David HASON RUDD, Ph.D, MIEAust, (Australian Citizen based in Sydney)

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Bio

- **Dr. David Hason Rudd** is currently a full-time sessional lecturer at the Australian Higher Degree Institute (AIH) and has over 3 years of casual academic and subject coordinator experience at the School of Computer Science in the Faculty of Engineering and Information Technology (FEIT), UTS Business School, and Faculty of Arts and Social Sciences (FASS) at the University of Technology Sydney (UTS).

- His research portfolio is broad and impactful, encompassing causal machine learning, Industry 4.0 technologies, 5G networks, and smart sensing. A significant focus of his work is on the innovative application of signal processing and deep learning to recognize emotional and mental states from speech data, providing insights into human behaviour and interaction.

- Moreover, his research focuses on advancing financial analytics and has developed a novel method called "Financial XRay". This innovative approach combines semi-supervised and deep learning techniques to predict customer financial literacy.

- Additionally, his expertise extends to conducting causal analysis of customer churn, which aids financial institutions in understanding the cause of attrition. He actively collaborates with the Data Science & Machine Intelligence Lab (DSMI.tech) on industrial research projects. His work includes a study on customer churn for the Australian Dental Association, identifying key factors in member retention. Recently, he developed drone-assisted AI-IoT techniques to enhance 5G indoor coverage predictions in 3D models.

- In the industrial sector, he is a qualified professional engineer, holding credentials from Engineers Australia (MID 8385590) and Industrial Engineers Australia (MID 4473294), along with a license as a registered Design Building Practitioner (DBP) class 3 in electrical design (LID 01053001580). He has over 17 years of multidisciplinary engineering experience, spanning four countries and fields including electrical, telecommunications, engineering management, and data analytics.

- David teaches various undergraduate and postgraduate subjects in predictive and prescriptive business analytics, information systems, application implementation, and machine learning for data mining.

Employment History

2024 – · · · ·

- **Full-Time Seasonal Lecturer and Subject Coordinator in Business Information Systems,** Australian Higher Degree Institute, AIH.edu.au.
- **Casual Academic Lecturer and Subject Coordinator at Data Science and Innovation, Accounting School and Computer Science School in three faculties FEIT, FASS, and Business,** University of Technology Sydney (UTS) , UTS.edu.au.
- **41181 Information Security and Management, Subject Coordinator & Casual Lecturer.** UTS Computer Science School.
- **570002 Application Implementation with Microsoft Dynamics, Subject Coordinator & Casual Lecturer.** UTS FASS.

Employment History (continued)

- **36121 Artificial Intelligence Principles and Applications, Subject Coordinator & Casual Lecturer.** UTS, Data Science and Innovation.

2023 – 2024
- **62777 Business Data Processing using SAS, Casual Lecturer.** UTS Business School.
- **Research Engineer** FEIT, University of Technology Sydney (UTS).
- **42050 SAS Predictive Business Analytics, Subject Coordinator & Casual Lecturer**, UTS FEIT.
- **41030 Engineering Capstone Supervisor.** FEIT, UTS.
- **41029 Engineering Research Preparation Supervisor.** FEIT, UTS.

2021 – 2022
- **41004 AI/Analytics Capstone Project Supervisor.** FEIT, UTS.
- **Lead Data Scientist** BayesianConsulting.com.au, Sydney.

2017 – 2019
- **NBN FTTx Network Design Admin.** Cyient.com, Sydney.

2013 – 2017
- **NBN FTTx Site Engineer.** KoinoniaEnterprises.com.au, Sydney.

2011 – 2013
- **Medium Voltage (MV) Transport Engineer**, Petróleos de Venezuela, Caracas, Venezuela, pdvsa.com

2005 – 2011
- **Cellular Radio Access Network (RAN) Engineer**, Nokia.com, Tehran and Dubai.

