Dr. Pratama (https://scholar.google.com.au/citations?user=5nF0eQYAAAAJ&hl=en) received a Bachelor of Engineering from Institut Teknologi Sepuluh Nopember, Indonesia (Aug 2006-Feb 2010), where he was awarded "The best final-year project award" in 2010. Notably, as an undergraduate student, he published 4 international conference papers and 1 journal paper, which demonstrates that he is a very proactive researcher. He pursued his Master of Science in Computer Control at the Nanyang Technological University, Singapore (Aug 2010-Sep 2011), while working as a project officer to complete an A-STAR SERC research project. The project was undertaken in close collaboration with the Singapore Institute of Manufacturing Technology (SIMTech). During this period, Dr. Pratama produced 2 journal papers and 5 conference papers. Because the project had a substantial impact on Manufacturing Industries in Singapore, Dr. Pratama, and his research team achieved a "Prestigious Engineering Achievement Award" in 2011 granted by the Institute of Engineers (IES), a nationally competitive award in Singapore. This fact shows that he is a very independent researcher.

Dr. Pratama completed his Ph.D. degree at the University of New South Wales (UNSW) within 2.5 years (Mar 2012-Aug 2014). Dr. Pratama's thesis submission request was approved as a very special case by the UNSW Higher Degree Committee because of his excellent research performance during his Ph.D. candidature. Dr. Pratama published 6 papers in high tier journals and 5 papers in premier conference proceedings in this period, and his Ph.D. research project involved international research collaboration with Prof. Plamen Angelov, the research leader of Evolving Fuzzy Systems (EFS). He won the "High Impact Publication Award" from the UNSW in both 2013 and 2014. These facts show that he is a very productive researcher and has very high potential to be a research leader.

Dr. Pratama worked at the University of Technology, Sydney (UTS) as a Postdoctoral Research Associate (RA) from Aug 2014 till Nov 2015 to work on an ARC DP entitled "Fuzzy Transfer Learning". He was a core member of the DeSI (Decision Systems & e-Service Intelligence) Lab in the Centre for Quantum Computation and Intelligent Systems (QCIS). In his short time at UTS, he has successfully produced 2 journal papers and 2 conference papers. He received the "Best Paper Award" at 8th Hellenic Conference on Artificial Intelligence, and won the UTS FEIT Research Seed Fund Grant. He co-supervises Ph.D. students and has delivered internal seminars at the DeSI Lab. Through the DeSI lab, he has also built new collaborations with world leading researchers Prof. Witold Pedrycz (University of Alberta, Canada; h-index: 79; IEEE

Fellow; EIC of Information Sciences) and Prof. C-T Lin (National Chiao Tung University; Taiwan; h-index: 50; IEEE Fellow; EIC of IEEE TFS).

Dr. Pratama moved to the department of computer science and IT, La Trobe University, Melbourne in Nov. 2015 to take up a continuing lecturer position (Assistant Professor). Only a few months at the LTU, he has demonstrated outstanding performance by delivering 6 high-quality journal papers and 8 conference papers. In his early career, Dr. Pratama has shown research leadership in his field, where he recently organised two special sessions at the 2016 IEEE WCCI (Core ranking: A) and a special issue at Neurocomputing (IF: 2.1). He submitted a proposal for a nationally competitive research grant (success rate:13%), namely the ARC Discovery Project (DP) 2017 as the main core investigator with LTU and his proposal is currently under review. He currently supervises one Ph.D. students, one Master student, and one Honours student.
Dr. Pratama has contributed substantially to his research field. He has produced 48 papers in the last 5 years, 16 of which have been published in ERA tier A/A* and Q1 journals. Dr. Pratama is the first author of 37 of these 48 papers. More importantly, his papers have attracted a high number of citations; for example, one paper was cited 64 times in one year, and another was cited 37 times within one year of publication. *One of his papers is currently under consideration for IEEE TNNLS prestigious paper award*. Considering that Dr. Pratama just obtained his Ph.D. in Nov 2014, Dr. Pratama's h-index is high (h-index: 7, 207 citations). He has one special issue and two special sessions in his research area and actively seeks a nationally competitive research grant. Because of his innovative research, he was invited to deliver a keynote speech at ICAMIMIA 2015. Dr. Pratama also serves as a guest editor of Neurocomputing, a reviewer for 10 high-quality journals, and has been invited to be a member of the international program committee of 5 conferences. He currently serves as an associate editor of the journal of mathematic, statistics, and applications and an editorial advisory board member of the open automation and control systems journal. Recently, he has been appointed as *an editor in chief of* International Journal of Business Intelligence and Data Mining (ERA Ranking: C, SJR: 0.2, http://www.inderscience.com/jhome.php?jcode=IJBIDM).
As a very early career researcher – about one year after getting his PhD, Dr. Pratama has broad research training experience (NTU, SIMTech, UNSW, UTS, LTU), an active collaboration with world leading researchers from different countries (Canada, Taiwan, UK, Austria, Singapore), and wide professional engagement (project officer, research associate, international journal reviewer and associate editor, conference PC member, keynote speaker, PhD supervisor, lecturer).

Mahardhika Pratama Raih Gelar PhD di Usia 26 Tahun

Pakar Fuzzy System, Kini Ngajar di Sydney

Pada umumnya, seseorang selesai menuntaskan pendidikan strata-3 di usia kepala tiga. Mahardhika Pratama bisa menyelesaikan S-3 dari University of New South Wales, Australia, pada usia 26 tahun. Kini alumnus ITS itu menerima tawaran mengajar di University of Technology Sydney.

DINDA LISNA AMILIA

BERSANTAI di rumah bersama keluarga menjadi rutinitas Mahardhika Pratama selama Mei ini. Bulan ini, Dhika, panggilan Mahardhika, mengambil semua jatah cutinya selama 2015. Saat ditemui *Jawa Pos* di kediamannya di daerah Klampis, suhung dari dua bersaudara anak pasangan Bambang Tri Suharto dan Eny Hartati tersebut sedang menikmati waktu bersama keluarga. "*Quality time* bersama keluarga tidak perlu keluar rumah. Sesekali saya keluar untuk minum kopi saja," ujar pencinta kopi itu.

