

Navinda Kottege

(Citizenship: Australian)

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FIELDS OF INTEREST

Localisation & navigation, Experimental robotics, Sensor networks, Underwater robotics, Aerial robotics, Robot swarms, Mechatronics.

EDUCATION

- **PhD Candidate** - Thesis title: '*Underwater Acoustic Localisation in the context of Autonomous Submersibles*' - Thesis currently under examination - Research School of Information Sciences & Engineering (RSISE), The Australian National University - Australia (2004 - 2008).
 - ⇒ Conducted research on robotics as a team member of the 'Serafina' project.
 - ⇒ Designed, developed & experimentally evaluated a novel high precision, high update rate distributed localisation sensor to be deployed on small agile underwater robots to facilitate swarming.
- BSc (Honours) in Engineering Physics (**First Class**) - University of Colombo - Sri Lanka (2003).
 - ⇒ Honours project: 'Virtual robot arm control model'.
- BIT (**Second Class Upper Division**) - University of Colombo School of Computing - Sri Lanka (2004).
 - ⇒ Final year research project: 'Genetic Algorithm Toolkit for Modelling Group Behaviour'.

PROFESSIONAL EXPERIENCE

- The Australian National University (May 2008 to present).
 - ⇒ **Tutor** - School of Engineering (July 2009 to present).
 - Supervising & assessing labs & delivering tutorials for the course 'Introduction to Electronics'.
 - ⇒ **Engineer** - School of Engineering (September 2009 to present).
 - Constructing, assembling & testing a high performance remotely operated glider for solar research.
 - ⇒ **Research Associate** - RSISE (May 2008 to June 2009).
 - Conducted further experimental research in acoustical localisation & published findings building on the work done during my PhD candidature.
 - ⇒ **Tutor** - Department of Computer Science (July to November 2008).
 - Conducted lab tutorials & assessed assignments for the course 'Concurrent & distributed systems'.
 - ⇒ **Coordinator** - Outreach activity of the University where a team of school students (aged 14-18) competed in 'UAV Challenge 2008 - Outback rescue' (May to Sep. 2008).
 - Liaised with 20 Colleges in Canberra to initially recruit 34 students.
 - Provided leadership, guidance & supervision during the five month period where over 25 students were trained to build, equip & fly remote controlled aircraft (fixed wing & rotary wing).
 - Coordinated communication & activities amongst the team members by arranging regular meetings, scheduling flight training sessions & via web based forums.
 - Arranged logistics for transportation of two teams (fixed wing & rotary wing - 10 persons) along with tools, equipment & aircrafts for the 1200km journey & looked after the welfare of the school students during travel & while at the competition.
- ATSA Defence Services - Australia (June to December 2006).
 - ⇒ **Research Engineer** (Part-time).
 - Conducted research on underwater acoustic localisation technology as a member of the ANU research team collaborating with ATSA to commercialise the 'Serafina' submersibles.
 - Gave demonstrations & presentations of research outcomes to representatives of SAAB underwater systems (Sweden) & management of ATSA defence services.

- University of Colombo - Sri Lanka (July 2003 - Feb. 2004).
 - ⇒ **Assistant Lecturer** - Department of Physics (Sep. 2003 - Feb. 2004).
 - Supervised & assessed honours students' advanced electronics labs & computational physics labs.
 - Conducted tutorials for second & third year physics students.
 - Collaborated with the faculty to restructure first year introductory physics & electronics labs.
 - Planned, developed & delivered a new training course titled 'Microcontroller programming & its applications' to be offered via the physics department aimed at industrial sector personnel as a professional development program in collaboration with the faculty.
 - ⇒ **Teaching Assistant** - Department of Physics (July - Sep. 2003).
 - Supervised & assessed first & second year students' introductory physics & electronics labs.
- Sri Lanka Telecom Ltd. - Sri Lanka (Feb. 1998 - Oct. 2002).
 - ⇒ **Marketing team member** (Part-time) (Oct. 1998 - Oct. 2002).
 - Demonstrated & marketed broadband products & services offered by Sri Lanka Telecom Ltd. (The national telecom provider) at the biennial 'INFOTEL' exhibition & convention on three occasions. INFOTEL is the premier technology showcase event in Sri Lanka.
 - Contributed technical expertise as a member of the marketing & promotional team during the national ADSL launch during INFOTEL 2000 & later during INFOTEL 2002.
 - Contributed technical expertise as a member of the marketing team visiting corporate clients during the national ISDN corporate launch in Dec. 1998.
 - ⇒ **Technology demonstrator** (Part-time) (Feb. 1998).
 - Demonstrated & explained telecommunications technology to the general public during the nationally organised '50th Anniversary of Independence' exhibition & convention.

