

# **A report on WOMEN IN SENSORS WORKSHOP 2022**

## **IEEE SC NSW Chapter, Sydney**

**November 11, 2022**

IEEE Sensors Council New South Wales Chapter organized the Women in Sensors workshop at the Western Sydney University Parramatta campus on 11<sup>th</sup> November 2022. The workshop was a technical workshop and 5 women delivered technical talks on their research activities on sensors and system. The workshop was organized as a face to face event and was attended by 20 audiences.

The details of the activities are provided below.

**Opening/ Welcome:** Dr. Subhas Mukhopadhyay or Dr Ranjith Liyanapathirana

Prof. Subhas Mukhopadhyay, Chair, IEEE SC NSW chapter made a short presentation on IEEE, SC and NSW chapter and the activities. Dr. Ranjith Liyanapathirana, Vice-Chair along with Miss Reenu Tresa Jacob, Chair, IEEE Students branch, Western Sydney University welcomed all speakers and attendees. The event started at 5:45pm

**Speaker 1:** Dr Fowzia Akhter

**Title:** Internet of Things-enabled Smart Sensing Systems for a Smart City

**Abstract:** Design and development of low-cost, low-power sensors and sensing systems are active research areas in building an effortless smart city. This dissertation proposes novel compact systems applicable to a smart city scenario. Firstly, a pedestrian counting and environmental monitoring sensor node has been developed to count the number of pedestrians and their travel direction and provide ambient parameters (temperature, humidity, pressure, CO<sub>2</sub>, and TVOC). The novelty of this work is improving the accuracy by innovative system design and developing intelligent algorithms even though using off-the-shelf devices. The importance of developing selective sensors to monitor air quality has been realized while working with commercial sensors. The novelty of this work lies in compensating the temperature and humidity effect to make it applicable in actual environmental conditions and measure CO<sub>2</sub> concentrations with more than 95% accuracy. These systems and sensors provide an opportunity for decision-makers to test assumptions and strategies and provide a healthy and safe environment for all of us.

**Speaker 2:** Dr Noushin Nasiri

**Title:** SunWatch, Smart UV Nanosensing Watch for real time UV monitoring

**Abstract:** Australia has the highest melanoma rates in the world with a diagnosis every 30 minutes, and over 2,000 people dying from the disease each year. It accounts for more diagnoses than all other cancers combined, and costs more than \$750 million annually to treat. UV radiation is the most important environmental factor in the development of skin cancer. According to the Cancer Council Australia, it may take more than 12 hours after overexposure to UV radiation for the signs of the erythematous reaction – the characteristic redness of sunburn – to appear. This makes it extremely challenging for an average person to determine their sun-safe exposure limits. In this talk, I talk about SunWatch, a personalised technology platform to measure sun exposure. This innovation has the potential to save lives and dramatically reduce treatment costs for melanoma and other skin cancers.

**Speaker 3:** Mrs. Geethanjali.N.Pai

**Title:** Textronic Wearables and E-Skins

**Abstract:** The tremendous progress in intelligent wearables and flexible sensors has made sensor technology highly promising. However, the need to provide better comfort, flexibility, and durability to the wearer has led to the development of Textronics. Conventional textile fibers, yarns, fabrics, or garments with sensors integrated through traditional textile fabrication methods make flexible, skin-friendly, durable, and comfortable wearables and e-skins.

**Speaker 4:** Mrs. Hafsa Anam

**Title:** Smart Wireless Chipless RFID Sensor Tags for IoT Applications

**Abstract:** This research presents cost-effective solutions for identification in super smart networks. The main objective of this research is to design low cost, high data capacity, miniaturized passive chip-less RFID tags for IoT (Internet of Things) and wireless applications. We will also focus on green electronic passive chipless RFID tags to deploy environment friendly green electronic based identification system. Further, to incorporate sensing aspects, tag designs will be analysed and optimized to sense various environmental parameters. This work will pave the paths towards important applications for future research. The expected outcome of the proposed research unlocks the broad application areas including water management via deployment of humidity sensors. The work can be extended for multi-sensing utilizing environment friendly biodegradable materials with minimal environmental footprint. Further, novel techniques are required that can address multitude of necessities/demands i.e., green electronic based, widely applicable, and low-cost wireless microwave sensors.

**Speaker 5:** Miss Sakura J. Mukhopadhyay

**Title:** Designing Infrastructure for Better Living: A Graduate Design Engineer's perspective

**Abstract:** Arcadis is the leading design and consultancy firm for natural and built assets. We deliver services in engineering, design, consultancy, project, and management services. We deliver solutions to pressing challenges around resilience, places, and mobility, improving quality of life for people around the globe. Sakura is working at Arcadis in the design of overhead line electrification systems for both 1500 V DC and 25kV AC in railway projects all around Australia. The presentation will go through Arcadis's capabilities, what is rail electrification and current projects around Australia as well as potential research areas to increase the efficiency of future designs.

**Q&A/ Closing:** There was a very good interaction of the audiences with the speakers which was made it very lively. Overall, it was a very successful event with everyone enjoyed very much. The event ended at around 7:35pm.

**Dinner:** 7:45 PM at Grand Bavarchi, Parramatta.

A few pictures from the workshop are:



Programme of WiSe workshop



Prof. Subhas Mukhopadhyay and Dr. Ranjith Liyanapathirana welcoming audiences



Dr. Fowzia Akhtar



Dr. Noushin Nasiri



Mrs. Geethanjali Pai



Mrs. Hafsa Inam



Miss Sakura Mukhopadhyay



All speakers at Q&A