Education

2021 – 2024
- **Doctor of Philosophy (PhD) in Data Analytics (C02029), Computer Science,** University of Technology Sydney (UTS), Australia
  Thesis title: *Investigate Organisational Member Engagement Through Financial X-ray and Artificial Neural Networks.*

2020 – 2021
- **Master of Science (Research) in Computing Science (C03025)** UTS, Australia;
  Thesis title: *Predicting financial Literacy with Deep learning.*

2003 – 2006
- **B.Sc. Electrical Engineering, IAUSTB,** in Electronics.
  Thesis title: *Integrating Modern Security Protocols with Z80-Based Access Control Systems.*

Research Publications (First Author)

Journal Articles

1. D. Hason Rudd, H. Huo, and G. Xu, "Improved churn causal analysis through restrained high-dimensional feature space effects in financial institutions," DOI: 10.1007/s44230-022-00006-y.

Conference Proceedings

1. "An extended variational mode decomposition algorithm developed speech emotion recognition performance." DOI: 10.1007/978-3-031-33380-4_17.
2. "Causal analysis of customer churn using deep learning," IEEE. DOI: 10.1109/DSInS54396.2021.9670561.
3. "Churn prediction via multimodal fusion learning: Integrating customer financial literacy, voice, and behavioral data," IEEE. DOI: 10.1109/BESC59560.2023.10386253.
4. "Leveraged mel spectrograms using harmonic and percussive components in speech emotion recognition." DOI: 10.1007/978-3-031-05936-0_31.
5. "Predicting financial literacy via semi-supervised learning." DOI: 10.1007/978-3-030-97546-3_25.

6 D. H. Rudd, X. Gao, M. R. Islam, H. Huo, and G. Xu, "Speech emotion recognition using mel spectrogram hpca and variational mode decomposition," in *2024 11th International Conference on Behavioural and Social Computing (BESC)*, IEEE, 2024, pp. 1–7.

Skills

Data Science Tools	SAS Enterprises Guide, SAS Viya, SAS Studio, RapidMiner, MS Power BI, Tableau, Macro Excel, SQL, Qlik Sense, AWS, Azure services, Google Cloud Platform, ML Service, Alteryx, Databricks.
Coding	Python, SAS, SQL, LaTeX, …
Databases	SQL (MySQL, PostgreSQL, SQLite); Big Data Technologies (Hadoop, Spark, Hive); MPP Databases (SQL Server, Azure Synapse)
Teaching	Teaching data analytics; data science; academic research and publishing.
Data Management	Data Quality; End-to-End Data Pipeline Design and Development; Data Engineering (ETL); contact centre and CRM data management.
Business Analytics	Analytics for Pattern Identification and Scenario Creation; Business Intelligence; ML Signal Processing; Churn Prediction; Process Optimisation.
Stakeholder Engagement	Engagement with Teams; Stakeholder Management; Requirements Communication (User Stories).
Agile Methodologies	Agile Delivery Frameworks; Agile Development (SCRUM); Digital Frameworks and Methodologies (Scrum, Kanban, Lean, etc.)
ML & AI for Business	Large Language Model (LLM) and multimodality modelling; Natural Language Processing (NLP); Deep Learning Frameworks (PyTorch, TensorFlow); Speech Emotion Recognition; Computer Vision; Data Mining for Financial Crime Transaction; Data Structures and Algorithms.
LTE/5G Telecom Tools	Nokia: NetAct; Aircom: ASSET & Connect; Infovista: TEMS Investigation; Actix: Post-processing tool; iB-wave: Indoor Planning tool; GIS tools: MapInfo, MCOM, GE, Arc view.

Miscellaneous Experience

Achievements

2020 - 2024 **UTS RTP Scholarship**, Australian Government Research Training Program Stipend.

Certification

2020 **Qualified Professional Engineer**. Awarded by Engineers Australia.
2014 **Qualified Industrial Engineer**. Awarded by Industrial Engineers Australia.
2022 **Machine Learning Using SAS Viya**. Awarded by SAS.com.
2021 **Advanced Machine Learning and Signal Processing**. Awarded by IBM.
Advanced Data Science Capstone. Awarded by IBM.

References

Available on Request