

Navinda Kottege

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EDUCATION

- **PhD** in robotics - The Australian National University (ANU) - Australia (2009).
 - ⇒ Thesis title: *'Underwater Acoustic Localisation in the context of Autonomous Submersibles'*.
- 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

- Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Dec. 2009 to present).
 - ⇒ **Postdoctoral Fellow** - Autonomous Systems Lab, ICT Centre.
 - Conducting research on wireless sensor networks focussing on using multimedia sensor networks for biodiversity & ecological health monitoring.
 - Successfully lead a project where six acoustic sensor nodes were used to monitor the ecological health in a reservoir catchment area for four months with SEQWater as an external client.
 - Developing & implementing algorithms on BlackFin digital signal processors (DSP) using VisualDSP++ & on wireless sensor nodes using TinyOS (nesC).
 - Supervised a summer vacation student (University of Queensland - UQ), supervising an engineering thesis student (UQ), co-supervising a Masters degree student (ANU) & a PhD student (ANU).
 - Member of the CSIRO team teaching the course 'Wireless Sensor Networks' at UQ.
- The Australian National University (May 2008 to Nov. 2009).
 - ⇒ **Tutor** - School of Engineering (July to Nov. 2009).
 - Supervised & assessed labs & delivered tutorials for the course 'Introduction to Electronics'.
 - ⇒ **Engineer** - School of Engineering (Sep. to Nov. 2009).
 - Assembled, modified & tested a fast sailplane with an electric motor (Hotliner) for solar research.
 - ⇒ **Research Associate** - Research School of Information Sciences & Engineering (RSISE) (May to Dec. 2008).
 - Conducted further experimental research in acoustical localisation & published findings building on the work done during my PhD candidature.
 - ⇒ **Tutor** - School of Computer Science (July to Nov. 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 students during travel & while at the competition.
- ATSA Defence Services - Australia (June to Dec. 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 undergraduate students' introductory physics & electronics labs.

VOLUNTEER WORK

- CSIRO - (July 2010 to present)
 - ⇒ Participant in the 'Scientists in Schools' where scientists are paired up with primary & high school science teachers to engage students in promoting science.
- The Australian National University (Feb. 2008 to Nov. 2009).
 - ⇒ **Senior mentor** - Student Information & Guidance Network (SIGN) mentoring program.
 - Helped international students by giving them guidance & information, assisted them to familiarise with the University & its facilities & introduced them to the student community & social activities.
 - 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 Python, ADA, C & C++.
- Experienced in programming microcontrollers (PIC & Atmel) in Assembly & C languages, programming sensor nodes in nesC (TinyOS) & Blackfin DSPs in VisualDSP++.
- 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 web design tools such as Flash & Dreamweaver & web content management systems such as Joomla! & Wordpress.
- Experienced in working on Linux, Windows & MacOS 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, *Underwater acoustic localization for small submersibles*, Journal of Field Robotics, Special Issue: State of the Art in Maritime Autonomous Surface and Underwater Vehicles, Part 2, Vol. 28, Issue 1, pp. 40-69, November 2010, Wiley.
- 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).

SCIENCE CITIZENSHIP

I have been on the program committee of the International Symposium on Distributed Autonomous Robotics Systems (2010) & have been invited to be on the technical program committee of the Intelligent Sensors, Sensor Networks & Information Processing conference (2011). I have reviewed scientific publications submitted for the following international journals & conferences:

- Intelligent Service Robots journal (2011)
- IEEE/RSJ International Conference on Intelligent Robots & Systems (2011 & 2008)
- Journal of Field Robotics (2010).
- Intelligent Sensors, Sensor Networks & Information Processing (2010)
- IEEE Transactions on Robotics (2009).
- IEEE International Conference on Robotics & Automation (2009).

AWARDS

- **Australian Postgraduate Award** scholarship to conduct my PhD studies (2004-2008).
- RSISE supplementary scholarship in recognition of my academic performance (2004-2008).
- 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 '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).

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).
 - ⇒ Member - Computer Society of the IEEE (2010 to present).
- Member – Association of Computing Machinery (ACM) (2009 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 that 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 that received the Stanley Wijesundara Challenge Trophy for winning the Inter-university regatta in years 2000 & 2001.
- Member of the University of Colombo Rowing team that 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 yearbook 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. I also enjoy bushwalking & cycling. Currently learning to play the guitar & fly a remote controlled model helicopter (not at the same time).

REFEREES

References will be provided upon request.

Date: April 2011