Biographical Summary of Minyue Fu

Professor Minyue Fu is a leading researcher in control systems at the international level. He is also well recognised for cross-disciplinary research in signal processing and communications. In his research career spanning 30 years, he has published over 440 papers in referred international journals and conferences with over 7500 citations and h-index of 41 (Scopus). He was elected as an IEEE Fellow in late 2003, with the citation *for contributions to robust control and signal estimation*. He has been a key participant (Chief Investigator and Associate Director) of several special research centres funded by Australian Research Council. He has been a Chief Investigator of 14 major Australian Research Council research grants. He has supervised over 50 Ph.D. students and 20 research fellows, and has wide collaborations with researchers in USA, Singapore, China and Brazil, including Changjiang Visiting Professor at Shandong University and Distinguished Scholar at Zhejiang University and Guangdong University of Technology, China.

Professor Fu's current research interests are in networked control systems, multi-agent systems and optimization. Cooperative control systems involving wired and wireless communication networks are revolutionizing the applications of control theory. Examples of such systems range from smart electricity grids to traffic networks. These systems pose serious challenges for control design methods which have traditionally relied on perfect communication information. Not only new control theories are required, control-oriented communication paradigms also need to be developed. Fu's background in control, optimization, signal processing and communications plays an important role in this cross-disciplinary research.

Samples of his research outcomes include: Pioneering work in switching adaptive control which provides key ingredients for the so-called *supervisory control theory* popularly used in controlling complex dynamic systems; Major contributions in robust control theory and robust signal estimation; New design techniques for the so-called dual-stage control systems for super-precise, high-speed positioning with applications in high-resolution imaging, precision manufacturing and nano-technology; New methods for quantizer design for networked control systems; and cross-disciplinary work in communications by applying systems theory to model turbo codes and multi-channel wireless communication systems.

Professor Fu's managerial experience includes 7.5 years as a Head of School/Department and 8 years as an Associate Director of two Australian Research Council Centres of Excellence. In the role as a Head of School/Department, he led his academic unit through two major restructures in the University, ensuring major expansion in research activities and establishing innovative inshore and offshore teaching programs. In the role as the Associate Director, he was a chief investigator and key managerial figure in several prestigious research centres, leading a large program in signal processing and supervising many industrial research projects.

In relation to internationalization of tertiary education, Professor Fu's main experience includes the startup of a new offshore academic program in Singapore for the University of Newcastle for the Bachelor Degrees of Electrical Engineering, Computer Engineering, Telecommunications and partly in Mechatronics. This program, known as UoN-PSB program, was established in 2000 as a partnership tertiary education program in conjunction with the Singapore Productivity and Standards Board (PSB). Fu's involvement, as the Head of Department of the Electrical Engineering and Computer Engineering, was to establish the 3.5 academic degree programs in Singapore, managing the academic staff and administrative staff to carry out the required offshore teaching, quality control activities as well as the related financial matters. This program became very successful and led to the establishment of a major campus in Singapore known as UoN Singapore, offering a wide range of offshore tertiary programs in Singapore for the University of Newcastle.

CURRICULUM VITAE OF MINYUE FU

Personal Details

- Date of birth: 24 January, 1958
- Citizenship: Australia
- Country of birth: China
- Contacts: Email: minyue.fu@newcastle.edu.au; +61408528333 (Aus), +8615167116188 (China)

Education

- **Ph.D. in Electrical Engineering, University of Wisconsin-Madison, U.S.A., 1987.**
- M.S. in Electrical Engineering, University of Wisconsin-Madison, U.S.A., 1984.
- B.S. in Electrical Engineering, University of Science and Technology in China, 1982.

Positions Held at University of Newcastle, Australia

- **Professor, University of Newcastle, since April 2002**.
- **Director, Priority Centre for Complex Dynamic Systems and Control, University of Newcastle, since Jan. 2015.**
- **Associate Director, Centre of Excellence (Australian Research Council): Centre for Complex Dynamic Systems and Control, Jan. 2003. to Dec. 2011**.
- **Acting Head of School, School of Electrical Engineering and Computer Science, University of Newcastle, Jan. 2013 to July. 2013**.
- **Head of School, School of Electrical Engineering and Computer Science, University of Newcastle, Jan. 2005 to Dec. 2006**.
- **Head of Department, Department of Electrical and Computer Engineering, University of Newcastle, Aug. 1998 to Dec. 2001**.
- Associate Professor, University of Newcastle, Jan. 1996-March 2002.
- Assistant Director, ARC Special Research Centre: Centre for Integrated Dynamics and Control, Jan. 1997-Dec. 2001; Associate Director, Jan. 2002 to Dec. 2006.
- Assistant Director, ARC Special Research Centre for Industrial Control Science, 1994-1996.
- Senior Lecturer, University of Newcastle, Jan. 1992-Dec. 1995.
- Lecturer, University of Newcastle, Aug. 1989-Dec. 1991.

