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Analyzing Sensor Data in Real-time by Data Stream Mining Methods: Challenges and Prospects

Simon Fong



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Agenda

- Introduction of DACC Lab
- Human Activity Recognition
- Improvised Methods in Data Mining
- Data Stream Mining (as an alternative)
- Challenges Ahead
- Demonstration



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- **Introduction of DACC Lab**
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- Data Stream Mining (as an alternative)
- Challenges Ahead
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Introduction

- Bachelor of Computer Systems Engineering (Computer Networks), Ph.D.
La Trobe University, Australia
- Analyst Programmer
Creative Technology, Melbourne
- Network Applications Engineer
Singapore Network Services, Singapore
- Integrated Services Specialist
Hong Kong Telecom, Hong Kong
- Senior e-Business Consultant
Core Solutions, Hong Kong
- e-Business Director
Knowledge Engineering, Singapore
- Assistant Professor
Nanyang Technological University,
Singapore





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Data Analytics and Collaborative Computing Lab (DACC)



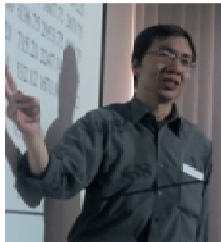
Simon Fong (方正天)

Associate Professor, University of Macau, Macau SAR
(Data stream mining, optimization)



Zhuang Yan, Sofia (莊巖)

Assistant Professor, University of Macau, Macau SAR
(Distributed computing)



Raymond Wong

Associate Professor, University of New South Wales, Australia
(Data mining)



Luiz Moutinho

Professor, University of Glasgow, Scotland
(Statistical and computer model building, Neuroscience in Marketing. Social media analysis)



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Courses supported:

ECOM707 Data Mining and Decision Support Systems

ECOM713 Topics in e-Commerce (e-Business Analytics)



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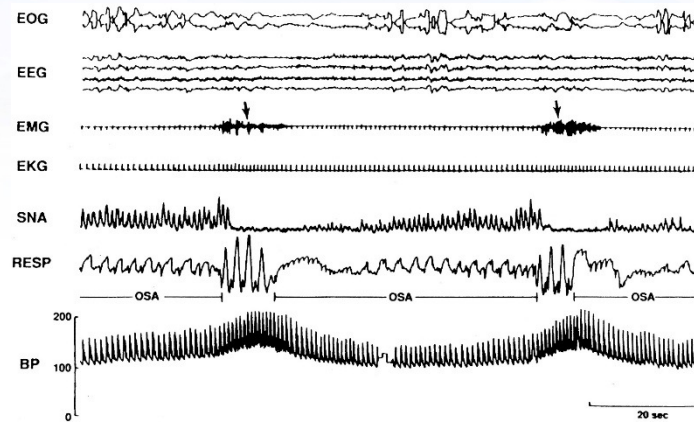




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Sensor-based analytic Research: Biosignals

