CURRICULUM VITAE

Name: Chris RIZOS

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Present Position: Professor
Head of the School of Surveying & Spatial Information Systems

Academic Qualifications & Awards:

- BSurv (Hons.1), UNSW, 1975
- PhD, UNSW, 1980
- University Medal, UNSW, 1975
- Institution of Surveyors (N.S.W. Division) Gold Medal, 1975
- Commonwealth Postgraduate Research Scholarship, 1975-78
- Fulbright Fellowship (Postgraduate Category), 1977-78
- Rothmans Fellowship, 1979
- Alexander von Humboldt Fellowship, 1981-83, 1991
- Fellow Japan Society for the Promotion of Science, 1999, 2003
- Senior Fellow, Nanyang Technological University, Singapore, 1999
- Honorary Professor, Wuhan University, China, 2006

Brief Biography:

- 1975 - mid 1980: Postgraduate student in the School of Surveying, The University of New South Wales (UNSW), under supervision of A/Prof. Ron Mather. In 1980 awarded Ph.D. in geodesy for a thesis entitled "The role of the gravity field in sea surface topography studies".
- 1981 - late 1983: Visiting Research Fellow at the German Geodetic Research Institute (DGFI), Munich, Germany, supported by an Alexander von Humboldt Fellowship.
- 1984 - September 1987: Professional Officer at the School of Surveying, UNSW, working under Assoc. Prof. Art Stolz and his team carrying out research into the new Global Positioning System (GPS) technology.
- October 1987 - September 1989: Appointed Lecturer School of Surveying, UNSW. Continued research in GPS software and modelling problems for static applications. Major teaching interest was (as it still is) GPS for undergraduate and postgraduate students.
- October 1989 - December 1995: Senior Lecturer School of Surveying (in 1994 renamed the School of Geomatic Engineering). Manager of the Geodesy Laboratory, and leader of the Satellite Navigation & Positioning group.
- January 1996 – December 2000: Associate Professor.
- Promotion to Professor, effective from 2001.
- Appointment to Head of the School of Surveying & SIS in July 2004.
- Sabbatical leave: 1991 DGFI (Munich, Germany), 1995 GeoForschungsZentrum (Potsdam, Germany), 1999 Nanyang Technological University (Singapore).

Chris Rizos is a graduate of the School of Surveying, The University of New South Wales (UNSW), Sydney, Australia; obtaining a Bachelor of Surveying in 1975, and a Doctor of

Philosophy in 1980 in Satellite Geodesy. Chris joined the academic staff of the School of Surveying in 1987, and was promoted to Professor in 2001. Chris is currently the Head of the School of Surveying & Spatial Information Systems, UNSW. Chris has been researching the technology and high precision applications of GPS since 1985, and has published over 400 journal and conference papers. Chris established the Satellite Navigation and Positioning Lab at UNSW in the early 1990s - Australia's premier academic R&D group for GNSS and wireless positioning technology and applications. He is a Fellow of the Australian Institute of Navigation, a Fellow of the International Association of Geodesy (IAG), and is currently Vice President of the IAG. He is the Chair of the joint IAG/IHO (International Hydrographic Organisation) Advisory Board of the Law of the Sea (ABLOS). He is a member of the International GNSS Service (IGS) Governing Board and a member of its Executive. He is also Science Manager of Program 1 "Integrated Positioning & Mapping Systems" of the Cooperative Research Centre for Spatial Information.

Professional & Scientific Duties:

