

## Executive Summary

I am USyd Research Fellow based at the Centre for Translational Data Science and School of Geosciences at the University of Sydney. My research interests encompass a range of methodologies and applications of artificial intelligence. Specifically, some focus areas of my research interests are in areas of deep learning, recurrent neural networks, neuroevolution, time series analysis, and Bayesian methods with applications to mineral exploration, solid Earth evolution, and geo-coastal and reef modelling. I have a wide range of teaching and course development experience which I gained as a Lecturer in Computer Science for about four years. Apart from this, I have about six years experience in postgraduate student supervision which has resulted in successful completion of 7 masters and 1 honours thesis. Furthermore, I have been part of internal and external successful research grants over the past few years.

## Contact Information

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Campus, Fiji *E-mail:* [rohitash.chandra@sydney.edu.au](mailto:rohitash.chandra@sydney.edu.au)  
*E-mail:* [c.rohitash@gmail.com](mailto:c.rohitash@gmail.com)

## Citizenship and Visa

Fijian Citizen. 457 Work Visa (expiry: 21st February, 2021)

## Research Impact

- ResearchGate (25.55 Score): [https://www.researchgate.net/profile/Rohitash\\_Chandra](https://www.researchgate.net/profile/Rohitash_Chandra)
- Google Scholar - H-Index (14), 10-Index (18), 720 plus citations:  
<https://scholar.google.com/citations?user=pVPvRLoAAAAJ&hl=en&oi=ao>
- Scopus, H-Index (12), 490 plus citations:  
<https://www.scopus.com/authid/detail.uri?authorId=35106707300>
- Software development: <https://github.com/rohitash-chandra>
- USyd Academic profile: <https://sydney.edu.au/science/people/rohitash.chandra.php>
- Professional profile: <https://rohitash-chandra.github.io>

## Education

**Victoria University of Wellington**, Wellington, New Zealand (from March 2009 - February 2012).

Ph.D in Computer Science (Artificial Intelligence), School of Engineering and Computing Science ( Graduation on 15th May 2012)

- Thesis Topic: Problem decomposition and adaptation in cooperative neuroevolution
- Advisor: [Prof. Mengjie Zhang](#) and [Dr. Marcus Frean](#)
- Area of Study: Neural networks and evolutionary computation

**The University of Fiji**, Lautoka, Fiji.

M.S. in Computer Science, [School of Science and Technology](#) ( graduation date: April 2009)

- Thesis Topic: Modelling of Deterministic, Fuzzy and Probabilistic Dynamical Systems
- Advisor: [Professor Christian Omlin](#)
- Area of Study: Evolutionary Recurrent Neural Networks

**The University of the South Pacific**, Laucala Campus, Fiji.

Postgraduate Courses in Computing Sc., School of Information, Computer and Mathematical Sciences, July 2006

B.S., School of Information, Computer and Mathematical Sciences, April 2006

- Double Major in Computing Science and Engineering Technology with emphasis in Electronics Engineering

## Research Grants and Awards

2017-2019 USyd Fellowship, University of Sydney

- Research Grant: 25 000.00 AUD for three years  
Project Title: Multi-source transfer learning for time series prediction in areas of climate change  
Principle Investigators: **R. Chandra** and S. Cripps  
Granting Body: DVC-R, Grant: University of Sydney Fellowship Scheme  
Project Time-frame: 02/03/2017 to 01/03/2020  
**FOR Code:** 080109 (50 %) and 080205 (50 %)

SREI Grant 2017, University of Sydney

- Project Title: Understanding the deep carbon cycles from ice-house to greenhouse cycles  
Principle Investigators: D. Muller, T. Salles, J. Webster, S. Cripps, **R. Chandra**, S. Zahirovic, and A. Dutkiewicz  
Research Grant: 149,183.00 AUD. Granting Body: DVC-R, Grant: SREI  
Project Time-frame: 1/07/2017 to 30/06/2018  
**FOR Code:** 040305 (40%), 040310 (30%), 080109 (30 %)

Deep Carbon Observatory Grant 2018 -2019

- Project Title: The Deep Carbon Cycle (DCC) through geological time: An interdisciplinary synthesis of the carbon cycle in the Earth's lithosphere-biosphere system  
Principle Investigators: S. Zahirovic, D. Muller, T. Salles, A. Dutkiewicz, X. Qin, S. Williams, S. Brune, A. Ionescu, L. Purkamo, M. Pistone, M. Ruhl, B. Tutolo, T. Keller, J. Webster, **R. Chandra**, N. Wright, R. Hazen, S. Morrison, C. Liu, S. Runyon, D. Giovannelli, W. Leavitt, M. Bowles, E. Hughes 16(RF), E. Mason, and R. Davies  
Research Grant: 300 000.00 AUD.

Granting Body: Deep Carbon Observatory (<https://deepcarbon.net>)

Project Time-frame: 1/01/2018 to 30/12/2018

**FOR Code:** 040305 (40%), 040310 (30%), 080109 (30 %)

## Graduate Student Grants and Awards

IEEE and International Neural Network Society

- Best paper conference travel awards, July 2014. Grant: 800.00 USD

Victoria University of Wellington

- Doctoral Completion Award, December 2012. Grant: 6000.00 NZD.

IEEE and International Neural Network Society

- Best paper conference travel awards, August 2011. Grant: 800.00 USD

Victoria University of Wellington

- [Victoria Doctoral Assistantship, March 2009- March 2011](#)
- Research Assistantship in Computing Science, May 2009- February 2010.