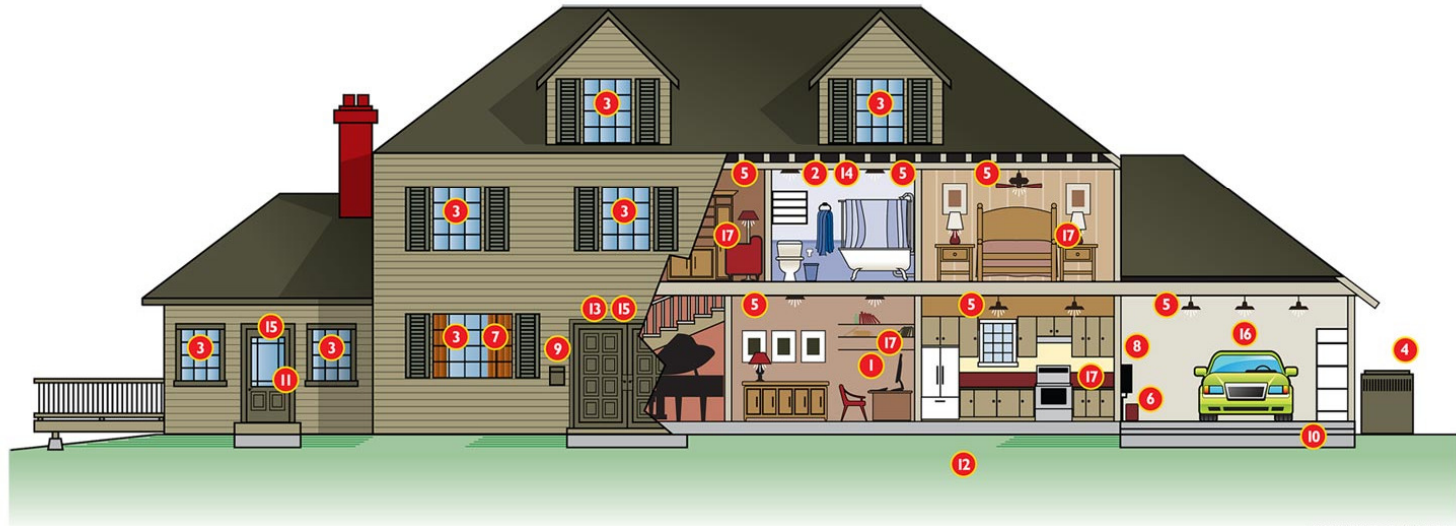




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Data Analytics and Collaborative Computing Lab (DACC)

Sensor-based analytic Research: Smart Home



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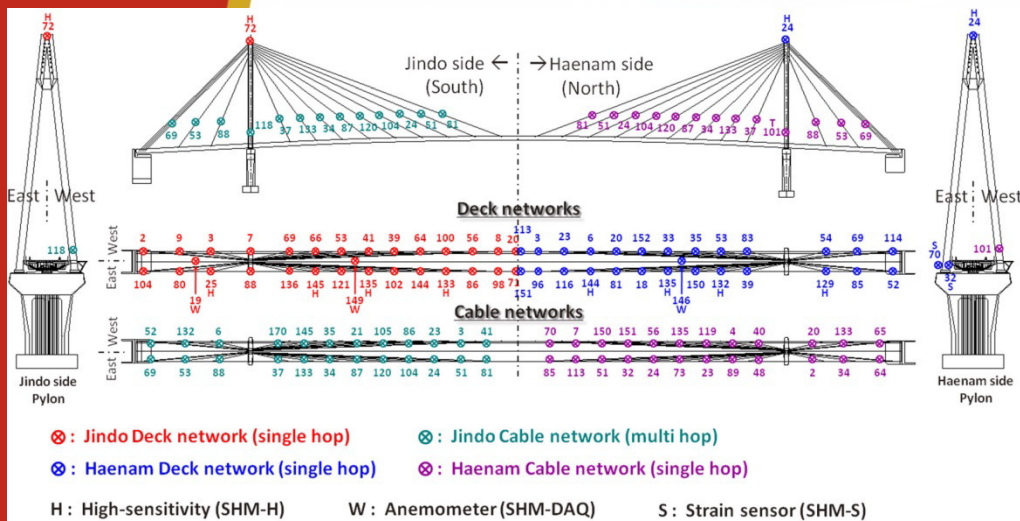
- | | | |
|--|------------------------|-----------------------------------|
| 1 Ambient Intelligence Agent (Aml) Control | 6 Automatic Pet Feeder | 12 Lawn Moisture Sensor |
| 2 Light Sensor | 7 Motorized Drapes | 13 Face Recognition Sensor |
| 3 Windows and Door Control | 8 Automatic Watering | 14 Motion Sensors |
| 4 HVAC Control | 9 Mailbox Sensor | 15 Door Sensors |
| 5 Lighting Control | 10 Driveway Sensor | 16 Aml Interface with Car |
| | 11 Security System | 17 Aml Interface with Smart Phone |



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Data Analytics and Collaborative Computing Lab (DACC)

