

Li-Chen Fu (傅立成)

Rm. 533, Dept. of Computer Sci. & Information Eng.

National Taiwan University, Taipei, Taiwan, R.O.C.

Tel: (886-2)2362-2209

Fax: (886-2) 2365-4267

Email: lichen@ntu.edu.tw

2022.02

Education

Ph.D. and M.S

1987 and 1985

Dept. of Electrical Engineering and Computer Science, University of California, Berkeley

B.S.

1981

Dept. of Electrical Engineering, National Taiwan University

Working Experience

- NTU Chair Professor, National Taiwan University 2020.08-Present
- Director, All Vista Healthcare Center 2018.01-Present
- Director, NTU Center for Artificial Intelligence and Advanced Robotics 2017.07-Present
- Director, Health Science and Wellness Center 2014.08-2017.07
- Associate Dean, College of Electrical Engineering & Computer Science 2009.08-2012.07
- Lifetime Distinguished Professor, Department of Electrical Engineering, Department of Computer Science & Information Engineering, National Taiwan University 2007.08-2020.07
- Secretary General (主任秘書), National Taiwan University 2005.08-2008.07
- Deputy Dean, College of Electrical Engineering & Computer Science, National Taiwan University 2004.02-2005.07
- Deputy Director, Tjing Ling Industrial Research Institute, National Taiwan University 1998.08-2001.07
- Professor, Department of Electrical Engineering, Department of Computer Science & Information Engineering, National Taiwan University 1991.08-2007.7
- Associate Professor, Department of Electrical Engineering, Department of Computer Science & Information Engineering, National Taiwan University 1987.08-1997.07

Technical Experience

- Advisory Committee Member, Asian Control Association 2014.04-Present
- BoG Member, Robotics Society of Taiwan 2007.01-Present
- Editor-in-Chief, Asian Journal of Control (AJC) 1999.01-Present
- Administrative Committee Member, Chinese Institute of Automation Engineers 1996-Present
- BoG Member, Chinese Automatic Control Society 1993-Present
- Vice President, IEEE Control Systems Society 2017.01-2018.12
- BoG Member, IEEE Control System Society 2014.01-2016.12
- President, Asian Control Association 2012.03-2014.03
- Program Co-chair (special sessions), 2011 SICE Annual Conference 2011.09
- Awards Chair, Regional Program Chairman, 2011 IEEE International Conference on Robotics and Automation (ICRA) 2011.05
- Conference Activity Board Member, IEEE Robotics and Automation Society 2010.01-2010.12
- Regional Program Chairman, 2010 IEEE/RSJ International Conference on Intelligent Robot and Systems (IROS) 2010.10
- Program Director (國科會控制學門召集人), Control Program under Engineering Department, National Science Council(NSC), R.O.C. 2009.12-2012.11
- Regional Publicity Chair, IFAC World Congress, International Federation of Automatic Control 2008.07
- Editor, Advanced Robotics 2007.05-2019.03
- Steering Committee Member, Asian Control Association (ACA) 2005-2014.03
- Vice President, Asian Control Association 2005.04-2012.03
- Program Chairman, 2004 IEEE Conference on Control Applications(IEEE CCS) 2004.08
- President (理事長) Chinese Automatic Control Society (CACCS) 2004.01-2007.12
- Administrative Committee Member, IEEE Robotics and Automation Society (IEEE RAS) 2004.01-2005.12
- Program Chairman, 2003 IEEE Int. Conf. on Robotics and Automation (IEEE RAS) 2003.05
- Distinguished Research Fellow (特約研究), National Science Council, Taiwan, R.O.C. 2001.08-2007.07
- Program Co-Chair, 2001 IEEE Intl. Conf. on Robotics and Automation 2001.05
- Program Committee Member, 2001 IEEE/ASME Int. Conf. on Advanced Intelligent Mechatronics 2001.07
- Steering Committee Member, Asian Control Professors' Association (ACPA) 2000.07-2004.12

