Sunil Aryal, PhD

School of Information Technology
Faculty of Science, Engineering & Built Environment
Deakin University
Office: KA3.250, 75 Pigdons Rd, Waurn Ponds VIC 3216
Phone: +61-3-92445615
Email: sunil.aryal@deakin.edu.au
URL: https://sunilaryal.github.io/

Current Position

2019-   *Lecturer in IT* (full-time continuing), Deakin University, Australia

Summary

- Nine years of teaching experience: six years in undergraduate and postgraduate levels (Australia) and three years in high school (Nepal)
- Part of a $1.28 million research grant (Co-investigator in a multidisciplinary collaborative research team)
- One competitive ECR seed research grant (AUD 5,000) and four student conference travel grants
- Masters by Research and PhD in Computer Science: 22+ publications, most of them in CORE A* or A ranked venues
- Academic leadership/administration experience: Course deputy director, developed three units (2 undergraduate and 1 postgraduate), precognition of prior learning assessment, etc.
- Three years of industry experience in Australia: two years in software development in C and one year in applied machine learning
- Successfully supervised six final year capstone projects and one Master's thesis, and currently supervising two PhD students
- Nominated by students for the Faculty of Information Technology Teaching Award at Monash University, Clayton School of IT (2015)
- Australian Postgraduate Award and research scholarships funded by European Research Council and US Air Force Research Laboratory
- Dean's Award for Outstanding Academic Achievement by University of Southern Queensland (USQ) and ISACA Prize by Information Systems Audit and Control Association (ISACA) Brisbane Chapter.

Teaching

Programming, Data Structure and Algorithm, Databases, Data Mining, Machine Learning, Project Management, Research & Development in IT, Professional Skills in IT, Capstone Projects

Areas of Research

Data Mining and Machine Learning — Practical and Robust Data Mining, Similarity Measures, Classification, Clustering, Anomaly Detection, Ensemble-based and Random Methods, Learning from small subsamples of data, Explainable AI, Health Informatics

Appointments Held

2016-2019	Lecturer (full-time), Federation University, Mt Helen, Australia
2013-2016	Lecturer (sessional), ATMC (Federation University), Melbourne, Australia
2014-2015	Data Engineer (part-time), Gyde Inc., Melbourne, Australia
2014-2015	Teaching Associate (sessional), Monash University, Clayton, Australia
2014-2015	Research Assistant (casual), Federation University, Churchill, Australia
2013-2013	Software Developer (casual), Monash University, Clayton, Australia
2012-2013	Research Assistant (casual), Monash University, Churchill, Australia
2009-2010	Research Student (full-time), Katholieke University, Leuven, Belgium
2008-2009	Software Developer (full-time), Ingenico Asia Pacific International, Warriewood, Australia
2006-2006	IT Officer (full-time), Nepal Bank Limited, Damauli, Nepal
2002-2005	Computer Teacher (full-time), Kathmandu Don Bosco Higher Secondary School, Kathmandu, Nepal

Education

2020	GRADUATE CERTIFICATE IN HIGHER EDUCATION LEARNING & TEACHING, Deakin University, Australia

2017	PHD, Monash University, Australia
Thesis title	A data-dependent dissimilarity measure: An effective alternative to distance measures
Supervisors	Prof. Kai Ming Ting, A/Prof. Gholamreza (Reza) Haffar and Prof. Takashi Washio
Examiners	Prof. Tu-Bao Ho (Japan Advanced Institute of Science and Technology) and Prof. Bernhard Pfahringer (Waikato University)

2012	MIT(Research), Monash University, Australia
Thesis title	New generative classifiers with mass-based likelihood estimation
Supervisors	Prof. Kai Ming Ting and A/Prof. Madhu Chetty
Examiners	Prof. Geoff Webb (Monash University) and Prof. Xiaodong Li (Royal Melbourne Institute of Technology University)

2008	MIT(Coursework), University of Southern Queensland, Australia

2005	BIT, Purbanchal University, Nepal

Grants, Honours & Awards

2020	*A new robust method to detect anomalies in cybersecurity datasets* [AUD 5,000] (Principal investigator), a seed grant under Peer-Reviewed ECR Support Scheme (PRESS2020) funded by Deakin University, Faculty of Science, Engineering and Built Environment
2019-2021	*Wellbeing Track & Change – Using digital monitoring to improve the mental well-being of residential aged care workers* [AUD 1.28 million] (Co-investigator, part of a large research team lead by Mental health organisation Prevention United, Federation University Australia and Ballarat Health Services) funded by WorkSafe, WorkWell Improvement Fund (Round 2)
2015	Asian Information Retrieval Society (AIRS) student travel award to attend AIRS conference in Brisbane, Australia
2015	Monash Institute of Graduate Research (MIGR) student travel grant to attend AIRS conference in Brisbane, Australia
2014	Alberta Innovates Centre for Machine Learning (AICML) student travel award to attend IEEE ICDM in Shenzhen, China

