

Assoc Professor. Manjeevan Singh Seera  
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## Biography

Ir. Dr. Manjeevan Singh Seera is a highly accomplished academic and industry professional, currently serving as an Associate Professor in Business Analytics and Deputy Head of School (Research) at the School of Business in Monash University Malaysia. He earned his Ph.D. in Computational Intelligence from Universiti Sains Malaysia and has published over 60 peer-reviewed journal and conference papers in his field.

With more than 18 years of experience in academia and industry, Manjeevan has established himself as an expert in his field. Prior to his current role, he served as a Data Analytics Manager at Bank Negara Malaysia and gained extensive experience in the electronic manufacturing industries working with prominent companies like Intel and Flextronics. Manjeevan's research focuses on machine learning principles and applications in finance and engineering, with a particular interest in developing advanced machine learning models for Fintech applications. His current research work centers around the detection and prediction of fraudulent financial transactions. His dedication and contributions to the field of business analytics have earned him high regard among his peers and students alike.

## Qualifications

Computational Intelligence, PhD, Universiti Sains Malaysia (University of Science Malaysia)  
Award Date: 19 Sept 2012

16 Mar 2023 → ... Professional Engineer, PE

2 Jul 2015 → ... Registered Electrical Energy Manager, REEM

14 May 2015 → ... Chartered Engineer, CEng

## Employment

### Associate Professor

Malaysia Sch of Business  
MONASH UNIVERSITY  
1 Sept 2020 → present

### Manager, Data Analytics

Bank Negara Malaysia  
Kuala Lumpur, Malaysia  
1 Sept 2018 → 1 Sept 2020

### Adjunct Research Fellow

Swinburne University of Technology, Sarawak  
Kuching, Malaysia  
1 Oct 2016 → 31 Dec 2020

## Projects

### Enhancing Sustainable Growth Among Malaysian SMEs

Khaw, K., Avvari, V. M., Seera, M. S., Guglyuvatyy, E. & Chang, L. H.  
1/12/23 → 31/03/25

### Formulating a Comprehensive Legal Framework for Blockchain Technology in the Energy Industry of Malaysia

Karim, R., Seera, M. S., Alam, N., Trakic, A. & Kunhibava, S. B.  
1/10/23 → 30/09/25

## **Multimodal cyber-bully detection in ASEAN Languages**

Seera, M. S., Saha, S. & Pasupa, K.

1/09/21 → 31/08/23

## **Impacts**

### **Preventing Cyberbullying using Machine Learning**

Manjeevan Singh Seera (Participant) & Sriparna Saha (Collaborator)

### **Sustainable Work through Women-in-tech Application for Older Women in Malaysia and Thailand: Integrating Action Research and Design Science Approach**

Pei-Lee Teh (Participant), Ewilly J. Y. Liew (Participant), Stephanie Cheah (Participant), Soo Yeong Ewe (Participant), Manjeevan Singh Seera (Participant), Chong Chun Yong (Participant), Tin Tin Su (Participant) & Keith Hill (Participant)

## **Research outputs**

### **Navigating the landscape of concept-supported XAI: challenges, innovations, and future directions**

Shams Khoozani, Z., Sabri, A. Q. M., Seng, W. C., Seera, M. & Eg, K. Y., 2024, (Accepted/In press) In: Multimedia Tools and Applications. 51 p.

### **An investigation into predictive modelling of Malaysian stock prices using an optimum feature set**

Chia, Q. F., Seera, M., Lim, L. L. & Lai, W. K., 7 Dec 2023, *Proceedings of the 4th Tarumanagara International Conference of the Applications of Technology and Engineering (TICATE) 2021*. Tjahjono, B., Teng, S. S., Liang, A. R. T., Gopal, L., Hugeng, H., Chuang, C. & Soemardi, T. P. (eds.). American Institute of Physics, 7 p. 020095. (AIP Conference Proceedings; vol. 2680, no. 1).

### **Enhancing computer-aided cervical cancer detection using a novel fuzzy rank-based fusion**

Sahoo, P., Saha, S., Mondal, S., Seera, M., Sharma, S. K. & Kumar, M., Dec 2023, In: IEEE Access. 11, p. 145281-145294 14 p.