## Academic Work Experience

### 1. Centre for Translational Data Science, 2. School of Geosciences, The University of Sydney

USyd (Chancellor's Research) Fellow, March 2017 to February 2020 (3 Year Fellowship supervised by Prof. Dietmar Muller)

- Research Areas: Bayesian Machine Learning, Solid Earth evolution, Mineral exploration, and reef modelling.
- Teaching: Developed MOOCs in "Neural Networks: Fundamentals and Applications" (10 weeks course) that was enrolled by more than 65 students who participated online. About 30 participants attended the course initially at the Centre for Translational Data Science, University of Sydney <sup>1</sup>.
- Teaching and Course Development: Mineral Exploration with Prof. Dietmar Muller and A/Prof. Derek Wyman, School of Geosciences, University of Sydney, Semester 1, 2019
- External Supervisor: COMP570: Master of Data Science Capstone Project, School of Computer Science, University of Sydney, Semester 2, 2018

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<sup>1</sup>[openlearning.com/courses/neural-networks-fundamentals-and-applications](https://openlearning.com/courses/neural-networks-fundamentals-and-applications)

**Rolls Royce @ NTU Corporate Lab, Nanyang Technological University**, Singapore.

*Research Fellow*, February 2016 to January 2017 (1 Year)

- Project: Machine Learning for Design of Jet Engines

**University of the South Pacific**, Suva, Fiji.

*Lecturer in Computer Science*, December 2012 to January 2016 (3 Years and 2 Months)

- Courses: Semester 2, 2012: Postgraduate level: CS427 Mobile Communications and CS412 Internet Computing. Undergraduate level: CS214 Design and Analysis of Algorithms, CS311 Operating Systems, CS215 Mobile Middleware

**University of Fiji**, Lautoka, Fiji.

*Lecturer in Computer Science*, June 2012 to November 2012 (6 Months).

- Courses: Semester 2, 2012: Postgraduate level: ITC 441 Artificial Intelligence, ITC 410 Research Project. Undergraduate level: ITC 216 Advanced Programming Constructs

**Victoria University of Wellington**, 6 Kelburn Parade, Kelburn, Wellington

*(Postdoctoral) Research Fellow in Bioinformatics*, January 2012 to June 2012 (6 Months)

- Research Project: Metabolic Flux Analysis using Cooperative Coevolution Optimisation

## Current Research Supervision

1. Ehsan Farahbakhsh, "Mineral exploration using GIS and machine learning", Amirkabir University of Technology, Iran, Ph.D thesis, 2018 (External Supervision)
2. Gary Wong, "Bayesian cooperative neuro-evolution for time series prediction", University of South Pacific, Fiji, MSc thesis, 2018 (External Supervision)

## Past Research Supervision

1. Shelvin Chand, MSc in Computer Science, "Multi-Objective Cooperative Neuro-evolution for time series problems", University of the South Pacific, Graduated September 2014. [Awarded PhD Scholarship ADFA UNSW 2015]
2. Shonal Chaudhary, MSc in Computer Science, "Intelligent Mobile Face Detection System for the Visually Impaired", University of the South Pacific, Graduated March 2016.
3. Swaran Ravindra, MSc in Information Systems, "Electronic Medical Records in Public Hospitals in Fiji", University of the South Pacific, University of the South Pacific, Graduated September 2016.
4. Ravi Nand, MSc in Computer Science, "Cooperative Neuro-evolution for Time Series Problem with application to climate change", University of the South Pacific, Graduated March 2016.
5. Kavitesh Bali, MSc, "Competition and Collaboration in Cooperative Coevolution for Global Optimisation", University of the South Pacific, Graduated March 2016. [Awarded PhD Scholarship NTU 2016]
6. Shamina Hussein, MSc, "Multi-Step Time Series Prediction using Neuro-evolution and Recurrent Networks", University of the South Pacific, Graduated March 2017. (External Supervision)
7. Ratneel Deo, MSc, "Multi-Dimensional Time Series using Neuro-evolution", University of the South Pacific, Submitted, Graduated March 2018. (External Supervision)
8. Jodie Pall, Honours thesis, "Bayesian inference for Reef Modelling", University of Sydney, Graduated 2018 (Awarded University Medal) (External Supervision)

## Refereed Publications

### Journals

1. E. Farahbakhsh, **R. Chandra**, T. Eslamkish, and D. Muller, "Discrete geochemical mapping of the stream sediment samples for prospecting porphyry Cu-Au mineralization", **Journal of Geochemical Exploration**, Elsevier, (Accepted with minor changes, November 2018)
2. **R. Chandra**, YS. Ong, CK Goh, Co-evolutionary Multi-task learning for dynamic time series prediction, *Applied Soft Computing*, 70: 576-589, (2018). (FOR Code: 080108 (50 %), 080109 (50 %))