- President Commission 4 "Positioning & Applications" of the International Association of Geodesy (IAG), 2003-2007.
- Vice President of the IAG, 2007-2011.
- Member of the joint IAG/IHO Advisory Board for technical aspects of the UN Law of the Sea (ABLOS), since 1995. Chair 2009-2010.
- Member of the Council of the Australian Institute of Navigation, 1994-2000.
- Member of the AuScope Geospatial Steering Committee, 2007+. Chair since mid-2009.
- Chair of the AuScope GNSS Sub-Committee, 2008+.
- Member of the Convenor's Committee for the "Tropical School of Geodesy" (initiative of the Institute Technology Bandung, Indonesia, and run in Bandung, in 1993 and 1996).
- Co-organiser and Program Director of the National Satellite Navigation Technology Symposia (jointly with QUT), in 1993, 1995, 1997, 1999, 2001, 2003, 2006, 2007, 2009.
- Science Program Manager for positioning-related topics in the Cooperative Research Centre for Spatial Information (http://www.crcsi.com).
- Member of the Australian GNSS Coordination Committee, mid-2004 to mid-2006.
- Member of the ICSM Geodesy Technical Sub-Committee, 2004+.
- Member of the Editorial Boards of “GPS Solutions”, “Journal of Geospatial Eng.”, “Geoinformation Science Journal”, “Journal of Global Positioning Systems”, and “Inside GNSS”, and correspondent for “Geomatic World”. Associate editor of “Journal of Location Based Services”, and editor-in-chief of “Journal of Applied Geodesy”.
- Associate Member of the International GNSS Service (IGS), since mid-2004.
- Member of the Governing Board of the IGS, 2004-2007, 2007-2011. Member of the Executive Committee 2006+.
- Australia/Asia representative on the Executive of the U.S. Institute of Navigation Satellite Division, mid-2004 to mid-2006.
- Convenor of sessions at AGU, ION and IAG international symposia, as well as member of Organising Committees of many overseas and national conferences.
- Reviewer of grant applications for research councils in Australia, USA, Canada, South Africa, New Zealand, and Hong Kong.

Research Student Supervision:

Supervision of research graduate students (total since 1987): 4 candidates for PhD (presently under direct supervision), 4 candidates for PhD (external or co-supervisor), 18 candidates for PhD (completed), 5 candidates for ME (completed), 1 candidate for MSurv (completed), 5 candidates for MSurvSc (completed).

Peer-Reviewed Research Grants:

- Australian Research Council (ARC) projects:

(1) ARC-Discovery (2010-2012): "Preparing For The Next Generation Global Navigation Satellite System Era: Developing and Testing New User And Reference Station Receiver Designs";
(2) ARC-Linkage grant (2009-2012) “Mobility and Location Information Providing Social Equality for Blind and Vision Impaired Persons”;
(3)ARC-Discovery (2008-2012): "Environmental Geodesy: Variations of Sea Level and Water Storage in the Australian Region";
(4)ARC-Discovery grant (2007-2009) “A Combined Inertial, Satellite & Terrestrial Signal Navigation Device for High Accuracy Positioning & Orientation of Underground Imaging Systems”;
(5)ARC-Linkage grant (2006.5-2009.5) “Structural Deformation Monitoring Integrating a New Wireless Positioning Technology with GPS”;
(6)ARC-Linkage grant (2006-2009) “Sensor Integration for Low-Cost Robust Agricultural Machine Automation”;
(7)ARC-Discovery grant (2005-2007) “Designing Next Generation GNSS Receivers Using the Software Approach”;
(8)ARC-Linkage (LIEF) grant (2005) “A Signal Simulation Facility for GNSS Receiver Design and Testing”;
(9)ARC-Linkage (APAI) grant (2005-2007) “Network Design and Management for a Pseudolite and GPS Based Ubiquitous Positioning System”;
(10) ARC-Linkage grant (2004.5-2007.5) “Real-time Atmospheric Modelling for Cm-level Positioning Based on Continuously Operating Global Navigation Satellite System (GNSS) Reference Station Networks”;
(11) ARC-Linkage grant (2003.5-2006.5): “Audio Nomad – A Location-based Handheld Audio Device for Sound-Art Applications”;
(12) ARC-Linkage (APAI) grant (2003.5-2006.5) “An Augmented GPS Software Receiver for Indoor/Outdoor Positioning”;
(13) ARC-Discovery grant (2003-2006) “Remote Sensing Based on Indirect GPS Signals”;
(14) ARC-Linkage grant (2003-2005) “Development of Internet-based Kinematic GPS Solutions for Local and Regional Positioning Services”;
(15) ARC-Discovery grant (2002-2004) “Integrated Space Geodetic Techniques for Ground Subsidence Monitoring Due to Underground Mining and Similar Activities”;
(16) ARC-SPIRT (2001-2003) “An Integrated GPS and Pseudolite Surveying System for Steelworks Applications”;
(17) ARC-SPIRT (2001-2003) “Development of Communications and Information Technologies in Support of Integrated GPS Reference Station Networks”;
(18) ARC small grant project (2000) “Investigations into GPS-Pseudolite Integration for Precise Positioning Applications”;
(19) ARC large grant project (1999-2001) “Development & Testing of Innovative High Precision GPS Techniques with the Aid of the Singaporean Multi-Base Station Network”;
(20) ARC-SPIRT grant (1999-2001) “Development of a Medium Range, Carrier Phase-Based GPS Positioning System for Helicopter Gravity Surveys”;
(21) ARC-RIEF (1999): “A GPS Receiver Facility to Support Australian Geodetic Research”;
(22) ARC-SPIRT grant (1998-2000) “A Precise Navigation System for Driverless Mine Equipment Using Combined GPS And Glonass Measurements”;
(23) ARC large grant project (1998-2000) “A Second Generation Low-Cost GPS Array System for Deformation Monitoring of the Mt. Guntur Volcano in Indonesia”;
(24) ARC small grant project (1997) “Engineering Development of a Low-Cost GPS Positioning System for General Survey Applications”;
(25) ARC large grant project (1996-98) “Develop, Test and Deploy a GPS Array System for Continuous, Automatic Monitoring of Earth Deformations Arising From Volcanic Activity”;