Dhika memang tidak bisa senaknya pulang ke Surabaya. Dia terikat sebagai staf pengajar di University of Technology, Sydney, sejak Agustus 2014. Bahkan, kini dia sudah memegang *permanent resident* (visa permanen) Australia.

Keberadaan Dhika di Sydney memang memberi kontribusi. Laki-laki yang

TERUS BELAJAR: Dhika pulang kampung ke Surabaya sekali dalam setahun. Dia menunjukkan ijazah doktor dari University of New South Wales, Canberra, Australia.

Research Statement

A. Research Expertise and Experience

Dr. Pratama has worked in the field of Fuzzy Machine Learning for five years in world class institutes: Nanyang Technological University (NTU), University of New South Wales (UNSW) and University of Technology Sydney (UTS), La Trobe University (LTU). Dr. Pratama has produced 48 research papers: 16 papers were published in ERA tier A/A* and Q1 journals, 1 paper won the "Best Paper Award" at the 8th Hellenic conference on Artificial Intelligence, and 2 papers were cited more than 40 times in the first year of publication. One of his papers is *nominated for IEEE TNNLS prestigious paper award and is endorsed by 5 IEEE fellows.* It is currently under review and the outcome will be announced in the IEEE WCCI, 2016, Vancouver. Dr. Pratama is the first author in 37 of 48 papers. As an early career researcher, Dr. Pratama has shown research leadership in the area of data streams mining as evidenced by his two special sessions in the IEEE WCCI 2016 (Tier A) and one special issue in the Neurocomputing (Q1 journal). Dr. Pratama is *an editor in chief of* International Journal of Business Intelligence and Data Mining (ERA Ranking: C, SJR: 0.2, http://www.inderscience.com/jhome.php?jcode=IJBIDM). He was also invited to give a keynote speech at an international conference (http://www.icamimia.org/speaker/). Dr. Pratama has made significant discovery, contribution and impact in related areas of this project as follows:

Fuzzy Neural Networks

His key contribution in this area was published in Neurocomputing [10]. This work presents a novel Fuzzy Neural Network, termed Dynamic Parsimonious Fuzzy Neural Network (DPFNN), which implements an open rule base concept to cope with the non-stationary learning environments. This work has inspired other studies by high profile researchers. For example, it has been used by Dr. Edwin Lughofer from JKU, Austria to develop interpretability criteria in evolving fuzzy systems, which was published in Information Sciences, 2015 (Q1 journal). This work has also been successfully applied by Dr. Yongpin Pan in Singapore in health prediction, and the related results were published in Engineering Applications of Artificial Intelligence, Vol. 35 (Q1 journal). Recently, a top-down approach is proposed by Dr. Lughofer and Dr. Pratama to improve coverage of SPARSEFIS, a batched FNN with constrained optimization technique [42]. This paper was submitted as a short paper to IEEE TFS.

Evolving Fuzzy Systems

Dr. Pratama's significant contribution in this area is that of Parsimonious Network Based on Fuzzy Inference System (PANFIS), published in IEEE Transactions on Neural Networks and Learning Systems [9] (Tier A*, IF:4.4). The PANFIS system actualises the holistic concept of an evolving system, in which the learning process is started from scratch with an empty rule base. The fuzzy rule is automatically evolved and pruned from data streams in the single-pass learning mode. This paper has been cited 60 times within one year or so of publication, by many high-quality journal papers. For example, Prof. J. Rubio applied his stability criteria to develop an evolving controller and published the job in the International Journal of Control, 2014 (tier A). This work has also been applied to a waste-water treatment process in Slovenia by D. Dovzan and was published in IEEE Transactions on Fuzzy Systems, 2014, (ERA tier A*). Prof. L. Rutkowski used his method to develop a drift detection method, which is published in IEEE Transactions on Neural Networks and Learning Systems, 2014 (ERA tier A*). Dr. Pratama proposed an enhanced version of PANFIS termed Generic Evolving Neuro-Fuzzy Inference System (GENEFIS), published in IEEE Transactions on Fuzzy Systems [3] (Tier A*, IF: 8.8). GENEFIS not only exhibits an evolving working framework but also

demonstrates the plug-and-play learning scenario. This work has received over 34 citations within one year of publication and has generated several important works. For example, M. Mohammed et al. made use of this method in Fuzzy Min-Max Neural Networks, and published their results in IEEE Transactions on Neural Networks and Learning Systems, 2015 (ERA tier A*). This method was also used to develop autonomous clustering method by E. Lughofer, whose work was published in Information Sciences, 2014 (Q1 journal). Both GENEFIS and PANFIS have principally been devised for the regression problem, which has a continuous target function. Neither algorithm is sufficiently robust to deal with classification problems. To correct this shortcoming, an evolving classifier called Parsimonious Classifier (pClass) was proposed in [4], published in IEEE Transactions on Fuzzy Systems. Recently, Dr. Lughofer with assistance from Dr. Pratama successfully developed GEN-SMART-EFS [13], which borrows some ideas of GENEFIS. Dr. Pratama has pioneered the idea of the evolving type-2 fuzzy classifier [6], which constructs a flexible learning machine based on the type-2 fuzzy system. This work is published by IEEE TFS. To the best of our knowledge, this is the first work that utilizes the type-2 fuzzy system for data streams classification problems. This idea is extended to the scope of recurrent network architectures and is equipped with some novel learning modules in [7]. It was recently accepted by IEEE TFS a few days ago. Dr. Lughofer and Dr. Pratama developed an online active learning strategy for data stream regression in [40]. This paper is under consideration by IEEE TFS.