### **Malaysia State of Consumer Credit 2022**

Alam, N., Seera, M. S., Ying, E. L. J., Ray, S., Isik, T. S., Majaman, N. E., Metha, A., How, H. & Namasivayam, S., 24 Feb 2023, Malaysia: Monash University Malaysia. 42 p.

### **A deep learning framework for the detection of Malay hate speech**

Maity, K., Bhattacharya, S., Saha, S. & Seera, M., 2023, In: IEEE Access. 11, p. 79542-79552 11 p.

### **A parallel ensemble learning model for fault detection and diagnosis of industrial machinery**

Al-Andoli, M. N., Tan, S. C., Sim, K. S., Seera, M. & Lim, C. P., 2023, In: IEEE Access. 11, p. 39866-39878 13 p.

### **Credit card fraud detection using a hierarchical behavior-knowledge space model**

Nandi, A. K., Randhawa, K. K., Chua, H. S., Seera, M. & Lim, C. P., 20 Jan 2022, In: PLoS ONE. 17, 1, 16 p., e0260579.

### **Commercial photovoltaic performance optimization using genetic algorithms**

Seera, M., Tan, C. J., Randhawa, K. K. & Chong, K-K., 2022, *Artificial Intelligence and Environmental Sustainability: Challenges and Solutions in the Era of Industry 4.0*. Ong, H. L., Doong, R., Naguib, R., Lim, C. P. & Nagar, A. K. (eds.). 1st ed. Singapore Singapore: Springer, p. 117-130 14 p. (Algorithms for Intelligent Systems).

### **An intelligent payment card fraud detection system**

Seera, M., Lim, C. P., Kumar, A., Dhamotharan, L. & Tan, K. H., Jun 2021, (Accepted/In press) In: Annals of Operations Research.

**Performance analyses of various commercial photovoltaic modules based on local spectral irradiances in Malaysia using genetic algorithm**

Seera, M., Tan, C. J., Chong, K. K. & Lim, C. P., 15 May 2021, In: Energy. 223, 22 p., 120009.

**Feature extension of gut microbiome data for deep neural network-based colorectal cancer classification**

Mulenga, M., Abdul Kareem, S., Qalid Md Sabri, A., Seera, M., Govind, S., Samudi, C. & Mohamad, S. B., 2021, In: IEEE Access. 9, p. 23565-23578 14 p.

**Stacking and chaining of normalization methods in deep learning-based classification of colorectal cancer using gut microbiome data**

Mulenga, M., Kareem, S. A., Sabri, A. Q. M. & Seera, M., 2021, In: IEEE Access. 9, p. 97296-97319 24 p.

**Superpixels features extractor network (SP-FEN) for clothing parsing enhancement**

Ihsan, A. M., Loo, C. K., Naji, S. A. & Seera, M., Jun 2020, In: Neural Processing Letters. 51, 3, p. 2245-2263 19 p.

**Face image synthesis with weight and age progression using conditional adversarial autoencoder**

Anwaar, M., Loo, C. K. & Seera, M., Apr 2020, In: Neural Computing and Applications. 32, 8, p. 3567-3579 13 p.

**Meta-cognitive recurrent kernel online sequential extreme learning machine with kernel adaptive filter for concept drift handling**

Liu, Z., Loo, C. K., Pasupa, K. & Seera, M., Feb 2020, In: Engineering Applications of Artificial Intelligence. 88, 15 p., 103327.

**An improved fuzzy ARTMAP and Q-learning agent model for pattern classification**

Pourpanah, F., Wang, R., Lim, C. P., Wang, X., Seera, M. & Tan, C. J., 24 Sept 2019, In: Neurocomputing. 359, p. 139-152 14 p.

**Episodic memory multimodal learning for robot sensorimotor map building and navigation**

Chin, W. H., Toda, Y., Kubota, N., Loo, C. K. & Seera, M., Jun 2019, In: IEEE Transactions on Cognitive and Developmental Systems. 11, 2, p. 210-220 11 p.

**A hybrid model of fuzzy min-max and brain storm optimization for feature selection and data classification**

Pourpanah, F., Lim, C. P., Wang, X., Tan, C. J., Seera, M. & Shi, Y., 14 Mar 2019, In: Neurocomputing. 333, p. 440-451 12 p.