- Program Committee Member, Symposium on “*Advance on Nonlinear Systems and Nonlinear Control*”, Beijing, P.R. China 2000.07
- Program Committee Member, 1999 IEEE Intl. Conf. on Robotics and Automation 1999.05
- Editor, Journal of Control Systems and Technology 1998.01-1998.12
- International Program Committee Member, IEEE International Conf. on Intelligent Engineering, Systems (INES'97) 1997.09
- International Program Committee Member, 8th International Conf. on Advanced Robotics (ICAR'97) 1997.07
- International Program Committee Member, IEEE/RSJ Conf. on Intelligent Robots and Systems (IROS'97) 1997.07
- International Program Committee Member, The 35th IEEE Conf. on Decision and Control 1996.12
- Associate Editor, Automatica 1996.10-1999.10
- Technical Program Committee Member, 1996 IEEE Intl. Conf. on Robotics and Automation 1996.04
- Administrative Committee Member, IEEE Robotics and Automation Society (IEEE R&A) 1996.01-1998.12
- Technical Program Committee Member, 1995 IEEE Intl. Conf. on Robotics and Automation 1995.05
- Associate Editor, Journal of Control Systems and Technology 1994.01-1997.12
- International Affairs Committee Member, IEEE Control Systems Society 1993-2010
- Technical Program Committee Member, 1993 IEEE Intl. Conf. on Robotics and Automation 1993.05
- Chairman (Founding), IEEE Robotics and Automation Society Chapter (IEEE R&A) 1993.04-1994.12
- Technical Program Committee Member, 1993 Intl. Symposium on Intelligent Robotics 1993.01
- Technical Program Committee Member, 1992 IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems 1992.07
- Chairman, IEEE Control Systems Society Chapter (IEEE CSS) 1992.01-1992.12
- Vice Chairman, IEEE Control Systems Society Chapter (IEEE CSS) 1992.01-1992.12
- Assistant Engineer, Microbot Incorporation, Mountain View, CA 94083 1985.06-1985.08
- Program Chairman, 13th National Symposium on Automatic Control, R.O.C. 1989.01-1989.12
- Vice Chairman & Secretary, Chinese Institute of Engineers, U.S.A., 1984.09-1986.05

San Francisco Bay Area Chapter

- Research Assistant, 1983.08-1987.07
- Lieutenant Lecturer, Missile Command Post, R.O.C. 1981.09-1983.07

Honors & Awards

- National Chair Professorship (27rd 教育部國家講座), Ministry of Education, Taiwan 2023.11
- Outstanding Robotics Engineering Medal (傑出機器人工程獎章), Robotics Society of Taiwan(RST) 2023.06
- National Innovation Award in the Academic Research Category (國家新創獎-學研創新獎), Institute for Biotechnology and Medical Industry 2021.12
- NTU Chair Professor(臺大講座教授), National Taiwan University 2020.08
- National Chair Professorship (23rd 教育部國家講座), Ministry of Education, Taiwan 2019.12
- Lifetime Achievement Award (自動控制工程終身成就獎), Chinese Automatic Control Society 2019.11
- Outstanding Service Award (卓越服務貢獻獎), Chinese Automatic Control Society 2019.11
- Fellow (會士), Robotics Society of Taiwan 2018.11
- Outstanding Service Award, Asian Control Association 2017.12
- Y. Z. Hsu Science Award, Technology & Innovation (有庠科技獎座), Y. Z. Hsu Science and Technology Memorial Foundation 2017.07
- IFAC Fellow, International Federation of Automatic Control 2017.01
- Academic Award (59th 教育部學術獎), Ministry of Education, Taiwan 2015.10
- Wook Hyun Kwon Education Prize, Asian Control Association 2015.07
- Macronix Chair Professor (旺宏電子講座), National Taiwan University 2013.01-2013.12
- Distinguished Lecturer, IEEE Control Systems Society 2013.01-2015.12
- The Outstanding Research Award (研究傑出獎), Pan Wen Yuan Foundation 2012
- Distinguished University Service Award (校內傑出服務獎), National Taiwan University 2012
- Academic Contribution Award (學術貢獻獎), College of Electrical Engineering and Computer Science, National Taiwan University 2012
- Fellow Evaluation Committee Member (Co-chair), IEEE Robotics and Automation Society 2010.01-2010.12
- Fellow (會士), Chinese Institute of Automation Engineers 2010

