	鄧禮濤 Li-Tao Teng	結合智慧型控制與改良型粒子群尋優法之風力驅動感應發電機系統
98	陳瑄易 Syuan-Yi Chen	利用智慧型滑動模式控制之五軸主動式磁浮軸承控制系統
99	周柏寰 Po-Huan Chou	智慧型同動控制之龍門式定位平台
101	談光雄 Kuang-Hsiung Tan	微電網之運轉與智慧型控制
101	洪英智 Ying-Chih Hung	應用於輕型電動車之智慧型錯誤容忍控制六相永磁同步馬達驅動系統
103	李世揚 Shih-Yang Lee	三軸壓電致動平台之智慧型精密運動控制系統

104	呂光欽 Kuang-Chin Lu	三相式併網型太陽光電系統之智慧型功率控制系統
105	張介寬 Jin-Kuan Chang	多功能太陽能微型逆變器之研製
108	陳世剛 Shih-Gang Chen	高性能同步磁阻馬達驅動系統之寬速度範圍控制器發展
112	廖仁忠 Jen-Chung Liao	微電網之智慧型功率控制與最佳化經濟調度
113	盧思穎 Su-Ying Lu	虛擬電廠最佳化能源管理模式研究