



UNSW
SYDNEY

Signal, Information and Machine Intelligence Lab

Working at the crossroads of health and technology to apply signal processing and machine learning algorithms to data, such as speech and bio-signals, to assist healthcare providers and improve the quality of patients' lives.

Competitive advantage

Expertise in:

- Non-intrusive health monitoring via audio signals
- Disordered speech monitoring
- Behavioural analyses
- Biomedical signal processing
- Machine learning and pattern classification
- Analyses of EEG, ECG, heart rate, respiratory rate, skin conductance
- Voice biometrics

Impact

With the use of machine learning and artificial intelligence, data such as speech and bio-signals – which contain tremendous amounts of information about health and wellbeing – can be used to determine if patients are at risk of health problems, provide feedback on the effectiveness of therapy and to interpret and help to regulate stress levels.

Successful outcomes

- Validated automated speech therapy system for children with apraxia of speech in clinical trials
- Prediction, detection and monitoring of a number of conditions and emotional states
- Fluorescence lifetime imaging endoscope
- Bayesian frameworks for incorporating uncertainty into machine intelligence for prediction and recognition of ambiguous, subjective and perceptual attributes such as emotional state
- Characterisation and recognition of speaker attributes in voice biometric systems
- Smartphone applications to monitor mental states and speech disorders
- Longitudinal validation of biofeedback games for stress self-regulation

Capabilities and facilities

- High performance computing capabilities for large scale signal and information analysis, and training machine learning models
- Large library of code, scripts and databases of speech and other signals
- Soundproofed, light-controlled studio facility for recording speech and behavioural signals

Our partners

- Charité – Universitätsmedizin, Berlin, Germany

More Information

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