- Contribution Award for Promoting Industry Economy(大學產業經濟貢獻獎), Ministry of Economic Affairs (經濟部), Taiwan 2010.08
- Irving T. Ho Chair Professorship (何宜慈講座), National Taiwan University 2007.08-2009.07
- Distinguished Research Fellow Award (傑出特約研究員獎), National Science Council (國科會), Taiwan 2008.04
- Distinguished Professor (終身特聘教授), National Taiwan University 2007 (lifetime)
- Fellow (會士), Chinese Automatic Control Society 2007
- TECO Science & Technology Award (東元獎), TECO Science and Technology Foundation 2005
- Distinguished Lecturer, IEEE Robotics and Automation Society (IEEE RAS) 2004.01-2005.12
2007.01-2007.12
- **IEEE Fellow**, Institute of Electrical and Electronic Engineers 2004
- Industry-Academia Collaboration Award (產學合作獎), Ministry of Education (教育部), Taiwan 2004
- Outstanding Control Engineering Medal (傑出自動控制工程獎), Chinese Automatic Control Society 2000
- Lee Kuo-Tin's Performance Award (李國鼎穿石獎), Institute of Information and Computing Machinery 2000
- The Ten Outstanding Young Persons Award (十大傑出青年獎), International Young Entrepreneur Association 1999
- Academic Research Achievement Award, National Taiwan University 1998-2001
- Who's Who of the R.O.C., Chinese Who's Who Publishing Center 1998
- Who's Who in the World, Marquis 1997,1998
- Outstanding Research Award (傑出研究獎), National Science Council (國科會), Taiwan. 1995, 1998, 2000
- Outstanding Engineering Professor Award (傑出工程教授獎), Chinese Institute of Engineers (中國工程師協會) 1995
- The Best Teaching Award (教學特優獎), Ministry of Education (教育部), Taiwan 1994
- Outstanding Youth Medal (青年獎章), Executive Yen (行政院), Taiwan 1991.03
- Excellent Research Award, National Science Council (國科會), Taiwan 1990.02-1993.01
- Good Performance Research Award, National Science Council (國科會), Taiwan 1988.02-1990.01
- Regents Fellowship, University of California, Berkeley 1985.06-1986.05
- Spencer Eaken Allmond Scholarship, Stanley M. Tasheira 1983.09-1984.05

Scholarship, University of California, Berkeley

Research Interests

Social Robotics, Smart Home, Visual Detection and Tracking, Virtual Reality, and Control Theory & Applications.

Laboratory

1. Intelligent Robotics and Automation Laboratory

- (a) Social robotics
- (b) Intelligent Robotics : SLAM and human robot interaction (HRI)
- (c) Smart home and healthcare
- (d) Home energy saving
- (e) Vehicle vision for autonomous driving
- (f) Virtual reality and augmented reality
- (g) Evolutionary optimization
- (h) Production Scheduling

2. Advanced Control Laboratory

- (a) High precision positioning and large range AFM
- (b) Visual servo and tracking for HCI
- (c) Nonlinear missile's guidance and autopilot
- (d) Rehabilitation robotics
- (e) Human centered robot navigation and sensor based robot control
- (f) Nonlinear, adaptive control : theory and applications
- (g) Nonlinear motor control

Patents (專利)

- 1). 專利權人：台灣大學，發明人：傅立成、吳俊緯、林奕廷、羅宇廷、劉韋志，發明名稱：**原子力顯微鏡掃描方法**，中華民國發明第 I582429 號，2017/5/11~2035/1/8。
- 2). Inventor : Fu, Li-Chen, Cheng-Hsien Lin, Chung-Da Lim, Chia-Ming Wang, and Shih-Huang Tseng, Patent Title : **Rehabilitation Device with Pace Pattern Projecting Function and Seat Structure and Control Method Thereof**, 美國專利，Patent No. US 9,510,992 B2, 2016/12/06~2020/06/06。
- 3). 專利權人：台灣大學，發明人：傅立成、李楷文、廖苡文、王成文、賴金鑫，發明名稱：**肢體復健既訓練系統**，中華民國發明第 I554262 號，2016/10/21~2033/05/12。
- 4). 專利權人：林正凱、劉添華、傅立成、蕭傑夫，發明人：林正凱、劉添華、傅立成、蕭