(26) ARC large grant project (1995-97) “Develop and Test a Software Package for Centimetre Accuracy Positioning of Moving Platforms Using the GPS System Over Very Long Baselines”;
(27) ARC small grant project (1995) “System Development for Automatic GPS Receiver Array Operations”;
(28) ARC large grant project (1993-94) “Establishment of an Australian GPS Fiducial Network”;
(29) ARC small grant project (1993) “Development of a GPS Surveying System Using Low-Cost Receivers”; and
(30) ARC large grant project (1992-94) “PRARE Satellite Tracking and ERS-1 Orbit Determination in Support of Radar Altimeter Studies in Australia”.

Research Interests:

- Carrier phase-based kinematic GPS/GNSS positioning over short, medium and long baselines: Research projects include combined GPS+Glonass data processing, single-epoch ambiguity-resolution over short ranges, multi-reference system techniques, special techniques for long-range positioning applications.
- Development of GPS-based deformation monitoring systems: Current research is focussed on the development and testing of low-cost GPS systems for survey applications. Investigations are underway using GPS (and other surveying sensors) for building monitoring.
- Development and testing of multi-reference receiver GPS/GNSS positioning techniques: Such techniques can improve the performance of both static and kinematic positioning. As a partner in the SydNet CORS network, investigations will be made in a realistic "open air laboratory". Real-time GPS/GNSS techniques will be the focus.
- Innovative geodetic techniques: Research into the most effective integration of low-cost, single-frequency GPS receivers with permanent, continuously-operated GPS/GNSS networks (CGPS), as well as the integration of CGPS with Interferometric SAR techniques, guidelines for the development of multi-functional CORS networks .
- New positioning technologies: New initiatives are to be taken in the area of indoor positioning, pseudolites, Locata, GSM-based positioning, GNSS+INS integration (and other similar sensors) strategies, GNSS+GIS and Location Based Services applications.

Consultancies:

Contract research projects to industry and government agencies: real-time GPS bus tracking; real-time GPS data logging and control of NovAtel, Leica, Trimble & Canadian Marconi receivers; "reverse" DGPS algorithm development for vehicle tracking; road map update using GPS and Dead Reckoning (DR) sensors; Kalman filter development for GPS-DR and GPS-INS integration; on-the-fly ambiguity resolution algorithm development; real-time carrier phase-based GPS positioning for long- and short-range; real-time GPS attitude determination; GPS ionospheric studies; GPS multipath studies; GPS quality control algorithm development; GPS for engineering and volcano deformation monitoring; low-cost GPS surveying technologies; GPS-InSAR investigations for ground subsidence monitoring & earthquake rupture detection; Assisted-GPS receiver & server development; pseudolite development & testing.

Publications:

Over 400 publications and conference papers in the areas of physical geodesy, satellite oceanography, satellite geodesy, GPS/GNSS and navigation technologies and applications (view full list at http://www.gmat.unsw.edu.au/snap/staff/rizos_papers.htm). Co-author of the book “Positioning Systems for Intelligent Transportation Systems (ITS)” (Artech House), and a monograph “Principles and Practice of GPS Surveying”. Associate Editor of the book “Manual of Geospatial Science and Technology” (Taylor & Francis, 1st & 2nd eds).

C.R. October 2009