**Meta-cognitive recurrent recursive kernel OS-ELM for concept drift handling**

Liu, Z., Loo, C. K. & Seera, M., Feb 2019, In: Applied Soft Computing. 75, p. 494-507 14 p.

**A hybrid FAM-CART model for online data classification**

Seera, M., Lim, C. P. & Tan, S. C., May 2018, In: Computational Intelligence. 34, 2, p. 562-581 20 p.

**Quantum-inspired multidirectional associative memory with a self-convergent iterative learning**

Masuyama, N., Loo, C. K., Seera, M. & Kubota, N., Apr 2018, In: IEEE Transactions on Neural Networks and Learning Systems. 29, 4, p. 1058-1068 11 p.

**Improving the Fuzzy Min-Max neural network performance with an ensemble of clustering trees**

Seera, M., Randhawa, K. & Lim, C. P., 31 Jan 2018, In: Neurocomputing. 275, p. 1744-1751 8 p.

**Personality affected robotic emotional model with associative memory for human-robot interaction**

Masuyama, N., Loo, C. K. & Seera, M., 10 Jan 2018, In: Neurocomputing. 272, p. 213-225 13 p.

**Semi-supervised topo-Bayesian ARTMAP for noisy data**

Nooralishahi, P., Loo, C. K. & Seera, M., Jan 2018, In: Applied Soft Computing. 62, p. 134-147 14 p.

Credit card fraud detection using AdaBoost and majority voting

Randhawa, K., Loo, C. K., Seera, M., Lim, C. P. & Nandi, A. K., 2018, In: IEEE Access. 6, p. 14277-14284 8 p.

Motor fault detection and diagnosis based on a meta-cognitive random vector functional link network

Za'in, C., Pratama, M., Prasad, M., Puthal, D., Lim, C. P. & Seera, M., 2018, *Fault Diagnosis of Hybrid Dynamic and Complex Systems*. Sayed-Mouchaweh, M. (ed.). 1st ed. Cham Switzerland: Springer, p. 15-44 30 p.

Online semi-supervised multi-channel time series classifier based on growing neural gas

Nooralishahi, P., Seera, M. & Loo, C. K., Nov 2017, In: Neural Computing and Applications. 28, 11, p. 3491-3505 15 p.

Classification of transcranial Doppler signals using individual and ensemble recurrent neural networks

Seera, M., Lim, C. P., Tan, K. S. & Liew, W. S., 2 Aug 2017, In: Neurocomputing. 249, p. 337-344 8 p.

Classification of ball bearing faults using a hybrid intelligent model

Seera, M., Wong, M. L. D. & Nandi, A. K., Aug 2017, In: Applied Soft Computing. 57, p. 427-435 9 p.

Incremental clustering-based facial feature tracking using Bayesian ART

Islam, M. N., Loo, C. K. & Seera, M., Jun 2017, In: Neural Processing Letters. 45, 3, p. 887-911 25 p.

A robust incremental clustering-based facial feature tracking

Islam, M. N., Seera, M. & Loo, C. K., Apr 2017, In: Applied Soft Computing. 53, p. 34-44 11 p.

Application of emotion affected associative memory based on mood congruency effects for a humanoid

Masuyama, N., Islam, M. N., Seera, M. & Loo, C. K., Apr 2017, In: Neural Computing and Applications. 28, 4, p. 737-752 16 p.

Arm motion analysis using genetic algorithm for rehabilitation and healthcare

Obo, T., Loo, C. K., Seera, M., Takeda, T. & Kubota, N., Mar 2017, In: Applied Soft Computing. 52, p. 81-92 12 p.

A randomized neural network for data streams

Pratama, M., Angelov, P. P., Lu, J., Lughofer, E., Seera, M. & Lim, C. P., 2017, *Proceedings of 2017 International Joint Conference on Neural Networks, IJCNN 2017*. Jayne, C., Hammer, B. & King, I. (eds.). 1st ed. USA: IEEE, Institute of Electrical and Electronics Engineers, p. 3423-3430 8 p.

Motor fault detection and diagnosis using a hybrid FMM-CART model with online learning

Seera, M., Lim, C. P. & Loo, C. K., Dec 2016, In: Journal of Intelligent Manufacturing. 27, 6, p. 1273-1285 13 p.