Meta-Cognitive Learning

Although the evolving system is effective for an online learning scenario, it is not scalable for very large data streams. This issue motivated Dr. Pratama to undertake an in-depth study of machine learning based on prominent theories of psychology. Generic Classifier (gClass) was proposed in his publication [11] (Neurocomputing, Q1 journal, IF:2.1) and actualises the three components of meta-cognitive learning: what-to-learn, how-to-learn, and when-to-learn, with sample deletion strategy, sample learning strategy, and sample reserved strategy. All the learning scenarios of gClass work under an incremental, semi-supervised mechanism. gClass has been improved using a recurrent network topology in his work published by IEEE TFS [5] (Tier A*, IF: 8.8). This attempt aims to resolve the temporal system dynamic and deal with the unknown system order. In this paper, Dr. Pratama's contribution can be seen in the six novel learning scenarios embedded in rClass. Another important contribution of Dr. Pratama in the field of the metacognitive learning can be seen in his recent work of eT2ELM, published by IEEE TCB [8] (Tier A, IF:6.2). This work combines three emerging machine learning techniques: extreme learning machine, metacognitive learning, and type-2 fuzzy system. gClass was recently extended to the scope of the type-2 fuzzy system in [12], published by Neurocomputing (Q1 journal, IF: 2.1). This work was extended in [39]. This work was currently under review in Neurocomputing. Because of his work on metacognitive learning, Dr. Pratama has been invited as the keynote speaker at ICAMIMIA 2015, Indonesia - http://www.icamimia.org/speaker/.

Deep Learning

Dr. Pratama's track record in the area of deep learning can be viewed in his two papers with his collaborators [41], [43]. The multi-view learning strategy for a popular deep network, namely convolutional neural network, was proposed in [41]. This learning algorithm is used to solve the problem of multi-document summarization. In [43], a new attention pooling strategy and a bidirectional LSTM was proposed for sentence modelling. These two papers are currently under consideration by IEEE TCB (Q1 journal, IF: 4.3).

Text Mining

Dr. Pratama's experience in text mining can be observed in [41],[43],[45]. In [41], Dr. Pratama along with his research collaborator has successfully developed the so-called multi-view convolutional neural network (MVCNN) to perform the multi-document summarization. In [43], Dr. Pratama and his team solve the problem of sentence modelling using attention pooling-based CNN. In this work, we also offer a new recurrent neural network, namely bidirectional LSTM. In [45], Dr. Pratama and his student develop an evolving type-2 web news mining, which allows classification of web news article in the online real-time manner. This is made possible by a proposal of an evolving algorithm, evolving type-2 classifier, which is capable of handling streaming text data with high efficiency.

Tool Condition Monitoring Problem

Tool condition monitoring and prediction play a critical role in high-speed machining processes. Undetected or premature tool failures can impose to costly scrap or rework arising from damaged surface finishing, and loss of dimensional accuracy or possible damage to the workpiece and machine. More specifically, in the high precision machining industry, the development of a self-adaptive and integrated system capable of monitoring performance degradation and workpiece integrity under various operational conditions under minimum operator's supervision is urgently required. However, predicting tool wear accurately in the complex manufacturing process is quite challenging due to the nonlinear and uncertain natures of machining processes. In [10], Dr. Pratama initiates the use of the adaptive fuzzy neural network for an intelligent tool condition monitoring approach of a ball nose end milling process. This work, however, relies on input features extracted from the Force signal. Although the force signal presents the most informative indicator of the tool wear, a sensor to capture the force signal, namely dynamometer, is costly and has to be installed at a correct position to allow in-situ signals to be captured, processed, analysed, and transformed into useful reference models for condition and performance monitoring. In [25], we pioneered the use of vibration signal for tool wear prediction and it is shown that the vibration signal is a viable alternate of the force signal.

Intelligent Control System

Dr. Pratama research expertise involves control system design utilising computational intelligence techniques. He developed several intelligent controllers using the concept of fuzzy neural network. He also did research in the area of the networked control system, where he applied the intelligent controller and designed intelligent techniques to handle the packet loss and time-delay problem. this expertise is evidenced in his publications [30]-[37].

B. Research Plan

This research aims to address the research question: How can the issue of uncertainty in learning from data streams be handled to attain high predictive accuracy while retaining low complexity in data stream mining? Learning from large data streams is a research area of growing interest because large volumes of data are continuously generated from sensors, the Internet, etc., at a high incoming rate. Researchers in the area of fuzzy systems have pioneered the notion of evolving fuzzy systems (EFSs). EFSs offer a plausible solution for learning from data streams because they offer a flexible working framework which adapts to any variation in data trends. EFSs are also scalable for deployment in online real-time scenarios because they work in the single-pass mode. Furthermore, EFSs characterise the transparent trait of fuzzy systems via human-like linguistic rules and emulate the approximate reasoning ability of human beings which is able to cope with the uncertain, imprecise, and inaccurate nature of real-world problems. However, four uncertainty issues in learning from large data streams have not been explored in current EFS research:

1) *Uncertainty in real-time situations*: Although EFSs operate in incremental learning scenarios, which is claimed to be a cost-effective way to mine data streams, existing EFSs still need to exploit all incoming data without being able to rule out superfluous data streams for model updates, thereby resulting in the over-fitting issue and being computationally intractable for processing large data streams. In addition, labelling costs in the large-scale classification problem are prohibitive because it requires intensive operator intervention. To date, most EFSs still implement a fully-supervised working principle, which requires all data streams be annotated by a human expert.
2) *Uncertainty in data distribution*: Uncertainty in data distribution reflects a situation in which the input and/or output concepts do not follow a fixed and predictable data distribution. This issue is also known as concept drift in the literature. In the classification problem, uncertainty in data distribution can be also perceived in the existence of class overlapping, which leads to a confusion of classifiers in classifying data points.
Existing EFSs have matured to cope with abrupt drift because they adopt an open structure principle which captures rapidly changing environments. However, it does not take into account other types of concept drift: gradual, incremental, cyclic. The gradual drift is more difficult to handle because it cannot be detected by the drift detection method in a structural learning scenario and cannot be addressed by the parameter learning scenario either. Such drift gradually interferes with the current data distribution which undermines predictive accuracy more severely. Incremental drift often causes an oversized rule, whose predictive accuracy may be severely affected due to the limited specification of the rule concept. On the other hand, cyclic concept drifts often cause the catastrophic forgetting of previously valid knowledge because current EFSs lack the capability to perform the rule recall mechanism. In other words, a fuzzy rule, pruned in an earlier training episode, cannot be reactivated in the future. Another underlying drawback of existing drift handling strategies is the global principle which assumes drift takes place in the same intensity, speed, type and in the whole space. In fact, drift occurs locally with unique characteristics in each region.
3) *Uncertainty in data representation*: Real-world data streams often exhibit inexact, inaccurate and uncertain characteristics which induce uncertainty in data representation. This phenomenon occurs as a result of disagreements in expert knowledge, noisy measurements, noisy data or uncertainty of operators during labelling cycles (e.g. due to inconsistency resulting from fatigue, boredom etc.). Existing EFSs are mostly crafted in the context of the type-1 fuzzy rule, which possesses a crisp and certain membership degree. This rule is not sufficiently robust to overcome uncertainty in data representations. As the data do not truly represent the system dynamics, the identification of proper fuzzy rules as necessitated in the type-1 fuzzy system becomes an extremely difficult task.
4) *Uncertainty in data dimension:* The curse of dimensionality is another underlying issue in mining large data streams. In addition to the increase of computational complexity and memory requirement, the curse of dimensionality makes a learning problem hard to solve because the input dimension is inherent to the sample size. It is evident that a model can achieve higher accuracy after performing dimensionality reduction or the feature selection process.
In the realm of EFSs, the feature selection process is assumed to have been carried out offline in the pre-training process using pre-recorded samples. This fact is not in line with the online learning spirit of EFSs, which aims to minimise the use of the pre- and/or post-training steps. Conversely, existing feature selection scenarios adopt the batched learning mode or require the multi-pass learning procedure. As an input feature cannot be recalled in the future once discarded, this problem causes the

discontinuity of the training process, which at least warrants a retraining phase from scratch. To the best of our knowledge, this issue is uncharted territory in all the existing work.

The aim of this study is to advance so-called evolving fuzzy systems (EFSs) by improving their robustness against uncertainty in large data streams. *This study provides an online real-time solution for EFSs, which directly answers the four uncertainty issues without incurring additional pre-and/or post-training scenarios.*

This comprises four tasks:

Task 1: An online active learning scenario for both regression and classification tasks will be developed. Specifically, an enhanced sample selection strategy, going beyond commonly used certainty-based sampling approaches and a self-labelling strategy within a cascaded layered evolving system architecture will be proposed to minimise the use of ground truth in labelling data streams (Issue 1).

Task 2: A drift handling mechanism will be proposed. The drift handling strategy will not only focus on the drift detection scenario to tackle abrupt drift, it will also devise the rule forgetting scenario and the rule recalls scheme to resolve gradual, incremental, and cyclic drift (Issue 2). The drift handling strategy will be capable of addressing concept drift at the local level in accordance with its type, rate, direction, and intensity.

Task 3: Evolving general type-2 fuzzy systems (eGT2FS) will be proposed. This work will exploit the fuzzy-fuzzy set nature of the type-2 fuzzy system to deal with uncertainty in data representation (Issue 3).

Task 4: A dynamic feature selection strategy will be designed. The proposed method will not only reduce the input dimension but will also allow an input feature to be brought back when it becomes valid again in the future (Issue 4). Note that all learning components developed in this project in tasks 1-4 will run completely in the single-pass learning mode, satisfying the online real-time learning requirement.

Task 5: Application of the advanced evolving fuzzy systems in a tool condition monitoring problem of a complex manufacturing process and a real-world web news mining problem.

This project outputs a unified methodology for online real-time data analytics to overcome the four types of uncertainties in large data streams.

Teaching Statement

Dr. Pratama has strong teaching commitment and aims to deliver high-quality teaching to students. He has excellent track record in teaching with above university average of student feedback. His teaching philosophy always focusses on student's experience and utilises state-of-the-art teaching resources and tools, allowing students to easily understand the subject. His teaching actualises the research inform teaching concept, which brings his latest research result to the student. He is keen to link between research and teaching. Dr. Pratama is also experienced in conducting blended learning, which is implemented in his current subjects, and in handling a large class, which requires tutor's coordination. In this year at LTU, Dr. Pratama is a subject coordinator of two subjects: Information Technology Fundamental (ITF) and Decision Support System.

Dr. Pratama is also experienced in curriculum development. He is current developing, a brand-new subject, namely Data Exploration and Visualisation. This subject is designed for a new master course of the LTU - Master of Data Science. This subject puts forward the most frequently encountered problems by data scientists in practice and offers effective solutions from the most up-to-date techniques proposed in the machine learning community. This subject also cover data visualisation and related technologies use in the field of visual analytics. Dr. Pratama is involved in the course development. He plays a major role in the establishment of the Master of Data Science in LTU, starting in semester 2 this year. Dr. Pratama is recently offered a visiting professorship at Institut Teknologi Sepuluh Nopember, Indonesia.

Curriculum Vitae

DOB : 8th of August 1988
Country of Citizenship : Indonesia
Present appointment :
▫ Lecturer (Assistant Professor), Department of Computer Science and IT, La Trobe University, Australia.

▫ Editor in Chief of International Journal of Business Intelligence and Data Mining (ERA Ranking: C, SJR: 0.2 http://www.inderscience.com/jhome.php?jcode=IJBIDM, recently appointed)

▫ Consultant, LifeBytes, Australia (htttp://lifebytes.com.au)

▫ Visiting Research Scientist, Nanyang Technological University, Singapore (August 2016)

▫ Visiting Professor, Institut Teknologi Sepuluh Nopember, Indonesia (August 2016)

Academic Qualifications
1) Ph.D. in Electrical Engineering (March 2012-August 2014), ADFA, UNSW, Canberra, Australia (The minimum period of Ph.D. candidature is 3 years in UNSW, however, I successfully obtained Ph.D. in 2.5 years due to excellent performance and achievement).
2) M.SC in Computer Control and Automation (May 2010-May 2011), Nanyang Technological University (NTU), Singapore.
3) B.Eng in Electrical Engineering (major: control system), Cum Laude, (August 2006-March 2010), Institut Teknologi Sepuluh Nopember, Indonesia.