3. **R. Chandra**, S. Cripps, “ Co-evolutionary multi-task learning for modular pattern classification”, **Neurocomputing**, 319: 164-175 (2018) (FOR Code: 080108 (50 %), 080109 (50 %) )
4. **R. Chandra**, A. Gupta, YS Ong, CK Goh, “ Evolutionary Multi-task Learning for Modular Knowledge Representation in Neural Networks”, **Neural Processing Letters**, 47(3): 993-1009 (2018). (FOR Code: 080108 (50 %), 080109 (50 %) )
5. **R. Chandra**, YS Ong, CK Goh, “Co-evolutionary multi-task learning with predictive recurrence for multi-step chaotic time series prediction”, **Neurocomputing**, 243: 21-34 (2017). (FOR Code: 080108 (50 %), 080109 (50 %) )
6. S. Chaudhry and **R. Chandra**, “ Face Detection and Recognition in Unconstrained Environment for Visual Assistive System”, **Applied Soft Computing**, 53: 168-180 (2017). (FOR Code: 080108 (50 %), 080109 (50 %) )
7. **R. Chandra** and S. Chand, “ Evaluation of Co-evolutionary Neural Networks for Time Series Prediction with Mobile Application in Finance”, **Applied Soft Computing**, 49: 462-473 (2016). (FOR Code: 080108 (50 %), 080109 (50 %) )
8. L. Rolland and **R. Chandra**, The Forward Kinematics of the 6-6 Parallel Manipulator Using an Evolutionary Algorithm based on Generalized Generation Gap with Parent-Centric Crossover, **Robotica**, 34(1): 1-22 (2016) (FOR Code: 080108 (50 %), 080109 (50 %) )
9. **R. Chandra**, “Competitive Cooperative Coevolution of Recurrent Neural Networks for Chaotic Time Series Prediction”, **IEEE Transactions on Neural Networks and Learning Systems**, 26(12):3123-3136, (2015). (FOR Code: 080108 (50 %), 080109 (50 %) )
10. **R. Chandra** and L. Rolland, Global-Local Population Memetic Algorithm for Solving the Forward Kinematics of Parallel Manipulators, **Connection Science**, Taylor and Francis, 27(1): 22 - 39, (2015). (FOR Code: 080108 (50 %), 080109 (50 %) )
11. **R. Chandra**, Memetic Cooperative Co-evolutionary Recurrent Neural Networks, **Soft Computing**, 18(8): 1549-1559, (2014). (FOR Code: 080108 (50 %), 080109 (50 %) )
12. **R. Chandra**, M. Frean, M. Zhang, Crossover-based Local Search in Cooperative Co-evolutionary Feedforward Networks, **Applied Soft Computing**, 12(9): 2924-2932 (2012). (FOR Code: 080108 (50 %), 080109 (50 %) )
13. **R. Chandra**, M. Frean, M. Zhang, “On the Issue of Separability for Cooperative Coevolution of Feedforward Networks”, **Neurocomputing**, 87: 33-40 (2012). (FOR Code: 080108 (50 %), 080109 (50 %) )
14. **R. Chandra**, M. Zhang, Cooperative Coevolution of Elman Recurrent Neural Networks for Chaotic Time Series Prediction, **Neurocomputing**, 86: 116-123 (2012). (FOR Code: 080108 (50 %), 080109 (50 %) )
15. **R. Chandra**, M. Frean, M. Zhang, Adapting Modularity During Learning in Cooperative Co-evolutionary Recurrent Neural Networks, **Soft Computing**, 16(6): 1009-1020 (2012). (FOR Code: 080108 (50 %), 080109 (50 %) )
16. **R. Chandra** M. Frean, M. Zhang and Christian Omlin, “Encoding Subcomponents in Cooperative Coevolutionary Recurrent Neural Networks ”, **Neurocomputing**, 74(17): 3223-3234 (2011). (FOR Code: 080108 (50 %), 080109 (50 %) )
17. **R. Chandra**, L. Rolland, “On Solving the Forward Kinematics of 3RPR Planar Parallel Manipulator using Hybrid Metaheuristics”, **Applied Mathematics and Computation**, 217(22): 8997-9008 (2011) (FOR Code: 080108 (50 %), 080109 (50 %) )
18. **R. Chandra**, R. Knight and C. W. Omlin, “ Renosterveld Conservation in South Africa: A Case Study for Handling Uncertainty in Knowledge Based Neural Networks for Environmental Management”, **Journal of Environmental Informatics** , 13(1): 56-65 (2019). (FOR Code: 080108 (50 %), 080109 (50 %) )

## Journals in review/under submission

19. J. Pall, **R. Chandra**, D.Azam, T. Salles, and J. Webster, and S. Cripps, ”BayesReef: Bayesian inference for pyReef modelling “, **Environmental Modelling and Software**, Elsevier, Submitted in August 2018: <https://arxiv.org/abs/1808.02763>
20. **R. Chandra**, D. Muller, R. Deo, D.Azam, N. Buttersworth, T. Salles, and S. Cripps, ”Multi-core based parallel tempering BayesLands “, **Geochemistry, Geophysics, Geosystems** , AGU Publications, Submitted July 2018, Under 1st Revision: <https://arxiv.org/abs/1806.10939>

21. E. Farahbakhsh, **R. Chandra**, H. Olierook, C. Clark, S. Reddy, and D. Muller, "A remote sensing approach for extracting linear features for mineral prospecting via edge detection methods", **Remote Sensing and Environment**, Submitted October 2018: <https://arxiv.org/abs/1810.02320>
22. **R. Chandra**, D. Muller, D. Azam, T. Salles, and S. Cripps, "BayesLands: Bayesian inference approach to Badlands", **Computers and Geoscience**, Elsevier, Submitted in April 2018: <https://arxiv.org/abs/1805.03696>
23. **R. Chandra**, K. Jain, R. V. Deo, S. Cripps, "Langevin-gradient parallel tempering for Bayesian neural learning", **Neurocomputing**, Submitted November 2018: <http://arxiv.org/abs/1811.04343>
24. **R. Chandra**, K. Jain, A. Kapoor, "Surrogate-assisted parallel tempering for Bayesian neural learning", **IEEE Transactions on Neural Networks and Learning Systems**, Submitted November 2018: <https://arxiv.org/abs/1811.08687>
25. **R. Chandra**, D. Azam, A. Kapoor, D. Muller, "Bayesian inversion using surrogate-assisted parallel tempering for computationally expensive geo-scientific models", **Geoscientific Model Development**, To be submitted November 2018
26. R. Scalzo, D. Kohn, H. Olierook, G. Houseman, **R. Chandra**, M. Girolami, and S. Cripps, "Efficiency and robustness in Monte Carlo sampling of 3-D geophysical inversions: Setting up for success", **Geoscientific Model Development**, To be submitted November, 2018.
27. **R. Chandra**, A. Kapoor, S. Cripps, "Bayesian neural multi-source transfer learning", **Journal of Machine Learning Research**, To be submitted December 2018
28. R. Scalzo, D. Kohn, H. Olierook, **R. Chandra**, E. Farahbakhsh, G. Houseman, C. Clark, S. Reddy and D. Muller "Bayesian inversion approach via parallel tempering for mineral prospecting", **Geochemistry, Geophysics, Geosystems**, AGU Publications, To be Submitted December 2018
29. D. Muller, **R. Chandra**, N. Buttersworth, S. Williams, S. Cripps "Paleo-climate reconstruction using Bayesian machine learning", **Geochemistry, Geophysics, Geosystems**, To be submitted January 2019
30. A. Kapoor and **R. Chandra**, "Evolutionary parallel tempering for Bayesian neural learning", **IEEE Transaction on Cybernetics**, To be submitted January 2019

