Sunil Aryal, PhD

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Current position

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

Areas of specialization

Data mining and machine learning • Similarity measures, Classification, Clustering, Anomaly detection, Content-based information retrieval, Ensemble-based and random methods, Learning from small subsample of data

Appointments held

2013-2016 Lecturer (sessional), ATMC (Federation University), Melbourne, Australia
2014-2015 Data Engineer (part-time), Gyde Inc., Melbourne, Australia
2013-2015 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 Trainee (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, Dr. Gholamreza (Reza) Haffari and Prof. Takashi Washio
Examiners Prof. Tu-Bao Ho and Prof. Bernhard Pfahringer
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 and Prof. Xiaodong Li
2008 MIT(Coursework), University of Southern Queensland, Australia

2005 BIT, Purbanchal University, Nepal

Grants, honors & 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 EU and 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

Publications & talks

Journal articles

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
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
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
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

Conference & workshop papers

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, To appear In *Proceedings of the 11th Australasian Conference on Health Informatics and Knowledge Management (HIKM)* (accepted on 12 Nov 2017)
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

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

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

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

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

Theses

2017 **S. Aryal**, A data-dependent dissimilarity measure: An effective alternative to distance measures, *PhD Thesis*, Clayton School of Information Technology, Monash University

2012 **S. Aryal**, New generative classifiers with mass-based likelihood estimation, *Master's Thesis*, Gippsland School of Information Technology, Monash University

Books chapters

2017 A. Neupane, J. Soar, K. Vaidya, **S. Aryal**, Development and evaluation of an anti-corruption framework to address the public procurement corruption, In R. Shakya (ed.) *Digital Governance and E-Government Principles Applied to Public Procurement*, IGI Global pp 56-74

2014 A. Neupane, J. Soar, K. Vaidya, **S. Aryal**, The Potential For ICT Tools to Promote Public Participation in Fighting Corruption, In Christina M. Akrivopoulou and N. Garipidis (eds.) *Human Rights and the Impact of ICT in the Public Sphere: Participation, Democracy, and Political Autonomy*, IGI Global pp 175-191

Abstracts, Posters, Talks & Miscellaneous

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*]

2012 **S. Aryal** and K. M. Ting, MassBayes: A new generative classifier with multidimensional likelihood estimation, In the *Monash University Faculty of IT higher degrees by research conference* [*Poster*]

2010 L. Schietgat, **S. Aryal**, Ramon J., Predicting protein function with the relative backbone position kernel, In *Proceedings of the 9th European Conference on Computational Biology (ECCB)* pp 39 [*Extended abstract and poster*]

2002 **S. Aryal**, Prospects and Challenges of IT in Nepal, In the *Kathmandu Don Bosco College Newsletter* pp 3 [*Newspaper column*]

Teaching

Programming, Databases, Data Mining, Machine Learning, Software Engineering, Business Information Systems, Project Management, Capstone Projects

Professional memberships & associations

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