Summary of Work Experience
1)Lecturer (Assistant Professor), Department of Computer Science and IT, La Trobe University (Nov 2015-Now)
2)ARC Postdoctoral Research Associate, QCIS, FEIT, UTS (August 2014-Nov 2015), Supervisor: Prof.Jie Lu (Associate Dean Research, FEIT, UTS).
3)Project officer, NTU, Singapore (May 2010- December 2011), Supervisor: Prof. Er Meng Joo (Professor, EEE, NTU).

Research Projects: I have participated in the following funded research projects.
▫ Fuzzy Transfer Learning for Prediction in Data-Shortage and Rapidly-Changing Environments, ARC Discovery Project, *Role:* Postdoctoral Research Fellow (August 2014-Now).
▫ Evolving Type-2 Fuzzy System, 2014 FEIT Research Seed Fund Grant (category B), *Role:* Principal Investigator (September 2014-December 2014).
▫ Semi-supervised Evolving Neuro-Fuzzy System, UNSW research publication fellowship, *Role:* Principal Investigator (August 2014- December 2014).
▫ Development of Intelligent Techniques for Modelling and Control Complex Manufacturing System, A-Star SERC research project, *Role:* Project Officer (May 2010-December 2011).

Scholarship and Fellowship

1. 2014 FEIT Research Seed Fund Grant (Category B), FEIT, UTS ($ 3K).
2. Research Publication Fellowship, UNSW, Canberra ($ 6K).
3. Postgraduate Research Support Scheme round 2 2012, UNSW, Canberra ($ 1.75K).
4. School of Engineering and Information Technology Travel Grant, UNSW, Canberra ($ 5 K).
5. International Postgraduate Research Scholarship (IPRS), UNSW.

Award and Prizes

1) The best paper award, SETN, Ioannina, 15-17 May 2014.
2) SEIT high impact publications award 2013 for HDR Students, UNSW, Canberra ($ 3K).
3) SEIT high impact publications award 2014 for HDR Students, UNSW, Canberra ($ 3K).
4) The prestigious engineering achievement award, Institute of Engineer, Singapore (2011).
5) The best final-year project, Electrical Engineering Department, ITS, Indonesia (March 2010).

Keynote Speaker

Keynote Speaker at ICAMIMIA conference, 2015 (http://www.icamimia.org/speaker-workshop/)

Professionals

1. Editor in Chief, International Journal of Business Intelligence and Data Mining (ERA Ranking: C, SJR: 0.2, http://www.inderscience.com/jhome.php?jcode=IJBIDM), (16/06/2016-Now)
2. Program Committee: ICMLA 2013,2014 and 2015; EAIS, 2014; ICMIMIA, 2015
3. Reviewer in highly referred journals such as IEEE TFS, IEEE TNNLS, IEEE Transactions on Cybernetics, Neurocomputing, Fuzzy sets and Systems, SOCO.
4. Editorial Board Member, The Open Automation and Control Systems Journal, http://www.bentham-open.com/TOAUTOCJ/home/ (July 2016-Now)
5. Associate Editor, The journal of mathematic, statistics, and applications, (March 2016-Now)

PhD Supervision

Primary supervisor, Choiru Zain, Ph.D., SEMS, La Trobe University
Primary supervisor, Marwah Ahmed, M.Sc, SEMS, La Trobe University
Primary supervisor, Caleb Stott, Honours, SEMS, La Trobe University

Teaching Record

Subject Coordinator and Lecturer

1. Information Technology Fundamental, Semester 1 2016
2. Decision Support Systems, Semester 1 206

Subject Development

1 Data Exploration and Visualisation, Brand New Subject for Master in Data Science course (semester 2, 2017)

Referee

1. Prof. Witold Pedrycz, Professor at ECE University of Alberta and Canada Research Chair, Canada, email: wpedrycz@ualberta.ca
2. Prof. Plamen Angelov, School of Computing and Communications, Lancaster University, UK, email: p.angelov@lancaster.ac.uk
3. Prof. Er Meng Joo, Professor at EEE NTU, Singapore, email: emjer@ntu.edu.sg
4. Prof. Jie Lu, Professor at QCIS, UTS, Australia, email: jie.lu@uts.edu.au

5. Dr. Edwin Lughofer, Key Researcher, JKU, Austria, email: edwin.lughofer@jku.at
6. A/Prof. Chee Peng Lim, Associate Professor, Deakin University, Australia, email: chee.lim@deakin.edu.au
7. A/Prof. Agus Budiyono, Associate Professor, RMIT, Australia, email: agus.budiyono@rmit.edu.au

// referee reports are to be sent directly by the referees to the recruitment team//

Publications

Scholarly Book Chapters

1. *M.Pratama, S.Anavatti, E.Lughofer, "An Incremental Classification from Data Streams with Parsimonious Classifier", *Lecture Notes in Computer Science: Artificial Intelligence – Methods and Applications*, Vol.8445, pp.15-28, (2014).

[Core ranking: C, PhD student at UNSW, citations – ISI: 1]

2. **M.Pratama**, M. J. Er, X. Li, L. San, R. J. Oentaryo, L.-Y. Zhai, A. J. Torabi, and I. Arifin, "Genetic Dynamic Fuzzy Neural Network (GDFNN) for Nonlinear System Identification", *Lecture Notes in Computer Science: Advances in Neural Networks – ISNN 2011*, Vol.6676, pp.525-534, (2011).

[ERA Ranking: C, Master student at NTU, citations: Google Scholar: 4, Scopus: 3]

Refereed Journal Articles

3. ***M.Pratama**, S.Anavatti, E.Lughofer, "GENEFIS: Towards an Effective Localist Network", ***IEEE Transactions on Fuzzy Systems***, Vol.2(3), pp.547-562, (2014).

[ERA Ranking: A*, Impact Factor: 8.8, Journal Ranking: 2/121, SJR: 5.15(Q1), PhD student at UNSW, citations – Google Scholar: 38, ISI: 14, Scopus: 16]

4. ***M.Pratama**, S.Anavatti, M-J.Er, E.Lughofer, "pClass: An Effective Classifier for Streaming Examples", ***IEEE Transactions on Fuzzy Systems***, online and in press, Vol.23(2), pp.369-386, (2015).