## Book Chapters (Springer LNCS Series)

31. **R. Chandra**, L. Azizi, and Sally Cripps, "Bayesian neural learning via Langevin dynamics for chaotic time series prediction" International Conference on Neural Information Processing, China, November 2017. LNCS Springer, pp. 564-573.
32. **R. Chandra**, "Towards an affective computational model of machine consciousness", International Conference on Neural Information Processing, China, November 2017. LNCS Springer, pp. 897-907.
33. **R. Chandra**, "Dynamic cyclone wind-intensity prediction using co-evolutionary multi-task learning", International Conference on Neural Information Processing, China, November 2017. LNCS Springer, pp. 618-627.
34. **R. Chandra**, "Multi-task modular backpropagation for feature-based pattern classification", International Conference on Neural Information Processing, China, November 2017. LNCS Springer, pp. 558-566.
35. **R. Chandra**, "Co-evolutionary multi-task learning for modular pattern classification", International Conference on Neural Information Processing, China, November 2017. LNCS Springer, pp. 692-701.
36. **R. Chandra**, A. Gupta, YS. Ong and CK. Goh, Evolutionary multi-tasking for modular training of feedforward neural networks, International Conferences on Neural Information Processing, Japan, October 2016, Springer LNCS, ICONIP (2) 2016: 37-46 (FOR Code: 080108 (50 %), 080109 (50 %))
37. S. Chaudhary and **R. Chandra**, Face Detection on Moving People from a Moving Source using Convolutional Neural Networks, International Conferences on Neural Information Processing, Japan, October 2016, Springer LNCS, ICONIP (2) 2016: 567-576 (FOR Code: 080108 (50 %), 080109 (50 %))
38. S. Hussein and **R. Chandra**, Window-Based Feature Selection for Chaotic Time Series Prediction using Cooperative Neuro-evolution, International Conferences on Neural Information Processing (ICONIP), Japan, October 2016, Springer LNCS, ICONIP (3) 2016: 3-11 (FOR Code: 080108 (50 %), 080109 (50 %))
39. G. Wong **R. Chandra**, Gradient Local Search in Memetic Cooperative Neuro-evolution for Chaotic Time Series Prediction, International Conferences on Neural Information Processing (ICONIP), Japan, October 2016, Springer LNCS, ICONIP (3) 2016: 299-308 (FOR Code: 080108 (50 %), 080109 (50 %))
40. R. Nand and **R. Chandra**, Feature Selection Based Competition in Cooperative Coevolution for Neuro-Evolution of Feedforward Networks for Time Series Prediction, Proceedings of the Australasian Conference on Artificial Life and Computational Intelligence, Lecture Notes in Artificial Intelligence, Canberra Australia, February 2016, Springer, pp. 285-297 (FOR Code: 080108 (50 %), 080109 (50 %))
41. R. Nand and **R. Chandra**, Reverse Neuron Level Problem Decomposition in Cooperative Neuro-Evolution of Feedforward Networks for Time Series Prediction, Proceedings of the Australasian Conference on Artificial Life and Computational Intelligence, Lecture Notes in Artificial Intelligence, Canberra Australia, February 2016, Springer, pp. 171-182 (FOR Code: 080108 (50 %), 080109 (50 %))



