

**Fifth International Conference on
Intelligent Sensors, Sensor Networks and Information Processing
ISSNIP 2009**

*December 7-10, 2009
Langham Hotel, Melbourne, Australia*

Advance Program

7th December 2009 - Monday		
8:30 AM	Registration	
9:00 AM	ISSNIP Collaboration Day Opening + 3 talks (Ballroom 3)	
10:30 AM	Coffee/Tea Break	
11:00 AM	ISSNIP Collaboration Day 3 talks (Ballroom 3)	
12:30 PM	Lunch	
1:30 PM	ISSNIP Collaboration Day Demo + Posters (Yarra)	
3:00 PM	Coffee/Tea Break	
3:30 PM	Conference opening Dr. D. Nandagopal (DSTO) Executive Chair of the ARC Research Network on ISSNIP Opening Key Note Prof David Karoly (University of Melbourne) (Ballroom 1 & 2)	
5:30 PM	Program Closes	
6:00 PM	Welcome Reception - Alto Room, Langham Hotel	

8th December 2009 – Tuesday

8:00 AM	Registration		
8:30 AM	Key Note - 1 Prof Guanrong (Ron) Chen (City University of Hong Kong) (Ball Room 1 & 2)		
9:30 AM	Coffee/Tea Break		
10:00 AM	Key Note - 2 Prof Anthony Burkitt (University of Melbourne) (Ball Room 1 & 2)		
11:00 AM	Session 1A: Middleware for Sensor Systems - 1 (4 Papers) (Ball Room 3)	Session 1B: Radio Frequency identification (RFID) Technology (4 Papers) (Yarra 1 & 2)	
12:20 PM	Lunch		
1:20 PM	Key Note - 3 Prof Mohan Kumar (University of Texas, Arlington, USA) (Ball Room 1 & 2)		
2:20 PM	Session 2A: Theoretical and practical aspects of large-scale WSN - 1 (3 Papers) (Ball Room-3)	Session 2B: Adaptive Sensing, Control and Optimization in Sensor Networks - 1 (3 Papers) (Yarra 1 & 2)	
3:20 PM	Coffee/Tea Break		
3:50 PM	Session 3A: Control theory and optimization for mobile adhoc networks (5 Papers) (Ball Room 3)	Session 3B: Autonomous Systems (5 Papers) (Yarra 1 & 2)	
5:30 PM	Program Closes		

9th December 2009 - Wednesday

8:00 AM	Registration		
8:10 AM	Session 4A: Information Driven Spatial Representation - 1 (4 Papers) (Ball Room 3)	Session 4B: Adaptive Sensing, Control and Optimization in Sensor Networks - 2 (4 Papers) (Yarra 1 & 2)	
9:30 AM	Key Note - 4 Prof S. S. Iyengar (Louisiana State University, USA) (Ball Room 1 & 2)		
10:30 AM	Coffee/Tea Break		
11:00 AM	Session 5A: Theoretical and practical aspects of large-scale WSN - 2 (4 Papers) (Ball Room 3)	Session 5B: Information Processing and Sensor Technologies in Healthcare (4 Papers) (Yarra 1 & 2)	
12:20 PM	Lunch		
1:20 PM	Key Note - 5 Prof Paul Havinga (University of Twente, Netherlands) (Ball Room 1 & 2)		
2:20 AM	Session 6A: Middleware for Sensor Systems - 2 (4 Papers) (Ball Room 3)	Session 6B: Multimedia Processing in Sensor Networks (4 Papers) (Yarra 1 & 2)	
3:40 PM	Coffee/Tea Break		
3:40 PM	Conference Poster Session (Along with coffee and tea) Ballroom 1 and 2		
5:30 PM	Program Closes		
7:00 PM	<p align="center">Conference Dinner Eureka89</p>		

10th December 2009 - Thursday

8:00 AM	Registration		
8:10 AM	Session 7A: Information Driven Spatial Representation - 2 (4 Papers) (Ball Room 3)	Session 7B: Sensor Network Security (4 Papers) (Yarra 2)	
9:00 AM			CREON Workshop: Application of sensor networks to Coral Reef Systems - towards an International system of systems (Yarra 1)
9:30 AM	Key Note - 6 Prof John Langford (University of Melbourne) (Ball Room 1 & 2)		
10:30 AM	Coffee/Tea Break		
11:00 AM	Session 8A: Theoretical and practical aspects of large-scale WSN - 3 (5 Papers) (Ball Room 3)	Session 8B: Integration of the digital and physical world in the network of the future (5 Papers) (Yarra 2)	CREON Workshop (Yarra 1)
12:40 PM	Lunch		
1:40 PM	PhD/ECR Forum - Panel Session (Ball Room 2)		CREON Workshop (Yarra 1) (including coffee/tea break)
2:50 PM	Session 9A: Theoretical and practical aspects of large-scale WSN - 4 (4 Papers) (Ball Room 3)	Session 9B: PhD Forum - Poster presentation (20 posters) (Ball Room 1)	
4:10 PM	Coffee/Tea Break		
4:40 PM	Program Closes		
5:30 PM			CREON close