[ERA Ranking: A*, Impact Factor: 8.8, Journal Ranking: 1/121, SJR: 5.15(Q1), PhD student at UNSW, citations – Google Scholar: 24, ISI: 9, Scopus: 8]

5. ***M.Pratama**, S.Anavatti, J.Lu, "Recurrent Classifier Based on an Incremental Meta-cognitive-based Scaffolding Algorithm", ***IEEE Transactions on Fuzzy Systems***, Vol.23(6), pp. 2048-2066, (2015). **[ERA Ranking: A*, Impact Factor: 8.8, Journal Ranking: 1/121, SJR: 5.15(Q1), Research Associate at UTS, citations – Google Scholar: 10, ISI: 4, Scopus: 5]**

6. ***M. Pratama**, J. Lu, G. Zhang, "Evolving Interval Type-2 Fuzzy Classifier", ***IEEE Transactions on Fuzzy Systems***, Vol. 24(3), pp. 574-589, (2016)

[ERA Ranking: A*, Impact Factor: 8.8, Journal Ranking: 1/121, SJR: 5.15(Q1), Research Associate at UTS, citations – Google Scholar: 6]

7. ***M.Pratama,** J.Lu, E. Lughofer, G. Zhang, M-J. Er, "Incremental Learning of Concept Drift Using Evolving Type-2 Recurrent Fuzzy Neural Network", accepted for publication at ***IEEE Transactions on Fuzzy Systems***, (08-July-2016)

[ERA Ranking: A*, Impact Factor: 8.8, Journal Ranking: 1/121, SJR: 5.15(Q1), Lecturer at LTU]

8. ***M. Pratama**, G. Zhang, M-J. Er, S. Anavatti, "An Incremental Type-2 Meta-cognitive Extreme Learning Machine", ***IEEE Transactions on Cybernetics***, online and in press, DOI: 10.1109/TCYB.2016.2514537

[ERA Ranking: A, Impact Factor: 6.2, Journal Ranking: 3/121, SJR: 3.28(Q1), Lecturer at LTU]
9. ***M.Pratama***, S.Anavatti, P.Angelov, E.Lughofer, "PANFIS: A Novel Incremental Learning Machine", ***IEEE Transactions on Neural Networks and Learning Systems***, Vol.25(1), pp.55-68, (2014).

[ERA Ranking: A*, Impact Factor: 4.4, Journal Ranking: 7/121, SJR: 1.66(Q1), PhD student at UNSW, citations – Google Scholar: 65, ISI: 39 (highly cited paper), Scopus: 45, nominated for IEEE TNNLS prestigious publication award and supported by 5 IEEE fellows]
10. ***M.Pratama***, M-J.Er, X.Li, R.J.Oentaryo, E.Lughofer, I.Arifin, "Data-Driven Modelling Based on Dynamic Parsimonious Fuzzy Neural Network", ***Neurocomputing***, Vol.110, pp.18-28, (2013).

[ERA Ranking: B, Impact Factor: 2.1, Journal Ranking: 36/121, SJR: 1.2(Q1), master student at NTU, citations – Google Scholar: 19, ISI: 12, Scopus: 15]
11. ***M.Pratama,*** J.Lu, S.Anavatti, E.Lughofer, C-P.Lim, "An Incremental Meta-Cognitive-based Scaffolding Fuzzy Neural Network", ***Neurocomputing***, Vol. 171, pp.89-105, (2016)

[ERA Ranking: B, Impact Factor: 2.1, Journal Ranking: 36/121, SJR: 1.2(Q1), Ph.D. student at UTS, citations: Google Scholar: 3, ISI: 2, Scopus: 1]
12. ***M. Pratama***, J.Lu, E. Lughofer, G. Zhang, S. Anavatti, " Scaffolding Type-2 Classifier for Incremental Learning under Concept Drifts", ***Neurocomputing***, Vol.191, pp. 304-329, (2016)

[ERA Ranking: B, Impact Factor: 2.1, Journal Ranking: 36/121, SJR: 1.2(Q1), Lecturer at LTU]
13. ***M. Pratama***, E. Lughofer, C-P. Lim, W. Rahayu, T. Dillon, A. Budiyono, " pClass+: A novel Evolving Semi-supervised Classifier", accepted for publication at ***International Journal of Fuzzy Systems***, 23-July-2016

[ERA Ranking: C, Impact Factor: 1.1, Journal Ranking: 76/121, SJR: 0.63(Q2), Lecturer at LTU]
14. *E.Lughofer, C.Cernuda, **M.Pratama**, "Generalized Smart Evolving Fuzzy Systems", ***Evolving System***, Vol. 6(4), pp. 269-292, (2015)

[SJR: 0.77(Q2), Ph.D. student at UNSW, citations: Google Scholar: 13, Scopus: 1]
15. *R. Ventakesan, M. Dave, M-J. Er, **M. Pratama**, "A Novel Online Multi-label Classifier for High-Speed Streaming Data Applications ", *accepted for publication at **Evolving Systems***, 07-July-2016

[SJR: 0.77(Q2), Lecturer at LTU]
16. **M.Pratama**, S.Rajab, M.J.Er, "Extended Approach of ANFIS in Cascade Control", *International Journal of Computer and Electrical Engineering,* Vol.3(4),pp.572-576, (2011).