42. R. Nand and **R. Chandra**, Competitive Island Based Cooperative Coevolution for Neuro-Evolution of Feedforward Networks for Time Series Prediction, Proceedings of the Australasian Conference on Artificial Life and Computational Intelligence , Lecture Notes in Artificial Intelligence, Canberra Australia, February 2016, Springer, pp. 160-170 (FOR Code: 080108 (50 %), 080109 (50 %) )
43. K. Bali and **R. Chandra**, Scaling up Multi-Island Competitive Cooperative Coevolution for Real Parameter Global Optimization, Proceedings of the 28th Australasian Joint Conference on Artificial Intelligence, Lecture Notes in Artificial Intelligence, Canberra Australia, December 2015, Springer, pp 34-48 (FOR Code: 080108 (50 %), 080109 (50 %) )
44. **R. Chandra** and K. Dayal, Coevolutionary Recurrent Neural Networks for Prediction of Rapid Intensification in Wind Intensity of Tropical Cyclones in the South Pacific region, International Conferences on Neural Information Processing (ICONIP), Istanbul, November 2015, Springer LNCS, pp. 43-52 (FOR Code: 080108 (50 %), 080109 (50 %) )
45. G. Wong and **R. Chandra**, Enhancing Competitive Island Cooperative Neuro-evolution through Backpropagation for Pattern classification , International Conferences on Neural Information Processing (ICONIP), Istanbul, November 2015, Springer LNCS, (FOR Code: 080108 (50 %), 080109 (50 %) )
46. R. Nand and **R. Chandra**, Neuron-Synapse Level problem decomposition method for Cooperative Neuro-Evolution of Feedforward Networks for Time Series Prediction , International Conferences on Neural Information Processing (ICONIP), Istanbul, November 2015, Springer LNCS, pp. 90-100 (FOR Code: 080108 (50 %), 080109 (50 %) )
47. K. Bali and **R. Chandra**, Multi-Island Competitive Cooperative Coevolution for Real Parameter Global Optimization, International Conferences on Neural Information Processing (ICONIP), Istanbul, November 2015, Springer LNCS, pp. 127-136 (FOR Code: 080108 (50 %), 080109 (50 %) )
48. K. Bali, **R. Chandra** and M. Omidvar, Competitive Island-Based Cooperative Co-evolution for Efficient Optimization of Large-Scale Fully-Separable Continuous Functions, International Conferences on Neural Information Processing (ICONIP), Istanbul, November 2015, Springer LNCS, pp. 137-147 (FOR Code: 080108 (50 %), 080109 (50 %) )
49. **R. Chandra**, M. Zhang, L. Peng, “ Application of Cooperative Convolution Optimization for <sup>13</sup>C Metabolic Flux Analysis: Simulation of Isotopic Labeling Patterns Based on Tandem Mass Spectrometry Measurements ”, SEAL 2012: Proceedings of International Conference on Simulated Evolution, Lecture Notes in Computer Science, Springer, pp. 178-187 (FOR Code: 080108 (50 %), 080109 (50 %) )
50. **R. Chandra**, M. Frean, M. Zhang, “An Encoding Scheme for Cooperative Coevolutionary Neural Networks”. AI 2010: Advances in Artificial Intelligence. Lecture Notes in Artificial Intelligence. Vol. 6464, , Springer., (Proceedings of the 23rd Australasian Joint Conference on Artificial Intelligence) Adelaide, Australia, 2010. pp. 253-262.

## Conference Proceedings

51. **R. Chandra**, and S. Cripps, ” Bayesian multi-task learning for dynamic time series prediction”, Proceedings of the IEEE Joint Conference on Neural networks, July 2018, Brazil, pp. 1-8 (FOR Code: 080108 (50 %), 080109 (50 %) )
52. **R. Chandra**, ”Modular multi-task learning for dynamic time series prediction”, Proceedings of the IEEE Joint Conference on Neural networks, July 2018, Brazil, pp. 1-7 (FOR Code: 080108 (50 %), 080109 (50 %) )
53. Y. Zhang, **R. Chandra**, and J. Gao, ”Matrix neural networks for cyclone trajectory prediction”, Proceedings of the IEEE Joint Conference on Neural networks , July 2018, Brazil, pp. 1-8 (FOR Code: 080108 (50 %), 080109 (50 %) )
54. G. Wong, A. Sharma, **R. Chandra**, ”Information collection strategies for memetic cooperative neuroevolution”, Proceedings of the IEEE Joint Conference on Neural networks, July 2018, Brazil, pp. 1-6 (FOR Code: 080108 (50 %), 080109 (50 %) )
55. **R. Chandra**, R. Deo and C. Omlin, ”An Architecture for Encoding Two-Dimensional Cyclone Track Prediction Problem in Coevolutionary Recurrent Neural Networks”, Proceedings of the IEEE Joint Conference on Neural networks, July 2016, Vancouver, IJCNN 2016: 4865-4872 (FOR Code: 080108 (50 %), 080109 (50 %) )
56. R. Deo and **R. Chandra**, ”Identification of Minimal Timespan Problem for Recurrent Neural Networks with application to Cyclone Wind-Intensity Prediction”, Proceedings of the IEEE Joint Conference on Neural networks, July 2016, Vancouver, IJCNN 2016: 489-496 (FOR Code: 080108 (50 %), 080109 (50 %) )
57. M. Rana, **R. Chandra** and V. Agelidis, ”Cooperative Neuro-evolutionary Recurrent Neural Networks for Solar Power Prediction”, Proceedings of the IEEE Congress on Evolutionary Computation , July 2016, Vancouver, CEC 2016: 4691-4698 (FOR Code: 080108 (50 %), 080109 (50 %) )
58. S. Hussein and **R. Chandra**, ”Multi-step-ahead Chaotic Time Series Prediction using Coevolutionary Recurrent Neural Networks”, Proceedings of the IEEE Congress on Evolutionary Computation , July 2016, Vancouver, CEC 2016: 3084-3091 (FOR Code: 080108 (50 %), 080109 (50 %) )