7th December, 2009 – Monday

8.30 am: Registration

9.00am-10.30am

Session name: ISSNIP Collaboration Day (Opening & 3 Talks)

Speakers:

M. Palaniswami (University of Melbourne, Australia) – Opening & ISSNIP Research Network

Ron Johnstone (University of Queensland, Australia) – Smart Environmental Monitoring Analysis Technologies

Subhash Challa (NICTA/University of Melbourne) – University-Industry collaboration – SenSen Networks

Laurent Herault (CEA-LETI, France) – Development of a Future Internet – EU-Australian initiatives

Room: Ballroom 3

10.30am- 11.00am: Coffee Break

11.00am-12.30pm

Session name: ISSNIP Collaboration Day (3 Talks)

Speakers:

Stuart Milner (University of Maryland, USA) – Next generation wireless networking technologies for sensor networks

Cal Anderson (RFIDAA, Australia) – Outstanding challenges for RFID development

Jorge Pereira (European Commission) – Aspects of Large Scale Sensor Networks and EU Engagement

Room: Ballroom 3

12.30pm-1.30pm: Lunch

1.30pm-3.00pm

Session name: ISSNIP Collaboration Day (Posters)

Presenters:

Demo. Presentation - Pubudu Pathirana (Deakin University, Australia)

Poster presenters TBA

Room: Ballroom 3

3.00pm- 3.30pm: Coffee Break

3.30pm-4.00pm: Conference Opening

Dr. D. Nandagopal, DSTO, Executive Chair of the ARC Research Network on ISSNIP

4.00pm-5.30pm

Session name: Opening Key Note

Speaker: Prof. David Karoly (University of Melbourne)

Room: Ballroom 1-2

5.30pm: Program Closes

6.00pm: Welcome Reception, Venue: Alto Room, Langham Hotel

8th December, 2009 – Tuesday

8.00 am: Registration

8.30am-9.30am

Session name: Key Note 1

Speaker: Prof. Guanrong (Ron) Chen (City University of Hong Kong)

Room: Ballroom 1-2

9.30am- 10.00am: Coffee Break

10.00am-11.00am

Session name: Key Note 2

Speaker: Prof. Anthony Burkitt (The University of Melbourne)

Room: Ballroom 1-2

Parallel Session 1

Session Name: Middleware for Sensor Systems - I

Session Chair: Mohan Kumar

Room: Ballroom 3

11.00am-11.20am

A Metaheuristic Algorithm for Wireless Sensor Network Design in Railway Structures

11.20am-11.40am

Evolutionary design of wireless sensor networks based on complex networks

11.40am-12.00pm

Digital Moorea Cyberinfrastructure for Coral Reef Monitoring

12.00pm-12.20pm

TB-MAC: Efficient MAC-Layer Broadcast for Underwater Acoustic Sensor Networks

Session Name: Radio Frequency identification

(RFID) Technology

Session Chair: Robin Doss

Room: Yarra I

11.00am-11.20am

Design of Short Range Chipless RFID Reader Prototype

11.20am-11.40am

A Fusion of Data Analysis and Non-Monotonic Reasoning to Restore Missed RFID Readings

11.40am-12.00pm

Virtualisation of RFID supply chain

12.00pm-12.20pm

Tyrell: A RFID Simulation Platform

12.20pm-1.20pm: Lunch

1.20pm-2.20pm

Session name: Key Note 3

Speaker: Prof. Mohan Kumar (University of Texas, Arlington, USA)

Room: Ballroom 1-2

Parallel Session 2

Session Name: Theoretical and practical aspects of large-scale WSN – I (Localisation and target tracking)

Session Chair: TBA

Room: Ballroom 3

2.20pm-2.40pm

Trade-off Between Mobile Node Density and Detection Performance in Hybrid Sensor Networks with Random Node Mobility

2.40pm-3.00pm

COM-LOC: A Distributed Range-Free Localization Algorithm in Wireless Networks

3.00pm-3.20pm

A Novel Approach Towards Source-to-Destination Distance Estimation in Wireless Sensor Networks