Other Positions Held

- Distinguished Scholar, Guandong University of Technology, China, Sept. 2015-now.
- Distinguished Scholar, Zhejiang University, China, June 2010-June 2015.
- Changjiang Visiting Professor, Shandong University, China, 2008-2010.
- Visiting Professor, South China University of Technology, 2007-2010.
- Visiting Professor, Zhejiang University, China, 2007-2009.
- Visiting Professor, University of Tokyo, March-April 2004.
- Visiting Professor, Nanyang Technological University, Singapore, 2002.
- Visiting Associate Professor, University of Iowa, July 1995-June 1996.
- Invited Lecturer, Laboratoire D'automatique, Dynamique et Analyse des Systemes, Universite Catholique de Louvain, Belgium. May-August 1989.
- Assistant Professor, Department of Electrical and Computer Engineering, Wayne State University, Detroit, U.S.A. October 1987-April 1989.

International Recognition and Awards

- **Fellow of Chinese Automation Council**, 2018.
- Best paper Award: IEEE International Conference on Control and Automation, 2017.
- **Member of IEEE Fellow Evaluation Committee, IEEE Control Systems Society, 2012-2015**.
- **IEEE Fellow, since Jan. 2004.**
- **Associate Editor** for IEEE Transactions on Signal Processing, Nov. 2011-Dec. 2014.
- **Associate Editor** for Automatica, Nov. 2004 to Dec. 2007.
- **Area Editor & Associate Editor** of Optimization and Engineering, 1998-2006.
- **Associate Editor** for IEEE Trans. Automatic Control, Oct. 1993-Dec. 1997.
- **Associate Editor** for Conference Editorial Board, IEEE Control Systems Society, 1993-1997.
- **Keynote/Plenary Speakers** at international conferences: 9 times.
- Best paper Award: Asian Control Conference, 2009.

Contributions to International Federation on Automatic Control (IFAC)

- **Associate Editor** for Automatica, Nov. 2004 to Dec. 2007.
- **Int. Program Chair** for IFAC Symposium on Robust Control Design, 2018.
- **Program Chair** for Chinese Control Conference, 2019 (co-sponsored by IFAC)
- **General Chair** for Australian Control Conference, 2016 (co-sponsored by IFAC).
- Publications in Automatica: 26 Papers.
- Publications in IFAC conferences: 35 papers.
- Member of Organising Committee, IFAC World Congress, Sydney, 1993.
- International Program Committee Member of over 10 IFAC conferences.
- Member of IFAC Technical Committee on Robust Control.
- Member of IFAC Technical Committee on Time Delay Systems.
- Reviewer of 200+ papers for Automatica and IFAC conferences.

Major Research Grants

- ARC Discovery Grant (2015-2017): "Topological Analysis and Control Design for Heterogeneous Multi-agent Systems," $355,000, CI: Fu and Z. Chen.
- ARC Discovery Grant (2012-2014): "Distributed Estimation and Control Techniques for Sensor Networks," $320,000, CI: Fu and Marelli.
- ARC Discovery Grant (2011-2013): "Control of networked multi-agent systems," $270,000, CI: Fu.
- ARC Linkage Grant (2011-2013): "Communication networks for smart electricity grids," $660,000, CI: Khan, Mahata, Fu.
- ARC Discovery Grant (2008-2010): "Design of quantized feedback for robust control systems," $375,000, CI: Fu.
- ARC Discovery Grant (2006-2008): "The interplay of feedback control and digital communications," $336,000, CIs: Fu and Schreier.
- ARC LIEF Grant (2006): "Nanopositioning control laboratory," $800,000, Moheimani, Goodwin, Petersen, Fu, et. al.
- Special Research Centre (2003-2010): "Centre for Complex Dynamic Systems and Control," $1.7M per annum. CIs: Middleton, Goodwin, Fu, et. al.