Power quality analysis using a hybrid model of the fuzzy min-max neural network and clustering tree

Seera, M., Lim, C. P., Loo, C. K. & Singh, H., Dec 2016, In: IEEE Transactions on Neural Networks and Learning Systems. 27, 12, p. 2760-2767 8 p.

Classifying stress from heart rate variability using salivary biomarkers as reference

Liew, W. S., Seera, M., Loo, C. K., Lim, E. & Kubota, N., Oct 2016, In: IEEE Transactions on Neural Networks and Learning Systems. 27, 10, p. 2035-2046 12 p.

Hierarchical parallel genetic optimization fuzzy ARTMAP ensemble

Liew, W. S., Seera, M. & Loo, C. K., Oct 2016, In: Neural Processing Letters. 44, 2, p. 451-470 20 p.

Classification of implantable rotary blood pump states with class noise

Ooi, H. L., Seera, M., Ng, S. C., Lim, C. P., Loo, C. K., Lovell, N. H., Redmond, S. J. & Lim, E., May 2016, In: IEEE Journal of Biomedical and Health Informatics. 20, 3, p. 829-837 9 p.

Hybrid evolutionary neuro-fuzzy approach based on mutual adaptation for human gesture recognition  
Obo, T., Loo, C. K., Seera, M. & Kubota, N., May 2016, In: Applied Soft Computing. 42, p. 377-389 13 p.

Multi-channel Bayesian Adaptive Resonance Associate Memory for on-line topological map building  
Chin, W. H., Seera, M., Loo, C. K., Kubota, N. & Toda, Y., Jan 2016, In: Applied Soft Computing. 38, p. 269-280 12 p.

Data clustering using a modified fuzzy min-max neural network  
Seera, M., Lim, C. P., Loo, C. K. & Jain, L. C., 2016, *Soft Computing Applications: Proceedings of the 6th International Workshop Soft Computing Applications (SOFA 2014), Volume 1*. Balas, V. E., Kovačević, B. & Jain, L. C. (eds.). 1st ed. Cham Switzerland: Springer, p. 413-422 10 p. (Advances in Intelligent Systems and Computing; vol. 356).

Web-based career path model for human resource management  
Neoh, S. C., Tan, C. J., Seera, M. & Loo, C. K., 2016, In: Journal of Telecommunication, Electronic and Computer Engineering. 8, 12, p. 23-26 4 p.

A hybrid FAM–CART model and its application to medical data classification  
Seera, M., Lim, C. P., Tan, S. C. & Loo, C. K., 22 Nov 2015, In: Neural Computing and Applications. 26, 8, p. 1799-1811 13 p.

Classification of electrocardiogram and auscultatory blood pressure signals using machine learning models  
Seera, M., Lim, C. P., Liew, W. S., Lim, E. & Loo, C. K., 1 May 2015, In: Expert Systems with Applications. 42, 7, p. 3643-3652 10 p.

A modified fuzzy min-max neural network for data clustering and its application to power quality monitoring  
Seera, M., Lim, C. P., Loo, C. K. & Singh, H., Mar 2015, In: Applied Soft Computing. 28, p. 19-29 11 p.

Affect classification using genetic-optimized ensembles of fuzzy ARTMAPs  
Liew, W. S., Seera, M., Loo, C. K. & Lim, E., Feb 2015, In: Applied Soft Computing. 27, p. 53-63 11 p.

A hybrid model of fuzzy artmap and the genetic algorithm for data classification  
Seera, M., Liew, W. S. & Loo, C. K., 2015, *Neural Information Processing - 22nd International Conference, ICONIP 2015, Proceedings*. Lai, W. K., Liu, Q., Huang, T. & Arik, S. (eds.). Springer, p. 346-353 8 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 9490).

A review of online learning in supervised neural networks  
Jain, L. C., Seera, M., Lim, C. P. & Balasubramaniam, P., Sept 2014, In: Neural Computing and Applications. 25, 3-4, p. 491-509 19 p.

