

Academic Career Highlights

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Personal page at: <http://geospatial-mapping-and-navigation.net/>

Major academic activities

Teaching

Both undergraduate and postgraduate levels, including invited lectures at international universities and summer schools. Over the years, averaged student course/teaching evaluation above 90%. One of the student comments: *"the lecturer (professor) is enthusiastic, clearly enjoying the subject matters – this is very motivating for the class!"*

Courses and subject topics taught

- Surveying computations
- Geodesy and geospatial reference frames (including map projections, 3D point cloud, etc.)
- Optimal estimation (including least squares, filtering, network adjustments, etc.)
- Precise GPS/GNSS positioning and geodetic control
- Modern geodesy and applications
- Geo-positioning/mapping/navigation (including sensor integration, GNSS/INS/LiDAR/Camera, etc.)
- Surveying in building and constructions
- Capstone thesis or field projects, with example topics: geospatial Metaverse, Digital Twins; High-Definition (HD) Map for automated driving, 3D reality capture with LiDAR, Building Information Modelling (BIM), AI/Machine Learning in Structural Health Monitoring (SHM), Environmental monitoring with geodetic methods; Traffic monitoring with UAV/UAS, Photogrammetric mapping; UWB based positioning, etc.

Research

Research areas of interest include a) Global Navigation Satellite Systems - GNSS (GPS, Glonass, Galileo, BeiDou System-BDS) and Their Integration; b) Multi-Sensor Integration for Positioning, Mapping and Navigation; c) Statistical Theory and Its Applications in Positioning, Mapping and Navigation.

Published over 350 research publications including over 200 refereed journal papers, 7 book chapters and over 100 conference papers as well as two software packages (**Google Scholar H-Index: 59**, August 2022), see publication detail at <http://geospatial-mapping-and-navigation.net/publication/>

Total research funding > **5.5m**, including a) 10 Australian Research Council (ARC) grants to date: 6 as Lead Chief Investigator (CI) and 4 as CI; b) Project Leader/CI for 2 Cooperative Research Centre (CRC) projects; as well as c) Numerous industry-funded projects and competitive internal grants/external collaboration projects. Over 5 postdoctoral research associates/research fellows and over 10 visiting fellows joined the research team at various times working for the research projects and for research collaborations.

Since 2004, supervised **20 PhD students** and 3 Master research students to completions.

Awards received by the students under my supervision:

- Seven PhD students won prestigious international student prizes during their PhD studies.
- Three undergraduate thesis research students won the top awards from NSW Board of Surveying and Spatial Information (BOSSI).

External HDR thesis examinations: >10 PhD theses/dissertations and 4 Master research these to date.

Professional activities:

Funding Editor-in-Chief, Conference Convenors, etc. see details at <http://geospatial-mapping-and-navigation.net/professional-activities/>

Selected Awards, Prizes, Scholarships and Certificates

2022/2021/2020 Named on the World's Top 2% scientists list

2022/2020/2018 Named as Australia's Research Leader, in the field "Radar, Positioning and Navigation"

More details at <http://geospatial-mapping-and-navigation.net/awards/>

Academic positions and highlights

Associate Professor (3/2013 – Present):

School of Civil and Environmental Engineering (CVEN), UNSW Sydney, Australia.

During various time periods as

- School Academic Coordinator for Industrial Training programs
- Discipline Representative on School Teaching and Learning Committee
- Discipline Representative on School Research Management Committee
- Member of Faculty of Engineering International Committee

Education

- Course convenor/Lecturer for 4 courses each year
- Established Master/Graduate Certificate/Graduate Diploma Coursework Programs in geospatial engineering
- Participation in two Engineers Australia Accreditation submissions for UNSW Surveying program
- Established new capstone thesis research courses for surveying, and combined surveying/civil engineering programs
- Supervised one of the School's top performing UG students in Civil/Architectural program for her research thesis on Building Information Modelling (BIM), being awarded a scholarship as the Student Ambassador of the School to visit a construction automation research group at University of Michigan

Research

- Supervision of 10 PhD research students to their completions (within 9-year period)
- Refereed journal papers: 88 (within 9-year period)
- Research Funding (within 9-year period):
Total of A\$2.479million, including 568k under my leadership
(Australian Research Council (ARC): 483k; Cooperative Research Centre (CRC): 108k; Industry: 296k; Internal (competitive):164k; collaboration: 1430k)
- Key contributor to the latest ARC research ranking 5 out of 5 for geomatic engineering at UNSW
- Leadership in the UNSW project for the first Australian university UAS/UAV operator certificate as well as hardware platforms for surveying and mapping, collaboration with other disciplines.

Associate Professor (1/2010 – 2/2013)

School of Surveying and Geospatial Engineering (SAGE), the University of New South Wales (UNSW), Sydney, Australia.

