RMIT SPACE
RESEARCH CENTRE

SATELLITE POSITIONING FOR ATMOSPHERE CLIMATE AND ENVIRONMENT

RMIT UNIVERSITY

WELCOME MESSAGE

It is my great pleasure to introduce the RMIT SPACE Research Centre to you.

As part of the Australian Government's recent space-related initiatives to support national strategic, economic and social objectives, the Centre has been established through the support of a multi-million-dollar, merit-based competitive grant from the Australian Space Research Program as part of its Space Science and Innovation funding stream.

The Centre focuses on the development of Platform Technologies for Space, Atmosphere and Climate, including new methods, new algorithms and frontier technologies for satellite positioning, navigation and timing, space situation awareness (including space object/debris monitoring and tracking), space weather and climate change modelling. The research is conducted in the context of new generation global navigation and geo-environmental satellite systems to support a wide range of applications. It is expected that this research will play a significant role for the planning, design, launch and operation of any future Australian micro/nano-satellite missions.

The Centre comprises a team of national and international experts with a wide range of skills and experience. At the RMIT SPACE Research Centre, we target niche research areas that match our special capabilities. As a key player in the Australian space sector, the Centre seeks to establish close links and collaborations with other research organisations, international counterparts, government agencies and industry partners, to solve significant real-world challenges.

The Centre aims to become a serious player in the global space community, to conduct world-class and cutting-edge research, education and innovation activities, and to explore new opportunities in promoting knowledge creation, technology innovation and competitiveness for Australian space science and industry.

We welcome interested parties to join us for this exciting endeavour, please contact us if you are interested.

Yours faithfully,

Kefei Zhang
Professor and Director
RMIT SPACE Research Centre

RESEARCH AREAS

GNSS/surveying theory and algorithm

- multi-GNSS, Network RTK, PPP, etc.
- radio occultation and GNSS meteorology
- positioning, navigation and timing (PNT)
- surveying and geodesy
- ray tracing and reflectometry

Atmospheric modeling for

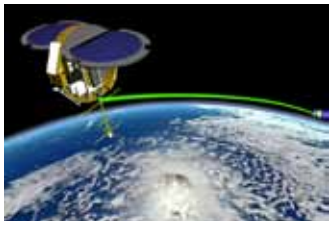
- precise positioning
- space weather
- weather forecasting, climate monitoring and climatic hazards
- environmental monitoring

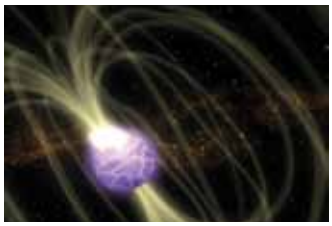
Space and debris tracking

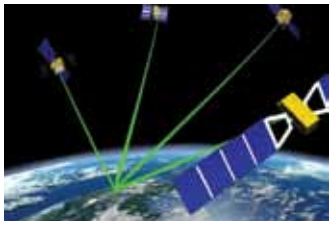
- precise orbit determination, in-space service
- debris surveillance and collision avoidance
- satellite laser ranging (SLR), square kilometre array (SKA) etc.

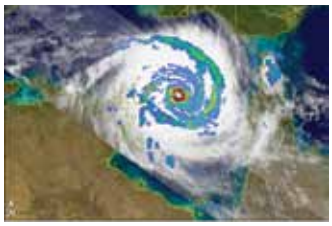
Smart people mobility and object tracking

- smart athlete training and coaching systems
- positioning/tracking indoor/outdoor and in difficult environments
- intelligent transportation systems (ITS)
- location based services (LBS)









KEY PARTNERS

- The Australian Bureau of Meteorology
- Australian Institute of Sport
- Chinese Academy of Science
- Chinese University of Mining Technology
- CRC for Spatial Information
- Curtin University of Technology
- Department of Sustainability and Environment
- EOS Space Systems Pty Ltd
- GFZ German Research Centre for Geosciences
- National Central University
- Wuhan University
- US National Oceanic and Atmospheric Administration
- US University Corporation for Atmospheric Research
- University of NSW

KEY PROJECTS (WITH PARTNERS)

- Platform Technologies for Space, Atmosphere and Climate, Australian Space Research Programme (2010–13) Stream B Space Innovation and Research, DIISR
- Satellite-Based Radio Occultation for Atmospheric Sounding, Weather Forecasting and Climate Monitoring in the Australian Region (2008–11) ARC-Linkage
- Precise Atmospheric Density Correction Model Using Space Tracking Data for Accurate Debris Surveillance and Collision Warning (2007–2010) ARC-Linkage
- Real-time atmospheric modelling for centimetre-level positioning based on GNSS continuously operating reference station networks (2004–2009) ARC-Linkage
- Continuously Operating Reference Stations Network and Its Synergized Disaster Monitoring and Warning Systems for Coal Mining (2009–2011) DIISR ISL program (Australia-China S&T Cooperation Programme, CH080155)
- GPS radio occultation data processing and assimilation system for weather forecast (2009–2011) DIISR (Australia–China S&T Cooperation Programme, CH080253)
- Assimilation of GPS Radio Occultation Data with NWP System for Climate Monitoring (2008–2011) DIISR ISL Competitive Grant with USA (CG130127)
- Intelligent gas disaster early-warning, robust emergency response and rescue systems for coal mining based on geospatial information technologies (2008–2010) DIISR ISL program (Australia-China S&T Cooperation Programme, CH070130)
- Investigation of Atmosphere and Climate Based on GPS, Galileo and LEO–LEO Radio Occultation in Australia (2007–2008) Burea of Meteorology—Strategic Investment Fund
- Boat monitoring and visitor behavior tracking for recreational activity in tourist destinations (2004–10) with Parks Victoria and Geodimensions Pty Ltd.
- Enhanced agency response strategies through modelling geo-temporal characteristics of emergency services calls (2008–2011) ARC Linkage

THE TEAM

Director:	Professor Kefei Zhang
Project Manager:	Fiona Madden
Operations Manager:	Sarah Gordon
Main research staff:	Associate Professor Colin Arrowsmith, Associate Professor Prem Chhetri, Dr Gang-Jun Liu, Dr David Silcock, Dr Sue Choy, Mr Rodney Deakin, Dr James Bennett, Mr Lucas Holden, Dr Robert Norman, Dr Tzupang Tseng, Dr Carl Wang, Dr Suqin Wu, Dr Hai Xu, Dr Shaocheng Zhang, Mr Brett Carter
Main research students:	Mr Bobby Wong, Mr Erjiang Fu, Mr Toby Manning, Ms Ying Li, Mr Shun Zhang, Mr Ming Zhu

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