- 傑夫，發明名稱：以電流變化偵測技術的預測電流控制法應用於內嵌式永磁同步電動機及同步磁阻電動機驅動系統，中華民國發明第 I543521 號，2016/07/21~2032/04/10。
- 5). 專利權人：台灣大學，發明人：傅立成、曾廷恩、劉安陞、蕭伯豪，發明名稱：人型影像追蹤系統及其人型影像偵測方法與追蹤方法，中華民國發明第 I503756 號，2015/10/11~2033/08/14。
 - 6). 專利權人：台灣大學，發明人：顏羽君、傅立成、楊宗翰、劉方正、廖峻鋒，發明名稱：一種具多階層推論架構的資訊處理系統，中華民國發明第 I486914 號，2015/06/01~2032/05/24。
 - 7). Inventor : Huang, Cheng-Ming, Yi-Tzn Lin, Li-Chen Fu, and Pei-Yung Hsiao, Patent Title : Visual Tracking System and Method Thereof, 美國專利, Patent No. US 8,885,876 B2, 2014/11/11.~2033/5/13.
 - 8). 專利權人：台灣大學，發明人：傅立成、林正凱，發明名稱：內藏式永磁同步電動機的轉軸角度估測方法，中華民國發明第 I433446 號，2014/04~2031/04。
 - 9). Inventor : Lu, Ching-Hu, Li-Chen Fu, Patent Title: **Pressure Sensing Based Localization and Tracking System**, 美國專利, Patent No.: US 8,648,732 B2, 2014/2/11~2032/10.
 - 10). Inventor : Lo, Ming-Fang, Li-Chen Fu, Pei-Yung Hsiao, Yi-Ming Chan, and Li-An Chuang, Patent Title: **Pedestrian Detector**, 美國專利, Patent No.: US 8,649,564 B2, 2014/2/11.
 - 11). Inventor : Fu, Li-Chen, Hung-Yu Lin, Christopher Young, and Jia-Yuan Yu, Patent Title: **Rehabilitation Device**, 美國專利, Patent No.: US 8,532,841 B2, 2013/09/10~2032/12.
 - 12). 專利權人：中山科學研究院，發明人：傅立成、李恣蔚、蕭培墉、羅民芳，發明名稱：影像式夜間行人偵測系統及方法，中華民國發明第 I401473 號，2013/07~2029/06。
 - 13). 專利權人：台灣大學，發明人：陸敬互、傅立成，發明名稱：感壓式定位追蹤系統，中華民國發明第 I399565 號，2013/06~2028/12。
 - 14). 專利權人：台灣大學，發明人：傅立成、黃聖智、洪紹剛、陳美勇，發明名稱：六自由度精密定位系統，中華民國發明第 I359344 號，2012/03~2028/03。
 - 15). 專利權人：台灣大學，發明人：傅立成、黃正民、林怡孜、蕭培鏞，發明名稱：影像追蹤及其方法，中華民國發明第 I357582 號，2012/02~2028/04。
 - 16). 專利權人：台灣大學，發明人：傅立成、吳兆麟、廖文豪，發明名稱：使用者追蹤及服務提供系統及方法，中華民國發明第 I356312 號，2012/01~2027/08。
 - 17). 專利權人：台灣大學，發明人：傅立成、王威文、何政昌、周晏榆，發明名稱：復健暨訓練裝置及其控制方法，中華民國發明第 I354550 號，2011/12~2028/05。
 - 18). Inventor : Fu, Li-Chen, Sheng-Chih Huang, Shao-Kang Hung, Mei-Yung Chen, Patent Title :**Six-Degree-of-Freedom Precision Positioning system**, 美國專利, Patent No.: US 7,940,150 B2, 2011/05~2029/05.
 - 19). Inventor : Wu, Chao-Lin, Li-Chen Fu, Patent Title : **Methods and Systems for Tracking Users and Providing Services**, 美國專利, Patent No.: US 7,804,416,B2, 2010/09/28 ~2029/05/20.
 - 20). 專利權人：中央研究院，發明人：黃英碩、洪紹剛、傅立成、林明彥，發明名稱：掃針式原子力顯微鏡之光束追蹤系統，中華民國發明專利第 I285273 號，2007/08~2025/04。

