

Sunil Aryal, PhD

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Current Position

2016- *Lecturer in IT* (full-time continue), Federation University Australia, Mt Helen campus

Teaching

Programming, Data Structure and Algorithm, Databases, Data Mining, Software Engineering, Business Information Systems, Project Management, Capstone Projects

Areas of Specialisation

Data mining and machine learning - Similarity Measures, Classification, Clustering, Anomaly Detection, Content-based Information Retrieval, Ensemble-based and Random methods, Learning from small subsamples of data

Appointments Held

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

2017	PhD, Monash University, Australia
Thesis title	A data-dependent dissimilarity measure: An effective alternative to distance measures
Supervisors	Prof. Kai Ming Ting (Federation/Monash University), Dr. Gholamreza (Reza) Haffari (Monash University) and Prof. Takashi Washio (Osaka University)
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 (Federation/Monash University) and A/Prof. Madhu Chetty (Federation/Monash University)
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

Selected Publications

- 2018 **S. Aryal**, Anomaly detection technique robust to units and scales of measurement, To appear In *Proceedings of the 22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)* (accepted on 11 Feb 2018)
- 2018 M. Santhanagopalan, M. Chetty, C. Foale, **S. Aryal** and B. Klein, Modelling neurocognitive reaction time with Gamma distribution, In *Proceedings of the Australasian Computer Science Week (ACSW) Conference* pp 28:01-29:10 ACM NY
- 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
- 2017 **S. Aryal**, A data-dependent dissimilarity measure: An effective alternative to distance measures, *PhD Thesis*, Clayton School of Information Technology, Monash University
- 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
- 2016 **S. Aryal** and K. M. Ting, A generic ensemble approach to estimate multi-dimensional likelihood in Bayesian classifier learning, *Computational Intelligence* 32(3) pp 458-479 Wiley Blackwell
- 2015 **S. Aryal**, K. M. Ting, G. Haffari and T. Washio, Beyond tf-idf and cosine distance in documents dissimilarity measure, In *Proceedings of the 11th Conference of Asia Information Retrieval Societies (AIRS)* pp 400-406 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 **S. Aryal** and K. M. Ting, MassBayes: A new generative classifier with multidimensional likelihood estimation, In *Proceedings of the 17th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)* pp 136-148 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
- 2012 **S. Aryal**, New generative classifiers with mass-based likelihood estimation, *Master's Thesis*, Gippsland School of Information Technology, Monash University

The list of my publications are available in my [Google Scholar](#) and [DBLP](#) pages.

Selected Talks & Posters

- 2017 K. M. Ting and **S. Aryal**, 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 research idea]
- 2015 **S. Aryal**, K. M. Ting, G. Haffari and T. Washio, Beyond tf-idf and cosine distance in documents dissimilarity measure, In the *11th Conference of Asia Information Retrieval Societies (AIRS)*, Brisbane, Australia [Poster]
- 2014 **S. Aryal**, K. M. Ting, G. Haffari and T. Washio, Mp-dissimilarity: A data dependent dissimilarity measure, In the *IEEE International Conference on Data Mining (ICDM)*, Shenzhen, China [Talk]

Grants, Honours & Awards

- 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 award to Prof. Kai Ming Ting
- 2009 Research student scholarship by a research grant funded by ERC 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

Service to the Profession

- 2018 Program committee member (reviewer) - The 27th International Symposium on Industrial Electronics (ISIE) 2018
- 2017 Program committee member (reviewer) - International Workshop on Effective Engineering Education (IWEEE) 2017

Professional Memberships & Associations

- 2008- Australian Computer Society
- 2014- IEEE Computer Society
- 2014- IEEE Young Professionals