Sensor-based analytic Research: Infrastructure Wireless Sensor Networks



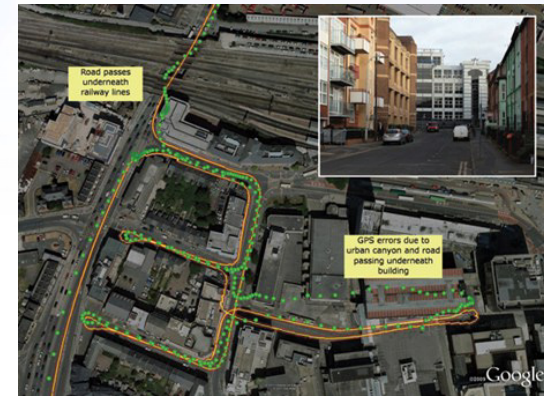
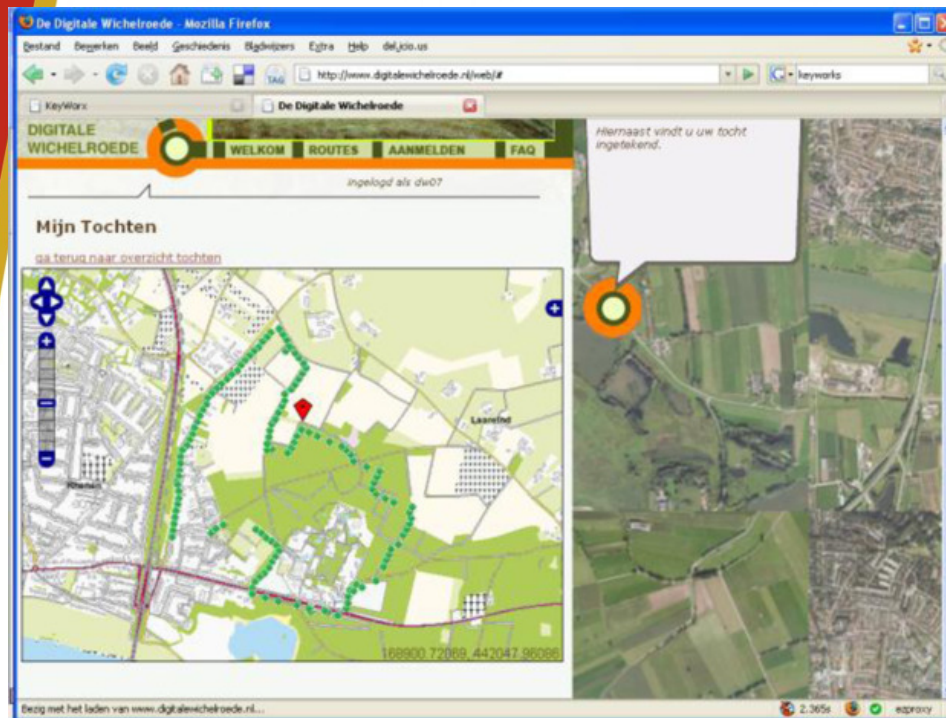
3. Wireless sensors are used to measure long-term stress and strain in civil engineering structures like buildings and bridges. (Courtesy: Microstrain Inc.)



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Sensor-based analytic Research: Location-based Sensors