- 21). Inventor : Hwang, Ing-Shouh, Shao-Kang Hung, Li-Chen Fu, and Ming-Yen Lin, Patent Title : **Beam Tracking System for Scanning-probe Type Atomic Force Microscope**, 美國專利, No. 7,249,494, 2007/07/31~2027/07.
- 22). Inventor : Fu, Li-Chen (傅立成), Patent Title : **Novel Maglev Positioning System**, 美國專利, No. US 7,185,590 B2, 2004/03~2024/03.
- 23). 專利權人：傅立成，發明人：傅立成，黃世勳，蕭培鏞，陳琮仁，王俊哲，發明名稱：**一種以電腦視覺為基礎之車道偵測安全警示方法及其系統**，中華民國發明專利第 I268878 號, 2006/12~2024/03。
- 24). 發明人：吳清平、傅立成、楊式興、陳健文、彭俊銘，發明名稱：**自動調控每分鐘通氣量之人工呼吸器及其方法**，中華民國發明專利第 I260219 號, 2006/08~2024/08。
- 25). 專利權人：傅立成，發明人：傅立成，黃世勳，蕭培鏞，陳琮仁，王俊哲，發明名稱：**一種以電腦視覺為基礎之乘車安全警視系統**，中華民國發明專利第 I245715 號, 2005/12~2024/06。
- 26). 專利權人：傅立成，發明人：傅立成及蔣宗哲，發明名稱：**電梯群控制裝置**，中華民國發明專利第 I225030 號, 2004/04~2021/07。
- 27). 專利權人：國立台灣大學，創作人：傅立成、陳美勇及林佐柏，新型名稱：**新型平面式磁浮定位裝置**，中華民國新型專利第 M247331 號, 2004/10~2013/12。
- 28). 專利權人：傅立成，發明人：傅立成、林銘宏及黃安志 發明名稱：**半導體晶圓製造廠之模擬、排程系統**，中華民國發明專利第 201419 號, 2004/04~2022/02。

Invited Talks

- 傅立成，“失智症照護的科技輔助 – 進階篇，” 失智症公共識能教育講座, 2021.09.19 (Invited Speaker)
- Fu, Li-Chen, “Life Quality Improvement with AI Boosted Socially Assistive Robots,” *SICE Annual Conference*, September 9, 2021, Japan. (Plenary Speaker)
- Fu, Li-Chen, “AI Empowered Social Robotics for Better Human Care,” *2020 IEEE International Conference on Robotic Computing (IEEE IRC)*, Nov.9, 2020. (Keynote Speaker)
- Fu, Li-Chen, “人工智慧醫療的新進展，” 台灣臨床研究倫理審查學會 2020 學術年會， November 28, 2020. (Plenary Speaker)
- Fu, Li-Chen, “AI Empowered Social Robotics for Better Human Care,” *2020 IEEE International Conference on Robotic Computing (IEEE IRC)*, Nov.9, 2020. (Keynote Speaker)
- Fu, Li-Chen, “Future Trend of AI and Robotics in Medical Application and Related Facilities,” *High-Tech Facility International Forum, SEMICON TAIWAN 2020*, Taipei, September 24, 2020. (Keynote Speaker)
- Fu, Li-Chen, “AI is a key to advance Social Robotics,” Kyoto University, October 11, 2019 (Department Seminar)
- Fu, Li-Chen, “Development of Atomic Force Microscopy: A Key to Explore the Nanoscale World,” *The 2017 Asian Control Conference (ASCC 2017)*, Gold Coast, Australia, December,