Condition monitoring of induction motors: a review and an application of an ensemble of hybrid intelligent models  
Seera, M., Lim, C. P., Nahavandi, S. & Loo, C. K., Aug 2014, In: Expert Systems with Applications. 41, 10, p. 4891-4903 13 p.

Transfer learning using the online fuzzy min–max neural network  
Seera, M. & Lim, C. P., Aug 2014, In: Neural Computing and Applications. 25, 2, p. 469-480 12 p.

A hybrid intelligent system for medical data classification  
Seera, M. & Lim, C. P., Apr 2014, In: Expert Systems with Applications. 41, 5, p. 2239-2249 11 p.

Online motor fault detection and diagnosis using a hybrid FMM-CART model  
Seera, M. & Lim, C. P., Apr 2014, In: IEEE Transactions on Neural Networks and Learning Systems. 25, 4, p. 806-812 7 p.

Probabilistic ensemble Fuzzy ARTMAP optimization using hierarchical parallel genetic algorithms

Loo, C. K., Liew, W. S., Seera, M. & Lim, E., Feb 2014, In: *Neural Computing and Applications*. 26, 2, p. 263-276 14 p.

A hybrid FMM-CART model for human activity recognition

Seera, M., Loo, C. K. & Lim, C. P., 2014, *2014 IEEE International Conference on Systems, Man, and Cybernetics, SMC 2014*. January ed. Vol. 2014-January. p. 182-187 6 p. (Conference Proceedings - IEEE International Conference on Systems, Man and Cybernetics).

An online transfer learning RBF neural network for cross domain data classification

Tan, S. C., Lim, C. P. & Seera, M., 2014, *Smart Digital Futures 2014*. IOS Press, p. 210-218 9 p. (Frontiers in Artificial Intelligence and Applications; vol. 262).

Condition monitoring of broken rotor bars using a hybrid FMM-GA model

Seera, M., Lim, C. P. & Loo, C. K., 2014, *Neural Information Processing - 21st International Conference, ICONIP 2014, Proceedings*. Loo, C. K., Yap, K. S., Wong, K. W., Teoh, A. & Huang, K. (eds.). Springer, p. 381-389 9 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 8836).

Transfer learning using the online FMM model

Seera, M., Lim, C. P. & Loo, C. K., 2014, *Neural Information Processing: 21st International Conference, ICONIP 2014, Kuching, Malaysia, November 3-6, 2014. Proceedings, Part I*. Springer, Vol. 8834. p. 151-158 8 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)).

Application of the fuzzy min-max neural network to fault detection and diagnosis of induction motors

Seera, M., Lim, C. P., Ishak, D. & Singh, H., 2013, In: *Neural Computing and Applications*. 23, SUPPL1, p. 191-200 10 p.

Detection and diagnosis of broken rotor bars and eccentricity faults in induction motors using the Fuzzy Min-Max neural network

Singh, H., Seera, M. & Abdullah, M. Z., 2013, *2013 International Joint Conference on Neural Networks, IJCNN 2013*.

Offline and online fault detection and diagnosis of induction motors using a hybrid soft computing model

Seera, M., Lim, C. P., Ishak, D. & Singh, H., 2013, In: *Applied Soft Computing*. 13, 12, p. 4493-4507 15 p.

Electrical energy audit in a Malaysian university - a case study

Singh, H., Seera, M. & Mohamad Idin, M. A., 2012, *PECon 2012 - 2012 IEEE International Conference on Power and Energy*. p. 616-619 4 p.

Fault detection and diagnosis of induction motors using motor current signature analysis and a hybrid FMM-CART Model

Seera, M., Lim, C. P., Ishak, D. & Singh, H., 2012, In: *IEEE Transactions on Neural Networks and Learning Systems*. 23, 1, p. 97-108 12 p.

A hybrid FMM-CART model for fault detection and diagnosis of induction motors

Seera, M., Lim, C. P. & Ishak, D., 2011, *Neural Information Processing - 18th International Conference, ICONIP 2011, Proceedings*. PART 3 ed. p. 730-736 7 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 7064 LNCS, no. PART 3).

Condition monitoring of electrical supply voltage quality to electrical machines using RBF neural network

Singh, H., Seera, M. & Ismail, A. P., 2010, *PECon2010 - 2010 IEEE International Conference on Power and Energy*. p. 312-317 6 p.