59. **R. Chandra**, R. Deo, K. Bali and A. Sharma, "On the Relationship of Degree of Separability with Depth of Evolution in Subcomponents of Cooperative Coevolution", Proceedings of the IEEE Congress on Evolutionary Computation , July 2016, Vancouver, CEC 2016: 4823-4830 (FOR Code: 080108 (50 %), 080109 (50 %) )
60. K. Bali, **R. Chandra** and M. Omidvar, "Contribution Based Multi-Island Competitive Cooperative Coevolution", Proceedings of the IEEE Congress on Evolutionary Computation , July 2016, Vancouver, CEC 2016: 1823-1830 (FOR Code: 080108 (50 %), 080109 (50 %) )
61. **R. Chandra** and K. Dayal, Two-Dimensional Time Series Approach for Cyclone Track Prediction using Cooperative Coevolution of Recurrent Neural Networks , IEEE Joint Conference on Neural networks, 2015, Ireland, pp. 1- 8 (FOR Code: 080108 (50 %), 080109 (50 %) )
62. **R. Chandra** and G.Wong , Competitive Cooperative Coevolution for Pattern Classification in Feedforward Neural Networks , IEEE Joint Conference on Neural networks, 2015, Ireland, pp. 1 - 8 (FOR Code: 080108 (50 %), 080109 (50 %) )
63. **R. Chandra** and K. Dayal, Cooperative Neuro-evolution of Elman Recurrent Networks for Tropical Cyclone Wind-Intensity Prediction in the South Pacific Region, Proceedings of the IEEE Congress on Evolutionary Computation , May 2015, Japan, pp. 1784-1791 (FOR Code: 080108 (50 %), 080109 (50 %) )
64. **R. Chandra**, Multi-Objective Cooperative Neuro-Evolution of Recurrent Neural Networks for Time Series Prediction, Proceedings of the IEEE Congress on Evolutionary Computation , May 2015, Japan, pp. 101-108 (FOR Code: 080108 (50 %), 080109 (50 %) )
65. **R. Chandra** and K. Bali, Competitive Two-Island Cooperative Coevolution for Real Parameter Global Optimisation, Proceedings of the IEEE Congress on Evolutionary Computation , May 2015, Japan, pp. 93-100 (FOR Code: 080108 (50 %), 080109 (50 %) )
66. **R. Chandra**, Competitive Two-Island Cooperative Coevolutionary Recurrent Neural Networks for Time Series Prediction , Proceedings of the IEEE International Joint Conference on Neural Networks, 2014, Beijing China, pp. 565 -572 (FOR Code: 080108 (50 %), 080109 (50 %) )
67. S. Chand and **R. Chandra**, Cooperative Coevolution of Feed Forward Neural Networks for Financial Time Series Problem, Proceedings of the IEEE International Joint Conference on Neural Networks, 2014, Beijing China, pp. 202 - 209 (FOR Code: 080108 (50 %), 080109 (50 %) )
68. S. Chand and **R. Chandra**, Multi-Objective Cooperative Coevolution of Neural Networks for Time Series Prediction, Proceedings of the IEEE International Joint Conference on Neural Networks, 2014, Beijing China, pp. 190-197 (FOR Code: 080108 (50 %), 080109 (50 %) )
69. **R. Chandra**, "Adaptation in Cooperative Coevolutionary Recurrent Neural Networks for Time Series Prediction" , Proceedings of the IEEE International Joint Conference on Neural Networks, 2013, Dallas Texas, USA, pp. 1-8 (FOR Code: 080108 (50 %), 080109 (50 %) )
70. **R. Chandra**, M. Frean, M. Zhang, "Modularity Adaptation in Cooperative Coevolutionary Feedforward Neural Networks" , Proceedings of the IEEE International Joint Conference on Neural Networks, 2011, San Jose, USA, pp. 681-688 (FOR Code: 080108 (50 %), 080109 (50 %) )
71. **R. Chandra**, M. Frean, M. Zhang, " Memetic Cooperative Coevolutionary Recurrent Neural Networks ", Proceedings of the IEEE International Joint Conference on Neural Networks, 2011, San Jose, USA, pp. 673-680 (FOR Code: 080108 (50 %), 080109 (50 %) )
72. L. Rolland and **R. Chandra**, "On solving the forward kinematics of the 6-6 General parallel manipulator with an efficient evolutionary algorithm", In ROMANSY 18 - Robot Design, Dynamics and Control, Series: CISM International Centre for Mechanical Sciences, Vol. 524 Springer, Berlin, 2010, pp. 117-124.
73. **R. Chandra**, M. Frean, L. Rolland, "A Hybrid Meta-Heuristic Paradigm for Solving the Forward Kinematics of 6-6 General Parallel Manipulator", Proceedings of 8th IEEE International Symposium on Computational Intelligence in Robotics and Automation (CIRA 2009), Daejeon, Korea, December 2009, pp. 171-176,
74. **R. Chandra**, M. Zhang, L. Rolland, "Solving the Forward Kinematics of the 3RPR Planar Parallel Manipulator using a Hybrid Meta-Heuristic Paradigm", Proceedings of 8th IEEE International Symposium on Computational Intelligence in Robotics and Automation (CIRA 2009), Daejeon, Korea, December 2009, pp. 177-182.
75. L. Rolland, **R. Chandra**, "Forward Kinematics of the 3RPR planar Parallel Manipulators Using Real Coded Genetic Algorithms", Proceedings of 24th International Symposium on Computer and Information Sciences, North Cyprus, September 2009, pp. 381-386. (doi: 10.1109/ISCIS.2009.5291810)
76. L. Rolland, **R. Chandra**, "Forward Kinematics of the 6-6 general Parallel Manipulator Using Real Coded Genetic Algorithms", Proceedings of 2009 IEEE/ASME Conference on Advanced Intelligent Mechatronics, Singapore, pp. 1637-1642. (doi: 10.1109/AIM.2009.5229824)
77. R. Chandra, C. W. Omlin, "Evolutionary One-Step Gradient Descent for Training Recurrent Neural Networks", Proceedings of International Conference on Genetic and Evolutionary Methods, Los Vegas, July 2008, pp. 306-311.