- ARC Discovery Grant (2004-2006): "Robust Control Design using Micro-Actuators," $298,000. CI: Fu.
- ARC Large Grant (2000-2002): "Robust Signal Proc. Techniques," $218,000. CI: Fu.
- ARC Large Grant (1999-2001): "Integral Quadratic Constraint Approach to Robust Control Design," $174,192. CI: Fu.
- Aligent Technologies Equipment Grant (2000): For Teaching in Telecommunications and Electronics, US$100,000, T. Wyile, M. Fu and J. Khan.
- ARC RIEF Grant (1999): "Smart Structures Control Laboratory," $250,000. CIs: Goodwin, Moheimani, Fu, Middleton, Petersen, Pota, Lai.
- Special Research Centre (1997-2002): "Centre for Integrated Dynamics and Control," $800,000 per annum . CIs: Goodwin, Middleton, Fu, et. al.
- ARC Large Grant (1996-1998): "Convex optimization approach to robust control," $150,000. CIs: Fu and de Souza.
- ARC Large Grant (1993-1995): "Signal Estimation in Uncertain Dynamical Systems," $186,000. CIs: Fu and de Souza.
- ARC Large Grant (1991-1993): "Analysis and Design of Robust Control Systems," $165,000. PIs: de Souza, Fu and Middleton.

Sample Publications

(Total publications: Journal papers+book chapters: 195; Keynote speeches: 9; Conference papers: 248. Total citations: > 7500 (Scopus); H-index = 41 (Scopus).
Full list of publications can be found at
http://www.eng.newcastle.edu.au/∼mf140/home/Pages/publications_complete.html)

Area 1: Control Systems

- M. Fu and L. Xie, "The sector bound approach to quantized feedback control," IEEE Transactions on Automatic Control, vol. 50, no. 11, pp. 1698-1711, Nov. 2005. (**1023 citations** - Scopus)
- M. Fu and B. R. Barmish, "Adaptive stabilization of linear systems via switching control," *IEEE Transactions on Automatic Control*, vol. AC-31, pp. 1097-1103, Dec. 1986. (**213 citations** - Scopus)
- M. Fu, A. W. Olbort, and M. P. Polis, "Robust stability for time-delay systems: the edge theorem and graphical tests," *IEEE Transactions on Automatic Control*, vol. 34, no. 8, pp. 813-820, 1989. (**140 citations** - Scopus)
- L. Xie, M. Fu and C. E. de Souza, "H_∞ control and quadratic stabilization of systems with parameter uncertainty via output feedback," *IEEE Transactions on Automatic Control*, vol. 37, no. 8, pp. 1253-1256, 1992. (**413 citations** - Scopus)

Area 2: Signal Processing

- H. Li and M. Fu, "A linear matrix inequality approach to robust H_∞ filtering," *IEEE Transactions on Signal Processing*, vol. 45, no. 9, pp. 2338-2350, 1997. (**352 citations** - Scopus)
- T. Li, M. Fu, L. Xie and J. Zhang, "Distributed consensus with limited communication data rate," *IEEE Transactions on Automatic Control*, vol. 56, no. 2, pp. 279-292, 2011.(**291 citations** - Scopus)
- M. Fu, C. E. de Souza and Z. Q. Luo, "Finite-horizon robust Kalman filter design," *IEEE Transactions on Signal Processing*, vol. 49, no. 9, pp. 2103-2112, 2001. (**88 citations** - Scopus)
- E. W. Bai and M. Fu, "A blind approach to Hammerstein model identification," *IEEE Transactions on Signal Processing*, vol. 50, no. 7, pp. 1610-1619, 2002. (**122 citations** - Scopus)

Area 3: Communications

- M. Fu, "Stochastic Analysis of Turbo Decoding," IEEE Transactions on Information Theory, vol. 54, no. 1, pp. 81-100, 2005. (**35 citations** - Scopus)
- L. Hanlen and M. Fu, "Wireless communication systems with-spatial diversity: A volumetric model," *IEEE Transactions on Wireless Communications*, vol. 5, no. 1, pp. 133-142, 2006. (**31 citations** - Scopus)