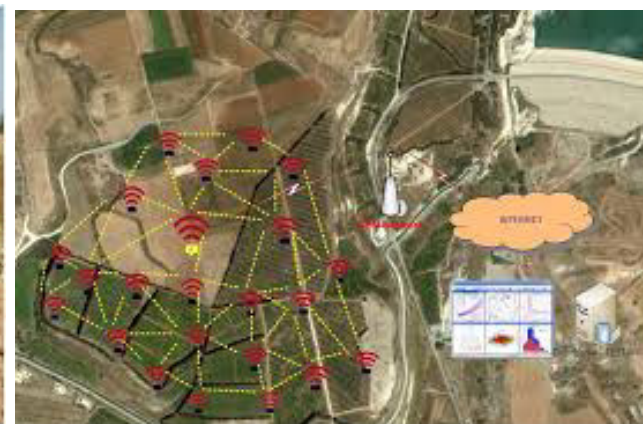
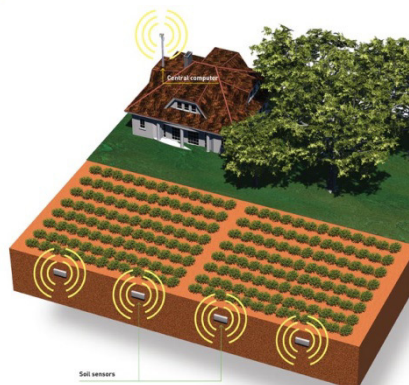




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Data Analytics and Collaborative Computing Lab (DACC)

Sensor-based analytic Research: Agricultural Monitoring Sensors





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Sensor-based analytic Research: Aquacultural Monitoring Sensors

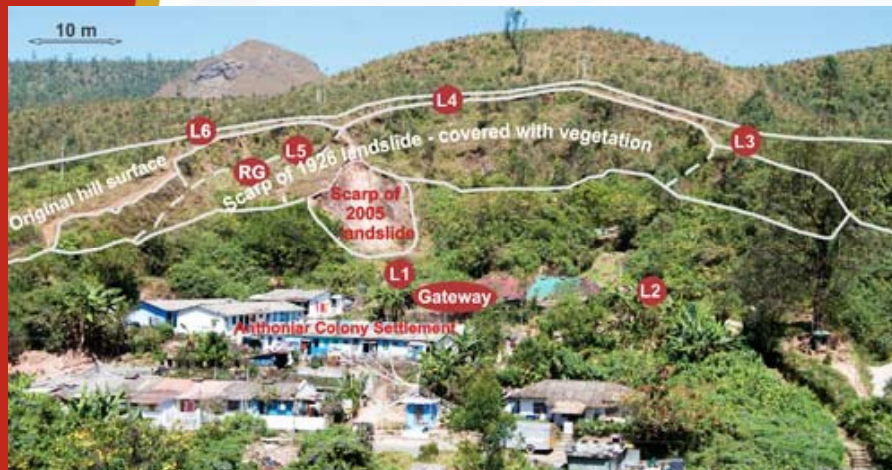




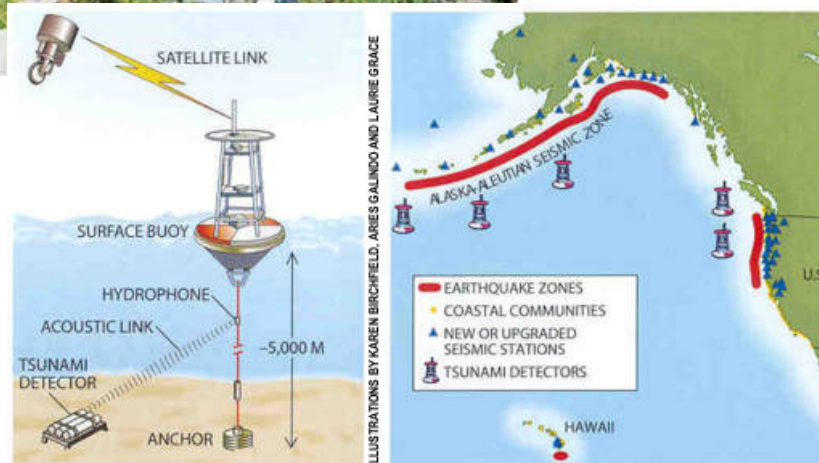
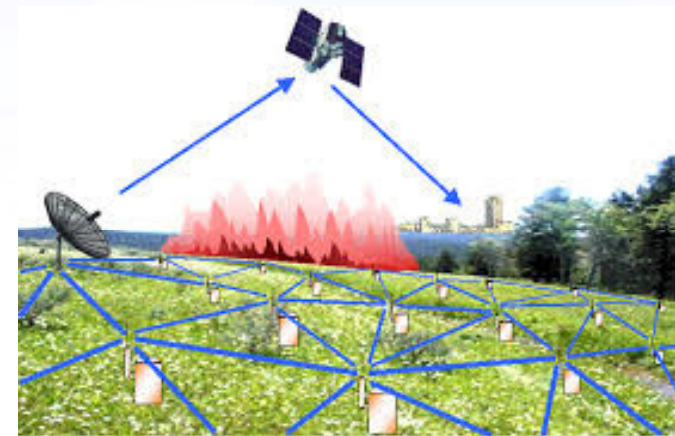
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Data Analytics and Collaborative Computing Lab (DACC)