78. **R. Chandra** and C. W. Omlin, “Combining Genetic and Gradient Descent Learning in Recurrent Neural Networks: An Application to Speech Phoneme Classification“, Proceedings of the International Conference on Artificial Intelligence and Pattern Recognition, Orlando FL, USA, July 2007, pp. 278-285.
79. **R. Chandra** and C. W. Omlin, “A Hybrid Recurrent Neural Networks Architecture Inspired by Hidden Markov Models: Training and Extraction of Deterministic Finite Automaton“, Proceedings of the International Conference on Artificial Intelligence and Pattern Recognition, Orlando FL, USA, July 2007, pp. 286-293.
80. **R. Chandra** and C. W. Omlin, “Hybrid Recurrent Neural Networks: An Application to Phoneme Classification“, Proceedings of International Conference on Genetic and Evolutionary Methods, Las Vegas, USA, June 2007, pp. 57-62.
81. **R. Chandra** and C. W. Omlin, “Knowledge Discovery using Artificial Neural Networks for a Conservation Biology Domain“, Proceedings of International Conference on Data Mining, Las Vegas, USA, June 2007, pp. 221-227.
82. **R. Chandra** and C. W. Omlin, “Training and Extraction of Fuzzy Finite Automata in Recurrent Neural Networks“, Proceedings of the International Conference of Computational Intelligence, San Fransisco, U.S.A, Acta Press, November 2006, pp. 274-279. Systems of Recurrent Neural Networks and Hidden Markov Models“, Proceedings of the International Conference on Neural Networks, Barcelona Spain, October 2006, pp. 58-63. based Neurocomputing Proceedings of Environmental

## Thesis

83. **R. Chandra**, “Problem Decomposition and Adaptation in Cooperative Neuro-evolution“, PhD thesis, Victoria University of Wellington, 2012.
84. **R. Chandra**, “Modeling of Deterministic, Fuzzy and Probabilistic Dynamical Systems“, M.S. Thesis, University of Fiji, 2008.

## Technical Reports and Workshops papers (Non-Refereed)

85. **R. Chandra**, “An affective computational model for machine consciousness“, CoRR abs/1701.00349 (2017)
86. **R. Chandra**, “Towards prediction of rapid intensification in tropical cyclones with recurrent neural networks“, CoRR abs/1701.04518 (2017)
87. S. Chaudhry, **R. Chandra**, “Design of a Mobile Face Recognition System for Visually Impaired Persons“, CoRR abs/1502.00756 (2015)
88. S. Ravindra, **R. Chandra**, Virallikattur S. Dhenesh, “A Study of the Management of Electronic Medical Records in Fijian Hospitals“, CoRR abs/1507.03659 (2015)
89. D. Abel, B. Gavidu, N. Rollings, **R. Chandra**, “Development of an Android Application for an Electronic Medical Record System in an Outpatient Environment for Healthcare in Fiji“, CoRR abs/1503.00810 (2015)
90. E. Reddy, S. Kumar, N. Rollings, **R. Chandra**, “Mobile Application for Dengue Fever Monitoring and Tracking via GPS: Case Study for Fiji“, CoRR abs/1503.00814 (2015)
91. **R. Chandra**, G. Onwubolu, “Neural Networks in Prediction Problems“, Proceedings of the International Workshop on Inductive Modeling, Prague, September 2007, pp. 46-54.
92. **R. Chandra**, K. Chaudhary, A. Kumar, “The Combination and Comparison of Neural Networks and Decision Trees for Wine Classification“, Proceedings of the International Workshop on Inductive Modeling, Prague, September 2007, pp. 10-17.

## Conference Presentations (without Proceedings)

1. **R. Chandra**, “Bayesian inference and surrogate assisted optimisation for basin and landscape evolution“, Australian Geoscience Council Convention, Adelaide, October 13-17, 2018
2. **R. Chandra**, “Bayesian inference for geological reef modelling“, Australian Geoscience Council Convention, Adelaide, October 13-17, 2018
3. **R. Chandra**, “Computer-vision techniques for mineral exploration“, Australian Geoscience Council Convention, Adelaide, October 13-17, 2018
4. **R. Chandra**, “Computer-vision techniques for mineral exploration“, Digital Disruption in Exploration Convention, CSIRO Technology Park, Perth, October 22-26th, 2018

## Invited Seminars and Workshops

1. **R. Chandra**, “Bayesian inference and surrogate assisted optimisation for basin and landscape evolution“, School of Computer Science, University of Adelaide, October 2018.



2. **R. Chandra**, “Bayesian inference for modelling geo-coastal, basin and landscape evolution”, Basin Genesis Hub Workshop, The University of Sydney, February 2018.
3. **R. Chandra**, “Bayesian inference for geo-coastal modelling and landscape evolution”, Planning for Centre of Excellence - Workshop and Meeting, Curtin University, February 2018.
4. S. Cripps and **R. Chandra** “ Bayesian inference for Earth science ”, Distal Footprints Workshop, Curtin University, September 2017.
5. **R. Chandra** “ Tackling climate change problems with machine learning ”, EarthByte Group, School of Geosciences, The University of Sydney, July 2017.
6. **R. Chandra** “Competitive neuroevolution with applications”, Seminar, School of Computing, Information and Mathematical Sciences, University of South Pacific, August 2015.
7. **R. Chandra** “Open source software for education in Fiji”, Seminar, South Pacific Computer Society, University of South Pacific, April 2013.
8. **R. Chandra** “Chaotic time series prediction using recurrent networks”, Seminar, School of Engineering and Computer Science, Victoria University of Wellington, August, 2011.