Session Name: Adaptive Sensing, Control and Optimization in Sensor Networks – 1

Session Chair: I-Jeng Wang

Room: Yarra I

2.20pm-2.40pm

Algorithms for closed-loop feedback based distributed adaptive beamforming in wireless sensor networks

2.40pm-3.00pm

An Adaptive Algorithm for Sensor Activation in Renewable Energy based Sensor Systems

3.00pm-3.20pm

Sensor Scheduling for Bearings-Only Tracking with A Single Sensor

3.20pm-3.50pm: Coffee Break

Parallel Session 3

Session Name: Control theory and optimization for mobile adhoc networks

Session Chair: Stuart Milner and Sylvie Perreau

Room: Ballroom 3

3.50pm-4.10pm

A Graph-Theory Approach to Network Synchronizability Analysis (Invited Talk)

4.10pm-4.30pm

Delivery Packets Reliably and Efficiently over Error Prone Channel of WSNs

4.30pm-4.50pm

Compensating for the Latency of Data Acquisition for Localization in Mobile Wireless Sensor Networks

4.50pm-5.10pm

Bounded Degree Energy Aware Topology Discovery and Reconfigurations in Ad hoc Wireless Sensor Networks

5.10pm-5.30pm

Resource Allocation in Adhoc Networks using Markov Random Fields

Session Name: Autonomous Systems

Session Chair: Jaime Valls Miro and Alen Alempijevic

Room: Yarra I

3.50pm-4.10pm

TBA (Invited Talk)

4.10pm-4.30pm

Centralized Path Planning for Unmanned Aerial Vehicles with A Heterogeneous Mix of Sensors

4.30pm-4.50pm

Mutual Information Based Data Association

4.50pm-5.10pm

Detection of the tau-margin and application to autonomous control of a flying robot

5.10pm-5.30pm

Multiple Sensors and Artificial Neural Networks in a Cognitive Technical System for Laser Welding

5.30pm: Program Closes

9th December, 2009 – Wednesday

8.00 am: Registration

Parallel Session 4

Session Name: Information Driven Spatial Representation - I

Session Chair: Pubudu Pathirana

Room: Ballroom 3

8:10am-8.30am

Title: Challenges for real world sensor networks

Speaker: Dr Michael.Brueinig

8.30am-8.50am

Collinearity Problems in Passive Target Localization Using Direction Finding Sensors

8.50am-9.10am

An Optimality Analysis of Sensor-Target Geometries for Signal Strength Based Localization

9.10am-9.30am

Designing Sensor Networks for Spatial Interpolation

Session Name: Adaptive Sensing, Control and Optimization in Sensor Networks - II

Session Chair: I-Jeng Wang

Room: Yarra I

8:10am-8.30am

Formation Control of Robotic Swarms Based on Sonar Sensing

8.30am-8.50am

Control of Unmanned Aerial Vehicles Performing Multiple Target Passive Detection and Tracking

8.50am-9.10am

Exploring Energy-Efficient Human Probes for High-Fidelity Sensing in Urban Environments

9.10am-9.30am

PMHT for Multiple Platform Path Exploration Planning

9.30am-10.30am

Session name: Key Note 4

Speaker: Prof. S. S. Iyengar (Louisiana State University, USA)

Room: Ballroom 1-2

10.30am- 11.00am: Coffee Break

Parallel Session 5

Session Name: Theoretical and practical aspects of large-scale WSN - II (Data management and applications)

Session Chair: TBA

Room: Ballroom 3

11:00am-11.20am

Error Analysis for Optimal Distributed Detection in Multi-Hop Sensor Networks

11.20am-11.40am

An Efficient Approach Using Domain Knowledge for Evaluating Aggregate Queries in WSN

11.40am-12.00pm

Use of Event Detection Approaches for Outlier Detection in Wireless Sensor Networks

12.00pm-12.20pm

Free Space Optical Sensor Networking for Underwater Sensing Applications

12.20pm-12.30pm

Dynamic Collaboration in Energy Constraint Networks of Chemical Sensors

Session Name: Information Processing and Sensor Technologies in Healthcare

Session Chair: Daniel Lai

Room: Yarra I

11:00am-11.20am

A Versatile Body Sensor Network for Health Care Applications

11.20am-11.40am

Lateral Decubitus Posture during Sleep: Sub-Groups of Obstructive Sleep Apnea Patients -

Positional Therapy for Most But Not for All OSA Patients

11.40am-12.00pm

Soft Clustering Support Vector Machine for the Classification of Abnormalities in Digital Mammograms

