

WORK EXPERIENCE

Embedded Application Engineer, InterCEL, Nov. 2010 – Present

- Developer of TotEM ZigBee In-Home Display
- Field Application Engineer of Internet of Things

Research Assistant, University of Melbourne, Jul. 2008 – Present

- Sensor based gesture recognition framework
- Main developer of SensorWeb 3.1
- Developer of IBES funded Royal Children’s Hospital Ambient Light Orb research project
- Developer of IBES funded Gardens of Tomorrow project
- Developer of Environment Protection Authority Victoria funded indoor air quality monitor programme

Software Engineer, Daintree Networks, Aug. 2008 – May 2010

- Implement and maintain wireless protocol decode engine of Sensor Network Analyzer
- Add new chips support to Sensor Network Analyzer
- Test Sensor Network Analyzer
- Test ZigBee enabled Wireless Lighting Control system

PUBLICATIONS

Dr Julie Green, Dr Frank Vetere, Dr Amy Nisselle, Xuan Thu Dang, Tsharni Zazryn, **Peng Deng**. *Inclusion during school absence: Using ambient technology to create a classroom presence for hospitalised children*. Interacting With Computers(Special Issue): Presence and Interaction (in press)

Dr Julie Green, Dr Frank Vetere, Dr Amy Nisselle, Xuan Thu Dang, **Peng Deng**, Glenda Strong, *“Lucy’s always with us”: overcoming absence from school through ambient orb technology*, Global Learn Asia Pacific 2011, Association for the Advancement of Computing in Education

Tomasz Kobialka, Rajkumar Buyya, **Peng Deng**, Lars Kulik, Marimuthu Palaniswami, *SENSOR WEB: INTEGRATION OF SENSOR NETWORKS WITH WEB AND CYBER INFRASTRUCTURE, HANDBOOK OF RESEARCH ON DEVELOPMENTS AND TRENDS IN WIRELESS SENSOR NETWORKS: FROM PRINCIPLE TO PRACTICE*, IGI Global, USA, 2009

EDUCATION

M. Eng. Department of Computer Science and Software Engineering,
University of Melbourne, Victoria, Australia, 2006 – 2008
Supervisor: Dr. Lars Kulik

IT CERTIFICATE AND MEMBERSHIP

Sun Certified Specialist for NetBeans IDE, Oct. 2008

Member (Certified Technologist), Australia Computer Society, 2008 – Present

PRESENTATIONS

Lucy’s Always with Us, UniMelb, 17 Sep. 2010

Introduction to SPOT, Wireless Sensor Networks, UniMelb, 4 Aug. 2009

Sensor Network deployment and development Sun SPOTS, ISSNIP Summer School, 13 Nov. 2008

Introduction to SPOT, Sun Microsystems Victoria Branch Australia, 28 May. 2008

Using Wearable Motion Sensor to Recognize Human Gestures, IDG, 24 Apr. 2008

PROFESSIONAL SKILLS

Mote Platform: SunSPOT, Arduino, MoteRunner, .Net Micro, TinyOS *SW Interface:* REST, WS, RPC



Language: Java, Python, C#, php, nesC

HW Interface: Analog, I²C, SPI, PWM

Production Tool: svn, cvs, Buildbot, Jira, Confluence, NetBeans, Eclipse, Visual Studio, Linux, Wordpress

Sensor: RFID, GPS, GPRS, accelerometer, light, temperature, humidity, sonar, gyro, ECG, dust, barometric pressure, flex, water level, compass, image, DAC, gas, servo motor, water flow meter

Protocol: IEEE 802.15.4, ZigBee, 6LoWPAN, RF4CE, MQTTs, JenNet

VISA

Australian Permanent Resident

PROJECTS

Ambient Light Orb

The Royal Children's Hospital, <http://www.broadband.unimelb.edu.au/main.php?id=131>