VOLUNTEER WORK

- The Australian National University (Feb. 2008 to present).
 - ⇒ **Senior mentor** - Student Information & Guidance Network (SIGN) mentoring program.
 - Helped new students to settle in to Canberra by giving them guidance & information, assisted them to familiarise with the University & its facilities & introduced them to the student community & University social activities.
 - Up to now I have mentored eleven PhD candidates, nine Masters Degree students & one Graduate Diploma student from ten different countries & diverse cultural backgrounds.

IT SKILLS & EXPERTISE

- Proficient in programming with ADA, C / C++, Visual Basic, Visual C++ & Delphi while being experienced in programming with Python & VBA.
- Experienced in programming microcontrollers (PIC & ATMEL) in Assembly & C languages.
- Experienced in circuit board design, construction & use of tools such as Protel DXP & pSpice.
- Experienced in using scientific software packages MAPLE, Mathematica, MatLAB & LabView.
- Experienced in web programming using HTML/CSS with PHP & JavaScript, use of tools such as Flash & Dreamweaver & web content management systems such as Joomla.
- Experienced in working on both Linux & Windows platforms, using numerous application packages along with most of Microsoft & Adobe product ranges including Illustrator, InDesign & FrameMaker.
- Proficient in scientific & technical document production using FrameMaker, LaTeX & Word.

SCIENTIFIC PUBLICATIONS

- Navinda Kottege & Uwe R. Zimmer, *Cross-correlation Tracking for Maximum Length Sequence Based Acoustic Localisation*, In proceedings of the Australasian Conference on Robotics & Automation 2008 (ACRA '08), Canberra, Australia, December 2008.
- Navinda Kottege & Uwe R. Zimmer, *Acoustical Methods for Azimuth, Range and Heading Estimation in Underwater Swarms*, In proceedings of ASA-EAA Acoustics '08, Paris, France, July 2008.

- Navinda Kottege & Uwe R. Zimmer, *MLS-based, Distributed Bearing, Range, and Posture Estimation for Schools of Submersibles*, Experimental Robotics, Series: Springer Tracts in Advanced Robotics, Vol. 39, February 2008, pp. 377-385, Berlin; Heidelberg, Springer.
- Navinda Kottege & Uwe R. Zimmer, *Relative Localization for AUV Swarms*, In proceedings of the International Symposium on Underwater Technology '07, Tokyo, Japan, April 2007, pp. 588-593.
- Navinda Kottege & Uwe R. Zimmer, *Acoustical Localization in Schools of Submersibles*, In proceedings of IEEE/OES Oceans '06, Singapore, May 2006.
- Navinda Kottege & D.U.J. Sonnadara, *Virtual robot arm control model*, In proceedings of the 20th Technical session of the Institute of Physics, Sri Lanka, March 2004, pp. 7-14.

