

# Sunil Aryal, PhD

School of Engineering and Information Technology  
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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) (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 href="#">A data-dependent dissimilarity measure: An effective alternative to distance measures</a>
Supervisors	<a href="#">Prof. Kai Ming Ting</a> , <a href="#">Dr. Gholamreza (Reza) Haffari</a> and <a href="#">Prof. Takashi Washio</a>
Examiners	<a href="#">Prof. Tu-Bao Ho</a> and <a href="#">Prof. Bernhard Pfahringer</a>
2012	MIT(Research), Monash University, Australia
Thesis title	<a href="#">New generative classifiers with mass-based likelihood estimation</a>
Supervisors	<a href="#">Prof. Kai Ming Ting</a> and <a href="#">A/Prof. Madhu Chetty</a>
Examiners	<a href="#">Prof. Geoff Webb</a> and <a href="#">Prof. Xiaodong Li</a>
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 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