Child in hospital can remotely control the ambient light orb placed in classroom to improve children's sense of connection to their peers and school community. The project will facilitate awareness of the presence of the child in the classroom. Australian Channel Nine reported this project in Late News. <http://goo.gl/p0z78>

A .Net application controls the remote light orb on, off and change colour. My contributions are:

- Develop embedded sensor application to control I²C LEDs
- Develop administration and activity log Ajax app <http://lc.sensorapp.net/>
- Implement a .Net app to detect presence of child and control led remotely



Gardens of Tomorrow

Institute for a Broadband-Enabled Society, <http://smartgarden.sensorapp.net>

This project demonstrates the potential benefits of integrating social networks with environmental sensor networks via broadband-enabled neighbourhoods, and explore the role of social networking within interconnected neighbourhoods for the overall benefit of community and neighbourhood members.

Sensors send environmental parameters through cellular network to server.

My contribution are:

- Develop embedded sensor application to sense and send data to web app
- Develop administration and data logging and plotting web app
- GPRS, GPS, temperature, soil moisture, light, humidity, air pressure, water flow meter

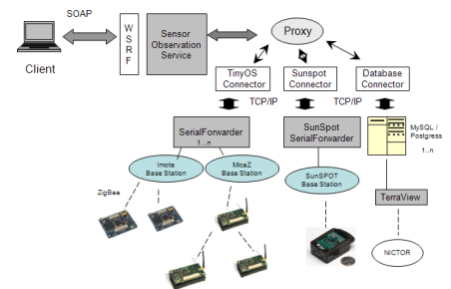


SensorWeb

CLOUDS Research Lab, UniMelb, <http://www.cloudbus.org/sensorweb/>

SensorWeb is a standards compliant platform and middleware for integration of sensor networks with Globus distributed computing platform. My main duties and contribution are:

- Implement embedded sensor application and develop sensor gateway interface to SensorWeb
- Create a machine learning module to learn and recognize data stream gathered from sensors
- Update Web Services Resource Framework interface and Open Geospatial Consortium standard to date



- Write project report and case study section in book chapter
- Develop demonstration application

Sensor Network Analyzer

Daintree Networks, <http://www.daintree.net/snasupport/index.php>

SNA is a tool for developing, decoding, debugging and deploying wireless embedded networks. It supports number of protocols including IEEE 802.15.4, ZigBee, RF4CE, 6LoWPAN, SimpliciTi, Synkro and more. My duties and contribution are:



- Create, update and maintain protocol decoder: ZigBee Application Profiles, RF4CE, 6LoWPAN and other proprietary protocols

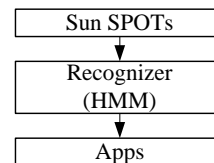
- Add interface of new wireless transceiver to SNA and bug fixing
- Software quality assurance test

Gesture Recognition Framework

UniMelb, http://download.sensorapp.net/GRF_V10_Win.zip

A research prototype recognizes human gestures in free space using real time acceleration data from wireless sensor. It is published in book and IEEE conference.

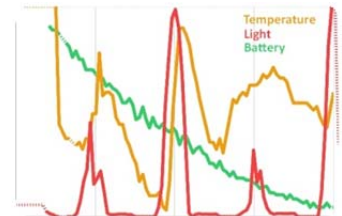
The Hidden Markov Model which is a machine learning algorithm is used in the recognizer to identify human motion. Recognizer is data type neutral, it can be extended to detect and identify events from real time multi-attributes complex data stream.



Tiny Weather Station

<http://kenai.com/projects/yaswas>

A Sun SPOT connected with temperature sensor and light sensor. It is reporting my bed room environment parameters every 30 seconds to Pachube. I am also adding new environment sensors to this platform: barometric pressure, humidity sensor, soil moisture sensor and air quality sensor.



Balance Board Game

<http://www.youtube.com/watch?v=4-1yBd5gbzU>

An accelerometer based balance board game I developed 2 years ago. Still eye catching, it is just been illustrated on Oracle's project home page at <http://sunspotstore.com/>.