Sensor-based analytic Research: Terrestrial Wireless Sensor Networks



Landslide Site, Munnar, Kerala



MICHELLE G. BULLOCK-NOMA (CNS)

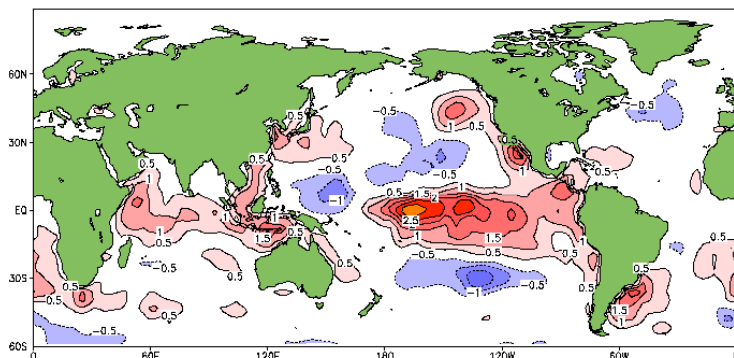


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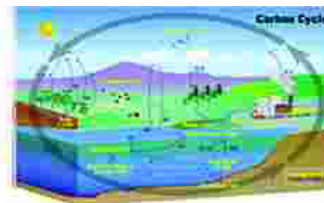
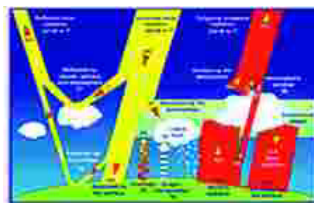
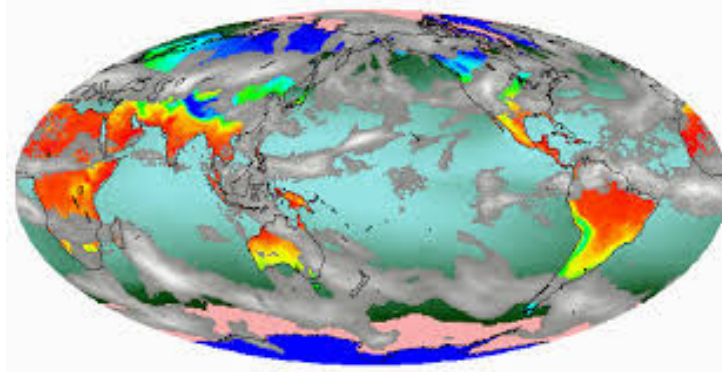
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Sensor-based analytic Research: Global Environmental Modelling

Sea Surface Temperature Anomaly Forecast
Winter (Jan-Feb-Mar) 1998



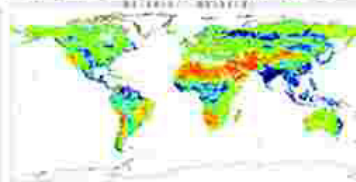
Center for Ocean-Land-Atmosphere Studies Statistical Filters Applied Initial Conditions: Jun-Jul-Aug 1997



开展基于系统平衡的辐射、水循环、植被生态系统与碳循环的定量反演理论与技术研究



短波辐射



土壤水分反演



碳通量