12.00pm-12.20pm

Wearable Biosensor for Monitoring Tear Glucose on Rabbit Eye as Novel Device of Body Sensor Network

12.20pm-1.20pm: Lunch

1.20pm-2.20pm

Session name: Key Note 5

Speaker: Prof. Paul Havinga (University of Twente, Netherlands)

Room: Ballroom 1-2

Parallel Session 6

Session Name: Middleware for Sensor Systems - II

Session Chair: Jadwiga Indulska

Room: Ballroom 3

2:20pm-2.40pm

Fusing Sensors with Uncertain Detection Performance

2.40pm-3.00pm

A Flexible Binding Mechanism for ZigBee Sensors

3.00pm-3.20pm

Passive House Sensor Networks: Human Centric Thermal Comfort Concept

3.20pm-3.40pm

Sensewrap: A Service Oriented Middleware with Sensor Virtualization and Self-Configuration

Session Name: Multimedia Processing in Sensor Networks

Session Chair: Tim Wark

Room: Yarra I

2:20pm-2.40pm

Power Aware Communication in Wireless Pervasive Smart Camera Networks

2.40pm-3.00pm

Characterization of a Neuromorphic Motion Detection Chip Based On Insect Visual System

3.00pm-3.20pm

A 3D Laser and Vision Based Classifier

3.20pm-3.40pm

Camera Calibration in Wireless Multimedia Sensor Networks

Poster Session (Along with Coffee & Tea)

3.40pm-5.30pm

Room: Ballroom B

Evolving discriminative features robust to sensor displacement for activity recognition in body area sensor networks

Adaptive synchronization for duty-cycling in environmental wireless sensor networks

An Improved Cluster-head Selection Approach in Wireless Sensor Networks

Sensor network for real-time vehicle tracking on road networks

Distributed Control of Triangular Sensor Formations with Angle-Only Constraints

Robocentric Mapping and Localization in Modified Spherical Coordinates with Bearing Measurements

Data Monitoring Sensor Network for BigNet Research Testbed

Low Cost ECG Monitor for Developing Countries

Simulink-based Sleep Apnea Screening Model for Portable Diagnosis

Cardiac Abnormalities Detection from Compressed ECG in Wireless Telemonitoring using Principal Components Analysis (PCA)

S-Sensors: Integrating Physical World Inputs with Social Networks using Wireless Sensor Networks

Optimized Network Layer Protocol for Sensor Driven Autonomous Real-Time Data Fusion in a Star BSN

Accurate Estimation of Indoor Occupancy using Gas Sensors

A Multi-Scale Strategy in Wireless Sensor Networks for Structural Health Monitoring

WSN-HM: Energy-Efficient Wireless Sensor Network for Home Monitoring

Distributed Optical Fibre Smart Sensors for Structural Health Monitoring: A Smart Transducer Interface Module

An Energy Efficient Wireless Communication Mechanism for Sensor Node Cluster Heads

Dynamic Collaboration in Energy Constraint Networks of Chemical Sensors

5.30pm: Program Closes

10th December, 2009 – Thursday

8.00 am: Registration

Parallel Session 7

Session Name: Information Driven Spatial Representation - II

Session Chair: Adrian Bishop

Room: Ballroom 3

8:10am-8.30am

The effect of data collection geometry on radiological source localisation

8.30am-8.50am

Experimental Verification of Evolutionary Estimation algorithms for Radioactive Source localisation

8.50am-9.10am

Multi-pass Maximum Likelihood Technique for Self Localisation in Wireless Sensor Networks

9.10am-9.30am

Tracking of Multiple Mobile Agents Using Single Frequency Continuous Wave Radar

Session Name: Sensor Network Security

Session Chair: Yee Wei Law

Room: Yarra II

8:10am-8.30am

Anomaly Detection by Clustering Ellipsoids in Wireless Sensor Networks

8.30am-8.50am

A Low-Complexity Algorithm for Intrusion Detection in a PIR-Based Wireless Sensor Network

8.50am-9.10am

Secure Group Formation Protocol for a Medical Sensor Network Prototype

9.10am-9.30am

TinyIBE: Identity-Based Encryption for Heterogeneous Sensor Networks

9.30am-10.30am

Session name: Key Note 6

Speaker: Prof John Langford (University of Melbourne)

Room: Ballroom 1-2

10.30am- 11.00am: Coffee Break

Parallel Session 8

Session Name: Theoretical and practical aspects of large-scale WSN – III (Networking I)

Session Chair: TBA

Room: Ballroom 3

11:00am-11.20am

Reliable Data Collection in Wireless sensor networks Design of a low-overhead energy-efficient streaming reliable transport protocol (Invited Talk)