SEMINAR PRESENTATIONS

- Colloquium seminar titled *Underwater Acoustical Localisation in the context of Autonomous Submersibles* at the Research School of Information Sciences & Engineering (RSISE), The Australian National University, Canberra, Australia (September 2008).
- Brown bag seminar titled *Underwater Acoustical Localisation in the context of Autonomous Submersibles* at the Artificial Intelligence Laboratory (AI Lab), University of Zurich (UZH) hosted by Rolf Pfeifer, Zurich, Switzerland (July 2008).
- Invited seminar titled *Acoustical Methods for Azimuth, Range and Heading Estimation in Underwater Swarms* at the Distributed Intelligent Systems & Algorithms Laboratory (DISAL), Ecoles Polytechniques Fédérale de Lausanne (EPFL) hosted by Alcherio Martinoli, Lausanne, Switzerland (July 2008).
- Invited seminar titled *Acoustical Methods for Azimuth, Range and Heading Estimation in Underwater Swarms* at the GIPSA-Lab, Institut Polytechnique de Grenoble (INPG) hosted by Nicolas Le Bihan, Grenoble, France (July 2008).

CONFERENCE PRESENTATIONS

- Presentation titled *Cross-correlation Tracking for Maximum Length Sequence Based Acoustic Localisation* in session 'Navigation - II' at the Australasian Conference on Robotics & Automation 2008 (ACRA '08) - Canberra, Australia (December 2008).
- Presentation titled *Acoustical Methods for Azimuth, Range and Heading Estimation in Underwater Swarms* in session 'Sensor Technologies for Autonomous Acoustic Sensing Systems' at ASA-EAA Acoustics '08 - Paris, France (July 2008).
- Presentation titled *Relative Localization for AUV Swarms* in session 'Vehicle Control & Swarms' at the International Symposium on Underwater Technology '07 - Tokyo, Japan (Apr. 2007).
- Presentation titled *MLS-based, Distributed Bearing, Range, and Posture Estimation for Schools of Submersibles* in session 'Estimation and Localisation' at the 10th International Symposium on Experimental Robotics - Rio de Janeiro, Brazil (July 2006).
- Presentation titled *Acoustical Localization in Schools of Submersibles* in session 'Acoustic & Magnetic Localisation' at the IEEE/OES Oceans'06 conference - Singapore (May 2006).
- Presentation titled *Virtual robot arm control model* at the 20th Technical session of the Institute of Physics - Sri Lanka (Mar. 2004).

REVIEWS

I have reviewed scientific publications submitted for the following international journals & conferences:

- IEEE Transactions on Robotics (2009).
- IEEE International Conference on Robotics & Automation (2009).
- IEEE/RSJ International Conference on Intelligent Robots & Systems (2008).

AWARDS & RECOGNITION

- **Australian Postgraduate Award** scholarship to conduct my PhD studies (2004-2008).
- RSISE supplementary scholarship in recognition of my academic performance (2004-2008).
- **Presidential Scholarship** to conduct my postgraduate studies in recognition of my undergraduate academic performance - Sri Lanka (2003).

- Sri Lanka Association for the Advancement of Science (SLAAS) **Physical Science Award** 2003 in Physics at the 59th annual session of SLAAS for undergraduate project 'Virtual Robot Arm Control Model'.
- Merit award in the Tertiary Education Institutes Category of the National ICT Excellence (NICE) competition (Sri Lanka) for undergraduate project 'Virtual Robot Arm Control Model' (2003).
- 'Arthur Lambert Rupasinghe Scholarship in Physics - 2000' for my performance in first & second year examinations conducted by the University of Colombo - Sri Lanka (2002).

GRADUATE COURSE WORK

- Graduate course on 'Applying linear algebra in engineering & computer science' conducted by National ICT Australia Ltd. (2004).
- Graduate course on 'Linear systems theory' conducted by The Australian National University (2004).
- Graduate course on 'Science communication' conducted by The Australian National University (2005).

