

Workshop on speech analysis for non-invasive clinical decision-supporting

Venue: AUT City Campus
WZ Building - Level 1

DAY 1: 31/01/2024

Theme: Mild Traumatic Brain Injury (Concussion)

9:00 – 9:15

Opening Ceremony by Professor William Wong

Welcome and Housekeeping by Dr Samaneh Madanian

KEYNOTE SPEAKER

9:15 - 10:00

Professor Christian Poellabauer (Florida International University)

Presentation Title: Speech-Based Digital Biomarkers: Opportunities & Challenges

10:00 – 10:30

BREAK - MORNING TEA

Session 1

10:30 - 12:30

- **A Comparison of Speech Biosignatures of Traumatic Brain Injury and Neurodegeneration** (Ms. Rahmina Rubaiat, Florida International University)
- **AI as a Clinical Decision Support Tool Non-Invasive and Non-Intrusive Tech for the Digital Transformation of Healthcare** (Dr Sam Madanian, AUT)
- **A Preliminary Study on Machine Learning for Speech-Based Concussion Detection** (Ms. Upeka De Silva, AUT)
- **Mobile Apps for Speech Analysis: Architecture and Design** (Mr. Sehaj Chawla and Dr Samaneh Madanian, AUT)

12:30 - 13:30	LUNCH
KEYNOTE SPEAKER	
13:30 – 14:15	<p>Professor Sandra Schneider (St. Mary's College)</p> <p>Presentation Title: Systems and Features Instrumental to the Production and Analysis of Speech</p>
Session 2	
14:15 – 15:15	<ul style="list-style-type: none"> • Applied NeuCube Spiking Neural Network Architecture: Enhancing Understanding and Classification of Alzheimer's Disease, Frontotemporal Dementia, and Healthy Groups (Mr. Quoc Cong Tran and Associate Professor Minh Nguyen, AUT) • Hypervector Encoding for mTBI Detection: Toward an Explainable Model for Traumatic Brain Injury Detection (Dr Olayinka Adeleye, Mr. Adebajji Adeleye and Dr Sam Madanian, AUT) • Speech Analysis as a Decision Support System in Healthcare for Detecting mild Traumatic Brain Injuries (mTBI) (Mr Minh Hoang Quach, AUT) • Exploring the Potential Roles of AI-Driven Speech Analysis in Mitigating Traumatic Brain Injury Risks within the Construction Industry (Ms. Thu Giang Mai, Mr Bunleng Chhun and Associate Professor Minh Nguyen, AUT)
15:15 – 15:45	Afternoon Tea
Session 3	
15:45 – 16:30	<p>Pannel Discussion</p> <ul style="list-style-type: none"> • Professor Christian Poellabauer (Florida International University) • Professor Sandra Schneider (St. Mary's College) • Dr John Templeton (South Florida University)
4:30 PM	CLOSE OF THE DAY

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Venue: AUT City Campus
WZ Building - Level 1

DAY 2: 01/02/2024
Theme: Mental Health

9:00 – 9:30

Opening (Dr Sharon Olsen)

Invited Speaker: Dr Alexander Merkin (AUT; University of Konstanz)

Presentation Title: Speech Analysis and Mental Health

Session 1

9:15 - 10:30

- **The MERSA Dataset and A Multimodal Approach for Speech Emotion Recognition** (Mr. Enshi Zhang and Professor Christian Poellabauer, Florida International University)
- **Optimizing Speech Emotion Recognition: A Lightweight Transformer Approach with Knowledge Distillation** (Mr. Hoang Nam Nguyen and Dr Samaneh Madanian, AUT)
- **Emotion Variation Detection in Discrete English Speech: A Wavelet Transform Use Case in Mental Health Monitoring** (Mr Adebajji Adeleye, Dr Samaneh Madanian, and Dr Olayinka Adeleye, AUT)
- **Comparison of Deep Learning Algorithms for Emotion Recognition using Audio Signals** (Mr. Haider Ali and Mr Malik Naveed Akhter, AUT and New Zealand College of Chiropractic)

10:30 – 11:00	BREAK - MORNING TEA
Keynote Speakers	
11:00 - 12:30	<ul style="list-style-type: none"> • Professor David Parry (Murdoch University) Presentation Title: How do we integrate speech sound analysis into eHealth • Professor John Templeton (South Florida University) Presentation Title: The Role of Digital Health Technology In Neurocognitive Assessment Systems
12:30 - 13:30	LUNCH
Group Discussion and Reflection	
13:30 – 15:00	<p>Discussion:</p> <ul style="list-style-type: none"> - Opportunities and Challenges - Future Direction - Next Step <p>Students Awards and Closing Ceremony</p>
15:00 – 15:30	Afternoon Tea and workshop closing