[Undergraduate student at ITS, citations – Google Scholar: 3]
17. C. Zain, **M. Pratama**, "Multimodal Image Retrieval using PLSA and Microstructure Descriptor", *Journal of Mathematics, Statistics, and Applications,* Vol. 1, (2016)

[Invited Contribution]
Refereed Conference Articles
18. ***M.Pratama,** E. Lughofer, W. Rahayu, T. Dillon, M-J. Er, "Evolving Type-2 Recurrent Fuzzy Neural Network", accepted for publication at *the 2016 IEEE World Congress on Computational Intelligence*, 17-March-2016

[Core Ranking: A, Lecturer at LTU]
19. *****Y. Zhang, M-J. Er, N. Wang, **M. Pratama**, " Sentiment Classification Using Comprehensive Attention Recurrent Models", accepted for publication at *the 2016 IEEE World Congress on Computational Intelligence*, 17-March-2016

[Core Ranking: A, Lecturer at LTU]
20. *F. Liu, M-J. Er, Y. Zhang, N. Wang and **M. Pratama**, "User-level Twitter Sentiment Analysis with a Hybrid Approach" accepted for publication at *the 2016 IEEE World Congress on Computational Intelligence*, 17-March-2016

[Core Ranking: A, Lecturer at LTU]
21. R. Venkatesan, M-J Er, S. Wu and **M. Pratama**, "A Novel Online Real-time Classifier for Multi-label Data Streams" accepted for publication at *the 2016 IEEE World Congress on Computational Intelligence*, 17-March-2016

[Core Ranking: A, Lecturer at LTU]
22. Y. Zhong, M-J. Er, N. Wang, **M.Pratama**, "Extractive Document Summarization Based on Convolutional Neural Networks" accepted for presentation at IECON, Florence 2016

[CORE Ranking: A, Lecturer at LTU]
23. *M-J. Er, F.Liu, Y. Zhang, N. Wang and **M. Pratama**, "User-level Twitter Sentiment Analysis with a Hybrid Approach" accepted for publication at *the 2016 International Symposium on Neural Network*, 17-March-2016

[Core Ranking: C, Lecturer at LTU]
24. ***M.Pratama**, S.Anavatti, E.Lughofer, "Evolving Fuzzy Rule-Based Classifier Based on GENEFIS", in *Proceedings of the 2013 IEEE Conference on Fuzzy Systems (FUZZ-IEEE),* pp.1-8,Hyderabad, India, (2013)

[CORE Ranking: A, Ph.D. student at UNSW, citations – Google Scholar: 7]
25. ***M.Pratama**, M-J.Er, S.Anavatti, E.Lughofer, "A Novel Meta-cognitive-Based Scaffolding Classifier to Sequential Non-Stationary Classification Problems", in *Proceedings of the 2014 IEEE Conference on Fuzzy Systems (FUZZ-IEEE)*, pp.369-376, Beijing, China, (2014).

[CORE Ranking: A, Ph.D. student at UNSW, citations - Google Scholar: 8, ISI: 2, Scopus: 5]
26. ***M.Pratama**, J.Lu, G.Zhang, "An Incremental Interval Type-2 Neural Fuzzy Classifier", *Proceedings of the 2014 IEEE Conference on Fuzzy Systems (FUZZ-IEEE),* pp. 1-8.

[CORE Ranking: A, Research Associate at UTS, citations – Google Scholar: 1]
27. ***M. Pratama**, M. J. Er, X. Li, O. P. Gan, R. J. Oentaryo, L. San, L.-Y. Zhai, and I. Arifin, "Tool wear prediction using evolutionary dynamic fuzzy neural network

(EDFNN)", in *Proceedings of IECON 2011, 37th Annual Conference on IEEE Industrial Electronics Society*, pp. 4739-4744, Melbourne, Australia

[CORE Ranking: A, Master student at NTU, citations – Google Scholar: 3]
28. ***M. Pratama**, J.Lu, G.Zhang, "A Novel Meta-cognitive Extreme Learning Machine to Learning from Large Data Streams", *the 2015 IEEE Conference on Systems, Man and Cybernetics (SMC)*, pp. 2792-3797, HK

[CORE Ranking: A, Research Associate at UTS]
29. ***M.Pratama**, S.Anavatti, M.Garratt, E.Lughofer, "Online Identification of Complex Multi-Input-Multi-Output System Based on Generic Evolving Neuro-Fuzzy Inference System", in *Proceedings of the 2013 IEEE Conference on Evolving and Adaptive Intelligent Systems (under the scope of IEEE Symposium Series on Computational Intelligence)*, pp.106-113, Singapore, (2013)**[PhD student at UNSW, citations – Google Scholar: 2]**
30. ***M.Pratama**, J.Lu, S.Anavatti, J.A.Iglesias, "A Recurrent Meta-cognitive-based Scaffolding Classifier from Data Streams", in *Proceedings of the 2014 IEEE Conference on Evolving and Autonomous Learning Systems (under the scope of IEEE Symposium Series on Computational Intelligence)*, pp.132-149, Orlando, Florida, (2014)**[Research associate at UTS, citations – Google Scholar: 1]**
31. *E.Lughofer, C.Cermuda, **M.Pratama**, "Generalized Flexible Fuzzy Inference System", in *Proceedings of the 12th International Conference on Machine Learning and Applications*, pp.1-7, Miami, Florida, (2013)

[CORE Ranking: C, Ph.D. student at UNSW, citations – Google Scholar: 3, Scopus: 2]
32. M.Pratama, S.Rajab, M.J.Er, "Radial Basis Function Neuro Fuzzy in the Pressure Rig 38-714", in *Proceedings of the 3rd IEEE International Conference on Computer and Automation (ICCAE 2011)*, Chonqing **[Master student at NTU]**

33. M.Pratama, I.Arifin, M.Rameli, "Real Time Evaluation of Fuzzy Modulation in The Networked Control System with Delay", in *Proceedings of the 3rd IEEE International Conference on Computer and Automation (ICCAE 2011)*, Chongqing **[Master student at NTU]**

34. M.Pratama, M.J.Er, "ANFIS for DC Servo Velocity Control Using Static Identification" , in *Proceedings of the 3rd International Conference on Machine Learning and Computing***[Master student at NTU]**

35. M.Pratama, M.J.Er, "Genetic Based Optimization of ANFIS Controller for DC Servo Velocity Control Using Static Identification", in *Proceedings of the 3rd International Conference on Machine Learning and Computing*, Singapore**[Master student at NTU]**

