

School of Surveying & Spatial Information Systems, UNSW
Satellite Navigation & Positioning (SNAP) Lab
(<http://www.gmat.unsw.edu.au/snap/>)

PhD Scholarships Available

ARC-Linkage (APAI) “Locating Interference to GPS: Protecting the World’s Aircraft Landing Systems” 2008-2011

Australia, through AirServices (our partner in this project) in partnership with Honeywell, is leading the world by providing the augmentation systems that will allow GPS to be used throughout the world as navigation equipment in commercial airlines. The Ground-Based Augmentation System (GBAS) and Ground-based Regional Augmentation System (GRAS) will be rolled out across the many countries who cannot afford satellite-based augmentation systems. GPS is vulnerable to unintentional interference. This project aims to detect and geolocate interference sources near airports. One PhD will investigate beam-steering of antennas to give directional information. The second PhD will investigate use of time-difference of arrival (TDOA) techniques to locate the interferer. The project would be led by A/Prof. Andrew Dempster. **Two PhD scholarships.** *Contact a.dempster@unsw.edu.au*

ARC-Linkage (APAI) “Assisted GPS and Advanced Positioning For Emergency Services” 2007-2010

GPS works well when the receiver can see open skies. Where there are tall buildings (“urban canyons”) or trees, performance is diminished. This project examines how “Assisted GPS” (AGPS) and weak-signal GPS (an area of expertise for our partners, Signav Pty Ltd) schemes can be used to assist emergency services such as bush fire fighters and search and rescue teams. One PhD will examine the provision of AGPS assistance, and the other will examine issues to do with automated despatch and tracking – how for instance to ensure that searchers have covered all of an area and not duplicated search effort. The project would be led by A/Prof. Andrew Dempster. **Two PhD scholarships.** *Contact a.dempster@unsw.edu.au*

ARC-Linkage (APAI) “Structural Deformation Monitoring Integrating a New Wireless Positioning Technology with GPS” 2007-2010

In this project, the student will be required to design algorithms that integrate measurements from GPS receivers with those taken from “Localites”, terrestrial transmitters produced by the innovative Australian company Locata. The Locata technology is proving to be a world-class provider of extremely accurate position and time synchronisation, and is being tested in Asia, North America and Africa. In many applications, it can be used to support or replace GPS. This project investigates these applications. **One PhD scholarship.** *Contact a.dempster@unsw.edu.au*

ARC-Linkage (APAI) “Safe Location at Home and Abroad” 2007-2010

Technologies exist to use mobile telephone signals for location. Mobile phones may also use GPS, by exploiting “assisted GPS” or A-GPS. Each of these two approaches works well where the other does not, so an integrated approach would make for a much more robust positioning system. This project examines integrating the novel technology of our partner, Seeker Wireless, with GPS to provide secure location information. The application is for monitoring the location of children to assure their safety. **One PhD scholarship.** *Contact a.dempster@unsw.edu.au*

CRC-SI Project 1.4 “Integrating Electricity, Telecommunications and Government Infrastructure to Deliver Precise Positioning Services in Regional Areas” 2007-2010

The aim of this project is to develop a long-term framework for the current and future GNSS network architecture and operations. The research will focus on the examination of alternatives for the precise positioning network architecture and approaches beyond the solutions currently offered by the major commercial suppliers. It will also address challenges and benefits in the context of next generation GNSS such as GPS-III and Galileo. The position is open for the development and implementation of a software platform to enable a server-based, thin-client, real-time kinematic positioning services. **One PhD scholarship.** *Contact Dr Samsung Lim (s.lim@unsw.edu.au)*

Visit our website to find out more about the SNAP Lab and its research projects,
http://www.gmat.unsw.edu.au/snap/work/our_work.htm

We are always looking for enthusiastic, well-qualified PhD candidates with a background in surveying/geodesy, computer science, electrical engineering, mathematics or physics. We have many other project topics, including GPS/GNSS technology and its applications, differential InSAR for deformation monitoring, and multi-sensor integration. These are available only for Australian or New Zealand citizens or Permanent Resident Visa Holders.

For all enquiries regarding postgraduate studies and research, contact the Director of Research Assoc. Prof. Andrew Dempster, at a.dempster@unsw.edu.au.