2014	Monash Institute of Graduate Research (MIGR) student travel grant to attend IEEE ICDM in Shenzhen, China
2013	Australian Postgraduate Award (APA) for PhD at Monash University
2012	Best Poster Award at the Faculty of IT higher degrees by research conference, Monash University
2012	Monash Postgraduate Publication Award (PPA)
2012	Research student stipend for MIT(Research) from a research grant funded by US Air Force Research Laboratory awarded to Prof. Kai Ming Ting
2009	Research student scholarship by a research grant funded by European Research Council awarded to Dr. Jan Ramon
2007	Dean's award for outstanding academic achievement by University of Southern Queensland (USQ)
2007	Academic scholarships during MIT(Coursework) study at USQ
2006	ISACA prize by Information Systems Audit and Control Association (ISACA) Brisbane Chapter
2001	Outstanding student full tuition fee waiver scholarship to study BIT

Selected Publications

2020 — J. R. Wells, **S. Aryal** and K. M. Ting, Simple supervised dissimilarity measure: Bolstering iForest-induced similarity with class information without learning, *Knowledge and Information Systems*, 62(8), pp 3203-3216 Springer

2020 — **S. Aryal**, K. M. Ting, T. Washio and G. Haffari, A comparative study of data-dependent approaches without learning in measuring similarities of data objects, *Data Mining and Knowledge Discovery*, 34(1), pp 124-162 Springer

2019 — C. Sitaula, Y. Xiang, A. Basnet, **S. Aryal** and X. Lu, Tag-Based Semantic Features for Scene Image Classification, In *Proceedings of The 26th International Conference on Neural Information Processing (ICONIP 2019)* pp 90-102

2018 — **S. Aryal**, Anomaly detection technique robust to units and scales of measurement, In *Proceedings of the 22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)* pp 589-601 Springer

2017 — **S. Aryal**, K. M. Ting, T. Washio and G. Haffari, Data dependent dissimilarity measure: An effective alternative to geometric distance measures, *Knowledge and Information Systems* 53(2) pp 479–506 Springer

2017 — K. M. Ting, T. Washio, J. R. Wells and **S. Aryal**, Defying the gravity of learning curve: a characteristic of nearest neighbour anomaly detectors, *Machine Learning* 106(1) pp 55–91 Springer

2016 — **S. Aryal**, K. M. Ting, and G. Haffari, Revisiting Attribute Independence Assumption in Probabilistic Unsupervised Anomaly Detection, In *Proceedings of the 11th Pacific Asia Workshop on Intelligence and Security Informatics (PAISI)* pp 73-86 Springer

2014 — **S. Aryal**, K. M. Ting, G. Haffari and T. Washio, Mp-dissimilarity: A data dependent dissimilarity measure, In *Proceedings of the IEEE International Conference on Data Mining (ICDM)* pp 707-712 IEEE

2014 — **S. Aryal**, K. M. Ting, J. R. Wells and T. Washio, Improving iForest with Relative Mass, In *Proceedings of the 18th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)* pp 510-521 Springer

2013 — K. M. Ting, T. Washio, J. R. Wells, F. T. Liu and **S. Aryal**, DEMass: A new density estimator for big data, *Knowledge and Information Systems* 35(3) pp 493-524 Springer

The list of my publications are available in my Google Scholar and DBLP pages.

Selected Talks, Tutorials & Posters

2019   Are you aware that numbers can be misleading?, In the *PACIFIC 2019 Pitchfest*, Sydney [*Selected to pitch my current research*]

2018   Which Outlier Detector should I use?, In the *IEEE International Conference on Data Mining (ICDM)*, Singapore [*One-day long tutorial* presented jointly with Prof. Kai Ming Ting and Prof. Takashi Washio]

2018   Anomaly detection technique robust to units and scales of measurement, In the *22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, Melbourne, Australia [*Talk*]

2017   The impact of sample size and dissimilarity on learning in dynamic and uncertain environments, In the *US-AUS Robotics & Autonomy Workshop*, Adelaide, Australia [*Invited talk to pitch our research idea*, joint proposal with Prof. Kai Ming Ting]

2016   Revisiting Attribute Independence Assumption in Probabilistic Unsupervised Anomaly Detection, In the *11th Pacific Asia Workshop on Intelligence and Security Informatics (PAISI)*, Auckland, New Zealand [*Talk*]

2015   Beyond tf-idf and cosine distance in documents dissimilarity measure, In the *11th Conference of Asia Information Retrieval Societies (AIRS)*, Brisbane, Australia [*Poster*]

2014   Mp-dissimilarity: A data dependent dissimilarity measure, In the *IEEE International Conference on Data Mining (ICDM)*, Shenzhen, China [*Talk*]

Service to the Profession

2019   Program Committee Member - AAAI 2019, PAKDD 2019, ICONIP 2019, PAKDD 2020, ECML/PKDD 2020

2018   Reviewer - The 27th International Symposium on Industrial Electronics (ISIE) 2018

2017   Reviewer - International Workshop on Effective Engineering Education (IWEEE) 2017

Professional Memberships & Associations

2008-   Australian Computer Society

2014-   IEEE Computer Society

2014-   IEEE Young Professionals