2017. (Semi-Plenary Speaker)

- Fu, Li-Chen, “Future Outlook of Advanced Medical and Healthcare Environments Surrounded by Robot Assistants,” *3rd Asian Congress of Robotic and Endoscopic Surgery (2017 ACRES)*, Taipei, December 2017. (Invited Speaker)
- Fu, Li-Chen, “Robot’s Social Intelligence in Human-Robot-Interactive Environment,” *2017 International Conference on Advanced Robotics and Intelligent Systems (ARIS 2017)*, Taiwan, September, 2017. (Plenary Speaker)
- Fu, Li-Chen, “機器人 - 人類生活中的好幫手!” *TSMC*, November 2016.
- Fu, Li-Chen, “How to Make a Robot More Socially Friendly with AI?” *Foxconn*, Taiwan, June 2016.
- Fu, Li-Chen, “How to Make a Service Robot Socially Friendly in a Human Society?” *The 2014 Conference on Technologies and Applications of Artificial Intelligence (TAAI 2014)*, Taiwan, November, 2014. (Keynote Speaker)
- Fu, Li-Chen, “Social Interaction of Intelligent Robots in Human Society,” *2014 International Conference on Robotic Welding, Intelligence and Automation (RWIA’2014)*, Shanghai, China, October, 2014. (Keynote Speaker)
- Fu, Li-Chen, “AFM Technology & Application : From Past to Future,” *11th IEEE International Conference on Control & Automation (ICCA)*, Taichung, Taiwan, June 2014 (Keynote Speaker)
- Fu, Li-Chen, “Next Generation Atomic Force Microscopy: Technology & Application,” *The 22nd Iranian Conference on Electrical Engineering*, Tehran, Iran, May 2014 (Keynote Speaker).
- Fu, Li-Chen, “Smart Home Energy Saving System,” CRESE Special Session, *SICE Control Division Conference*, Fukuoka, Japan, 2013 (Keynote Speaker).
- Fu, Li-Chen, “Enabling ICT for Smart Home Development — A Perspective in Home Energy Saving,” *Foxconn*, Taiwan, 2013.
- Fu, Li-Chen, “Real-Time Visual Surveillance with Active Camera,” *SICE Annual Conference*, Fukuoka, Japan, August, 2009.
- Fu, Li-Chen, “Intelligent Robot Development-Social Robot/Ambient Intelligence,” *International Workshop on Intelligent Robot and Embedded Software(IRES)*, Gyeongju, Korea, 2008.
- Fu, Li-Chen, “Advanced Applications of Computer Vision Technique to Our Living and Transportation,” *Symposium on Application of Information Science and Technology*, Keelung, Taiwan, August, 2007 (Keynote Speaker).
- Fu, Li-Chen, “Computer Vision Based Driver Safety Assistance System,” *Symposium on Development of Active and Passive Safety System of Advanced Vehicles*, Taipei, Taiwan, July 28, 2006.
- Fu, Li-Chen, “Communication and Cooperation among Multiple Mobile Robots,” *Symposium*

on Mobile Robot Technology,” December 9, 2005, Taipei.

- Fu, Li-Chen , “Advanced Visual Tracking with Bayesian Filter,” Dept. of Electrical Engineering and Computer Science, U.C. Berkeley, July, 2004.
- Fu, L.-C., “Intelligent Flexible e-Home: Past, Presence, and Future,” *The 13th Automation Technology Conference*, June, 2004 (**Keynote Speaker**).
- Fu, L.-C., “e-Manufacturing---A Total Solution for Due-date Prediction,” *e-Operations Symposium*, MITD, TSMC, December, 2003.
- Fu, L.-C., “What’s Happening in Recent Control Literature? ”*National Automatic Control Conference*, Taoyuan, 2001.
- Fu, L.-C., “Fuzzy Control of Nonlinear Systems and Robotic Application,” *Advance on Nonlinear Systems and Nonlinear Control Summer Workshop*, Beijing, July, 2000.