TRAINING

- Attended the 'Introduction to MatLAB & Simulink Technology' one day seminar conducted by MathWorks (Feb. 2008)
- Attended the '6th ACEVS-CVS Summer School on Animal Navigation' hosted by the Research School of Biological Sciences, The Australian National University (Nov. 2007).
- Attended a short course in 'Modelling & Control of Mechanical Systems' conducted by Prof. Sunil Agrawal of the University of Delaware, USA held at UNSW@ADFA - Australia (July 2007)
- Completed training course on Introductory Workshop Practice & Safety conducted by The Australian National University (June 2005).
- Completed nationally accredited course in Senior First Aid including remote area - Australia (Feb. 2005).
- Attended the 'Successful Innovations' two day workshop conducted by ATP Innovations (supported by University of Sydney, University of New South Wales, University of Technology - Sydney, Macquarie University, Australian National University & National ICT Australia) (Sept. 2005)
- Completed training program in Project Management conducted by the Australian Institute of Management (Nov. 2004).
- Completed the five month Career & Personality Development programme held by the Faculty of Science, University of Colombo - Sri Lanka (Nov. 2002 - Mar. 2003).
- Received a month long training at John Keells Computer Services - Systems Engineering Division (3rd year industrial placement during undergraduate studies) - Sri Lanka (2002).
- Received training on telecommunications technology by the national telecom provider - Sri Lanka Telecom Ltd. in preparation for the nationally organised '50th Anniversary of Independence' exhibition & convention - Sri Lanka (Nov. 1997 - Feb. 1998).
- Received month long trainings by Sri Lanka Telecom Ltd. for the INFOTEL exhibitions where ISDN & ADSL technology was introduced & demonstrated - Sri Lanka (Sep. 1998 & Jan. 2001).

MEMBERSHIPS & ACHIEVEMENTS

- Member - Institute of Electrical & Electronic Engineers (IEEE) (2005 to present).
 - ⇒ Member - Oceanic Engineering Society of the IEEE (2005 to present).
 - ⇒ Member - Robotics & Automation Society of the IEEE (2008 to present).
- Graduate Record Examination (GRE) score of 1300 for quantitative + verbal & analytical writing 5.0.
- Teaching Of English as a Foreign Language (TOEFL) test score of **653** & Test of Written English (TWE) score of **5.0**.
- While at College: President - Computer Society, Secretary - Interact club (part of Rotary International), Captain - Quiz team, Member - Debating team.

SPORTS ACHIEVEMENTS

- Sri Lanka University Sports Association award for outstanding performance in Rowing for year 2000.
- Awarded University of Colombo Colours Insignia for Rowing for year 2000.

- Re-awarded University of Colombo Colours Insignia for Rowing for years 2001 & 2002.
- Member of the University of Colombo Rowing team which received the B. C. Perera Memorial Trophy for winning the Inter-institutional regatta organised by the Royal College Rowing Club in 2002.
- Member of the University of Colombo Rowing team which received the Stanley Wijesundara Challenge Trophy for winning the Inter-university regatta in years 2000 & 2001.
- Member of the University of Colombo Rowing team which won the Dr. Mohan Pillai 'A Four' Challenge Trophy at the 7th Sri Lanka University Games in 2001.

SOCIAL ACTIVITIES

- Formulated questions & adjudicated at the South East Asian Regional Computer Confederation (SEARCC) Software Competition 2003 hosted by the Computer Society of Sri Lanka (Dec. 2003).
- Compiled the year book of the 98/99 Batch of the Faculty of Science, University of Colombo (2002).
- Participated in two day drama workshop organised by the University of Peradeniya Drama Society - Sri Lanka (2001).
- Presided over the fund raising committees for the 'Freshers' Welcome 2000' - the annual welcoming ceremony (attended by nearly 1000 people) hosted by the second year students for the first year students & the 'Going Down 2001' - the annual farewell ceremony hosted by the third year students for the final year students at the Faculty of Science, University of Colombo, Sri Lanka.

OTHER INTERESTS

I am a keen amateur photographer scaling a steep learning curve. Apart from that, I enjoy bushwalking & cycling. Currently learning to play the guitar & fly a remote controlled model helicopter (not at the same time).

REFEREES

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