36. M.Pratama, S.Rajab, I.Arifin, M.Rameli, "Real-Time Performance of Fuzzy PI+PD Self Tuning Regulator in Cascade Control", in *Proceedings of the International Conference on Industrial and Applied Mathematics*, 2010, Bandung, Indonesia **[Undergraduate student at ITS]**

37. **M.Pratama**, I.Arifin, M.Rameli, "Anti-Wind Up Method In Networked Control System", in *Proceedings of the 2009 International Student Conference on Advanced Science and Technology*, Seoul**[Undergraduate student at ITS]**

38. M.Pratama, I.Arifin, M.Rameli, "Experimental Comparison of Anti-Wind Up Fuzzy Method for Velocity DC Servo Controllers", in *Proceedings of the 2009 International Student Conference on Advanced Science and Technology*, Seoul**[Undergraduate student at ITS]**

39. M.Pratama, I.Arifin, M.Rameli, "Fuzzy Modulation for Networked Control System with Multiple Plants", in *Proceedings of the 1st International Seminar on Applied Technology,Science, and Art (APTECS)*, Surabaya, 2009 **[Undergraduate student at ITS]**

Other Research Output
Papers in the Pipeline
40. ***M. Pratama**, E. Lughofer, M-J.Er, C-P.Lim, " Data-Driven Modelling Based on Recurrent Interval-Valued Metacognitive Scaffolding Fuzzy Neural Network" submitted for publication at ***Neurocomputing***, under first round review, 1-05-2016

[ERA Ranking: B, Impact Factor: 2.1, Journal Ranking: 36/121, SJR: 1.2(Q1), Lecturer at LTU]
41. ***E.Lughofer, **M. Pratama**, "On-line Active Learning in Data Stream Regression employing Evolving Generalized Fuzzy Models with Certainty Sampling", submitted for publication at ***IEEE Transactions on Fuzzy Systems***, under second round review (major revision) 29-Oct-2015

[ERA Ranking: A*, Impact Factor: 8.8, Journal Ranking: 1/121, SJR: 5.15(Q1), Lecturer at LTU]
42. Z. Yong, M-J. Er, Z. Rui, **M.Pratama**, "Multi-view Convolutional Neural Networks for Multidocument Extractive Summarization", submitted for publication at ***IEEE Transactions on Cybernetics***, under third round review (minor revision), 08-Dec-2015

[ERA Ranking: A, Impact Factor: 6.2, Journal Ranking: 3/121, SJR: 3.28(Q1), Lecturer at LTU]
43. E. Lughofer, S. Kindermann, **M.Pratama**, " Top-Down Sparse Fuzzy Inference Systems Modeling from Data with Improved Coverage", submitted for publication at ***International Journal of Fuzzy Systems***, under first round review,18-March-2016

[ERA Ranking: C, Impact Factor: 1.1, Journal Ranking: 76/121, SJR: 0.63(Q2), Lecturer at LTU]
44. Y. Zhong, M-J. Er, N. Wang, **M.Pratama** Attention Pooling-based Convolutional Neural Networks for Sentence Modeling, submitted for publication at ***Information Sciences*****,** under first round review, 28-May-2016

[ERA Ranking: B, Impact Factor: 6.2, Journal Ranking: 3/121, SJR: 3.28(Q1), Lecturer at LTU]
45. **M. Pratama**, E. Lughofer, P. Angelov, M-J. Er, "A Recurrent Type-2 Metacognitive Random Vector Functional Link Network", submitted for publication at ***IEEE Transactions on Neural Networks and Learning Systems***, under first round review, 01-July-2016

[ERA Ranking: A*, Impact Factor: 4.4, Journal Ranking: 7/121, SJR: 1.66(Q1), Lecturer at LTU]
46. C. Zain, **M. Pratama**, E. Lughofer, M-J. Er, "Evolving Type-2 Webs News Mining", submitted for publication at ***Neurocomputing***, under first round review, 28-June-2016

[ERA Ranking: B, Impact Factor: 2.1, Journal Ranking: 36/121, SJR: 1.2(Q1), Lecturer at LTU]
47. S.G. Anavatti, S. Biswas, J. T. Colvin, **M. Pratama**, "A Hybrid Algorithm for Efficient Path Planning of Autonomous Ground Vehicles", submitted for publication at ***International Conference on Control, Automation, Robotics and Visions***, Phuket, 2016

[CORE Ranking: A, Lecturer at LTU]
48. S. Biswas, S. G. Anavatti, M. A. Garratt, **Mahardhika Pratama**, "Simultaneous Replanning with Vectorized Particle Swarm Optimization Algorithm", submitted for publication at ***International Conference on Control, Automation, Robotics and Visions***, Phuket, 2016

[CORE Ranking: A, Lecturer at LTU]
Citations
Google Scholar – 2013: 10, 2014: 42, 2015: 82, 2016: 74, total: 209, h-index: 7
ISI – 2013: 3, 2014: 15, 2015: 44, 2016: 25, total: 88, h-index: 4
Scopus – 2013: 4; 2014: 26, 2015: 39, 2016: 33, total: 103, h-index: 5
// citations are accumulated from 2013
Special Issue
1. ***M.Pratama**, E.Lughofer, D. Wang, "Online Real-Time Learning Strategies for Data Streams ", *Neurocomputing,* expected date of publication, 1-March-2017

[ERA Ranking: B, Impact Factor: 2.1, Journal Ranking: 36/121, SJR: 0.9(Q1), Lecturer at LTU]
Special Session
1. ***M.Pratama**, M-J. Er, E. Lughofer, W. Rahayu, C-P. Lim, "Online Real-Time Learning Strategies for Large Data Streams", *the 2016 IEEE World Congress on Computational Intelligence,* July 2016

[Core Ranking: A, Lecturer at LTU]
2. J. Lu, C-T. Lin, G. Zhang, F.K. Hussain, V. Behbood, D. Wu, **M.Pratama**, M. Naderpour, "Handling Uncertainties in Big Data by Fuzzy Systems" *the 2016 IEEE World Congress on Computational Intelligence,* July 2016

[Core Ranking: A, Lecturer at LTU]
// paper citations were taken on July, 10th, 2016 //