11.20am-11.40am

A Simplified Protocol for Energy Self-Sufficient Sensors in an IEEE 802.15.4/ZigBee WSN

11.40am-12.00pm

Impact of Link Quality Estimation Errors on Routing Metrics for Wireless Sensor Networks

12.00pm-12.20pm

Modeling and Throughput Analysis for SMAC with a Finite Queue Capacity

12.20pm-12.40pm

K-hop Statistics in Wireless Sensor Networks

Session Name: Integration of the digital and physical world in the network of the future

Session Chair: Laurent Herault and Srdjan Krco

Room: Yarra I

11:00am-11.20am

SENSEI framework architecture and the key design solutions (Invited Talk)

11.20am-11.40am

SENSEI framework architecture and the key design solutions (Invited Talk)

11.40am-12.00pm

Sensor network testbed deployments and experiments (Invited Talk)

12.00pm-12.20pm

Passive Acoustic Sensing of Walking

12.20pm-12.40pm

Implementation and Evaluation of a Swarming Sensor Network for Intrusion Detection

12.40pm-12.50pm

S-Sensors: Integrating Physical World Inputs with Social Networks using Wireless Sensor Networks

12.40pm-1.40pm: Lunch

1.40pm-2.50pm

Session name: PhD Forum Panel Session

Speaker:

Prof. Mohan Kumar (University of Texas at Arlington, USA)

Prof. Subhash Challa (NICTA/The University of Melbourne, Australia)

Prof. Paul Havinga (The University of Twente, Netherlands)

Assoc. Prof. Richard Baker (Murdoch Childrens Research Institute, Australia)

Dr. Jorge Pereira (Principal Scientific Officer, European Commission)

Room: Ballroom 2

Successful Research Collaboration in a Competitive World

Collaborative research involves people/organisations working together to achieve a particular research outcome. This helps converge different ideas and expertise from different disciplines to yield a synergetic research output. Nowadays, collaboration plays an important role not only in winning competitive grants but addressing critical interdisciplinary challenges. Initiating collaboration between researchers, research organisations and industry, evolving and sustaining such links can be challenging, especially for early career researchers. The ISSNIP PhD/ECR forum features a panel session consisting of leading international researchers, who will share their experience on initiating, sustaining and managing such collaboration from the unique perspectives of the different disciplines.

Parallel Session 9

Session Name: Theoretical and practical aspects of large-scale WSN – IV (Networking II)

Session Chair: TBA

Room: Ballroom 3

2:50pm-3.10pm

Throughput and Delay in Wireless Sensor Networks using Directional Antennas

3.10pm-3.30pm

Algorithmic approaches to distributed adaptive transmit beamforming

3.30pm-3.50pm

Feasible Bounds for Multi-hop Routing in Sensor Networks with Mobile Sinks

3.50pm-4.10pm

Limitations, performance and instrumentation of closed-loop feedback based distributed adaptive transmit beamforming in WSNs

Session Name: PhD/ECR Forum - posters

Session Chair: TBA

Room: Yarra I

4.10pm- 4.40pm: Cofee Break

**CREON workshop: The application of sensor networks to Coral Reef Systems - towards
an International system of systems**

10th December, 2009 – Thursday

9:00-9:10am	Welcome and house-keeping
9:10-9:30am	Status of Australian Activities [Scott Bainbridge]
9:30-9:50am	Status of Moorea Activities [Sally Holbrook]
9:50-10:10am	Status of Taiwan Activities [Fang-Pang Lin]
10:10-10:30am	US NOAA / ICON Activities [Lew Gramer]

10:30 – 11:00am	Morning Tea
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11:00-11:20am	Keynote Talk: The I-CREOS vision [Scott Bainbridge for Rusty Brainard]
11:20-12:00pm	Round Table Discussion: an international coral reef sensor network of networks, how does this vision fit with what is being done and what do we need to do at the local level to facilitate this?

12:00-1:30pm	Lunch
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1:30-2:00pm	Keynote: Data Turbine and the digital Moorea project [Tony Fountain]
2:00-2:30pm	Keynote: MBARI and the Puck: past, present, future [Kent Headley]
2:30-3:00pm	Keynote: New approaches to underwater communications [Stu Milner]
3:00-3:30pm	Integrating modelling and coral reef sensor data [Ron Johnstone]

3:30-4:00pm	Afternoon Tea
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4:00-5:00pm	Round Table Discussion: How to go from where we are now to where we need to be to realise the vision?
5.00-5:30pm	Development of an outcomes document, what form and by whom?

5:30pm	Close
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