- Director of Undergraduate Studies, SAGE (1/2012 – 2/2013)
- Director of Postgraduate Studies, SAGE (1/2010- 12/2011)
- Member of Faculty of Engineering Higher Degree Committee (HDC) (2010-2011)
- Member of Faculty of Engineering Education Committee (2012-2013)
- Member of Faculty of Engineering International Committee

Education

- Course convenor/Lecturer for 4 courses each year
- Convener of Education Forum on Surveying and Geospatial Studies, Sydney. (Invited speakers from academia, professional bodies, and industry, in support of strategical planning for the School's research activities).
- Participation in two Engineers Australia Accreditation submissions for UNSW Surveying program

Research

- Supervision of 4 PhD research students to their completions (within 3-year period)
- Refereed journal papers: 26 (within 3-year period)
- Research Funding (within 3-year period): Total of A\$414k, including 270k under my leadership (ARC: 60k; Industry: 60k; Internal (competitive):142k; International collaboration: 140k)
- Convener of Research Workshop on Trends in Geospatial Technology: Implications for Research (Invited speakers from academia, professional bodies, and industry, in support of strategical planning for the School's research activities).
- Initiated and led the collaborative projects with academics from electric and electronic, mechanical engineering disciplines, cross UNSW Sydney campus and UNSW Canberra campus, on multi-sensor integration for navigation, positioning, and mapping experiments.

Senior Lecturer (1/2004-12/2009)

School of Surveying and Spatial Information Systems (SSIS), UNSW, Sydney, Australia.

- Coordinator of Postgraduate Studies, SSIS (2004-2009)
- Member of Faculty of Engineering Higher Degree Committee (HDC) (2004-2009)
- Member of Faculty of Engineering Postgraduate Coursework Education Committee (2004-2009)
- Member of Faculty of Engineering International Committee (2009)

Education

- Course convenor/Lecturer for 4 courses each year
- Initiated and established a new course "Fundamentals of Geo-Positioning"
- Initiated and designed the undergraduate articulation **2+2 programs** with top overseas universities. Students who graduated from these programs have made excellent contributions to Australian surveying and spatial industry

Research

- Supervision of 6 PhD research students to their completions (within 6-year period)
- Refereed journal papers: 43 (within 6-year period)
- Research Funding (within 6-year period):
Total of A\$2.362 million, including 1.335 million under my leadership (ARC: 1149k; CRC: 551k; Industry: 295k; Internal (competitive):117k; International collaboration: 250k)

Lecturer (1/2003-12/2003)

Australian Research Council (ARC) Research Fellow (1/2000 – 12/2002)

School of Surveying and Spatial Information Systems (SSIS), UNSW, Sydney, Australia.

Education

- Course Lecturer for one course, start of academic life at UNSW.

Research

- Research Funding (within 3-year period): Total of A\$678k, including 341k under my leadership (ARC: 605k; Industry: 15k; Internal (competitive): 55k)
- Appointed supervisor of a PhD student, very first time in my academic career.

Postdoctoral Research Associate (3/1999 – 12/1999)

Department of Spatial Sciences, Curtin University of Technology, Perth, Australia.

- Successful Australian Research Council (ARC) Fellowship application (Highly competitive)

Ph.D candidate, March 1996 – February 1999

Department of Spatial Sciences, Curtin University of Technology, Perth, Australia.

- One of the major contributions of my PhD is the quality control formula named as *W-ratio*, highly cited in other papers/books, and adopted in the online processing software OPUS by US National Geodetic Survey (top surveying and mapping agency in the USA).

Associate Professor (9/1993 – 2/1996)

Department of Engineering Surveying, Wuhan Technical University of Surveying and Mapping (WTUSM), (now part of Wuhan University), Wuhan, China.

(on leave for research at Hong Kong Polytechnic University, from 10/1994 to 2/1996)

- Awarded the China National Natural Science Foundation grant (1993-1996) on reliability measures for correlated observations.
- *Career first research contribution* on defining the range of the redundancy numbers for correlated measurements, recognised as a fundamental discovery in the surveying/spatial science, and beyond into a broader area of statistics.

University Lecturer (9/1990 – 9/1993)

Department of Engineering Surveying, Wuhan Technical University of Surveying and Mapping (WTUSM), (now part of Wuhan University), Wuhan, China.

Education and qualifications

Ph.D. (1999), Geodesy/GNSS, Curtin University of Technology, Perth, Australia.

M.Sc. (1990), Surveying and Mapping, Wuhan Technical University of Surveying & Mapping (now part of Wuhan University), China.

B.Sc. (1983), Surveying Engineering, Wuhan Technical University of Surveying & Mapping (now part of Wuhan University), China.