## Curriculum Development and Review

1. 3rd year Mineral Exploration course development, School of Geosciences, The University of Sydney, Semester 1, 2019.
2. **Committee Member** Research Publication Ranking Committee, University of the South Pacific (USP), 2014 to 2015.
3. **Advisor** , Bachelor of Geo-Spatial Information Sciences, School of Geography, Earth Science and Environment, University of South Pacific, 2014.
4. **Program Development Coordinator**, Department of Computer Science and Information Systems, Fiji National University, (Bachelor of Information Systems, Computing Science, and Information Technology), 2010.

## Professional Membership and Activities

1. Associate Investigator, ARC ITTC for Data Analytics in Resources and Environment led by Prof. Sally Cripps, University of Sydney, Proposal to be submitted December 2018
2. Associate Investigator, ARC CoE for Solid Earth Evolution led by Prof. Dietmar Muller, University of Sydney, 2017-2018 (unsuccessful bid)
3. Member, ARC Basin Genesis Hub, School of Geosciences, University of Sydney
4. Member, Geocoastal Research Group, School of Geosciences, University of Sydney
5. Member, EarthByte Group, School of Geosciences, University of Sydney
6. Executive Member, Software Foundation (Fiji), <http://softwarefoundationfiji.org>
7. Member, International Neural Networks Society, <http://www.inns.org>, 2018
8. Member, International Society for Environmental Information Sciences, <http://www.iseis.org>
9. Member, IEEE, [ieee.org](http://www.ieee.org), 2011 to present
10. IEEE Computational Intelligence Society Member, [ieee.org](http://www.ieee.org), 2011-2015.

## Leadership and Professional Activities

1. Theme Co-Lead, Natural Resources, Centre for Translational Data Science, The University of Sydney.
2. Research Director, Artificial Intelligence and Cybernetics Research Group (AICRG), Software Foundation (Fiji) ([aicrg.softwarefoundationfiji.org](http://aicrg.softwarefoundationfiji.org)), (January 2013 to February 2017)
3. Chairman, Software Foundation (Fiji), Non-Profit Organisation, Established in August 2010 ([softwarefoundationfiji.org](http://softwarefoundationfiji.org)), (January 2012 to present) 2013

## International Conference Organisation

1. Publicity Chair, Australasian Joint Conference on Artificial Intelligence, Wellington, New Zealand, December 2018.
2. Program Committee Member, International Conference on Neural Information Processing (ICONIP 2017), November 14-18, 2017 Guangzhou, China ([www.iconip2017.org](http://www.iconip2017.org)).

3. Chair, Software Engineering Track, 4th IEEE Asia-Pacific World Conference in Computer Science and Engineering, December 2017, Nadi, Fiji.
4. Technical Programme Committee, International Conference on Neural Information Processing (ICONIP 2016), Kyoto Japan, October 16- 22, 2016.

## Journal Reviewer

IEEE Transactions of Neural Networks and Learning Systems, IEEE Transactions on Evolutionary Computation, IEEE Transactions on Cybernetics, Memetic Computing, Neurocomputing, Robotica Journal, Applied Soft Computing, Expert System with Applications, Knowledge Based Systems

## Event Organisation

1. Bayeslands Workshop, School of Geosciences, University of Sydney, August 2018.
2. Panel Discussion Chair, World Consumer Rights Day, Software Foundation and Consumer Council Fiji, May 23rd 2014, University of the South Pacific, Suva, Fiji.
3. Coordinator, C++ Programming BootCamp, School of Computing, Information , and Mathematical Sciences (SCIMS), University of the South Pacific, February 2014, Suva, Fiji.
4. Coordinator, Linux for Beginners Workshop, Software Foundation, SCIMS, Japan Pacific ICT Centre, USP, August 2013.
5. Publication and Proceedings Chair, New Zealand Computer Science Student Research Conference 2010, 14-18 April, Wellington, New Zealand.

## Conference Reviewer

1. International Conference on Neural Information Processing, 2017, China.
2. ACM Genetic and Evolutionary Computation Conference (GECCO), 2017, Germany.
3. International Conference on Neural Information Processing, 2016, Japan.
4. IEEE Congress on Evolutionary Computation, 2012, Australia.
5. IEEE Symposium Series on Computational Intelligence, 2013, Singapore
6. International Conference on Simulated Evolution and Learning, 2014, Dunedin, New Zealand/

## Publications in Literature

1. **R. Chandra**, Dusk, A River of Stories, Lift Education, 2015, pp. 134
2. **R. Chandra**, Summer in Fiji, A River of Stories, Lift Education, 2015, pp. 22-23
3. **R. Chandra**, Summer in Fiji, Dusk and Beware, Writing the Pacific, Ed. Jeff Webb and Kavita Nandan, Pacific Writers Forum, 2007 pp. 21 -23
4. **R. Chandra**, "Being at Home", Software Foundation Press, 2014, Fiji.  
Journal
5. **R. Chandra**, "Final Thoughts by the Sea", South Asian Review, Volume 27, No. 3, pp. 109.
6. **R. Chandra**, "Cycles", South Asian Review, Volume 27, No. 3, pp. 110.
7. **R. Chandra**, "Transformation of Energy", The Toe Tree Journal, Spring 2006 Issue.

## REFEREES

1. Prof. Dietmar Muller, Director and Professor, ARC Basin Genesis Hub and School of Geosciences, University of Sydney, NSW 2006, Australia. Email: dietmar.muller@sydney.edu.au
2. Prof. Sally Cripps, Director and Professor, Centre for Translational Data Science, University of Sydney, NSW 2006, Australia. Email: sally.cripps@sydney.edu.au
3. A/Prof. Jody Webster, School of Geosciences, The University of Sydney, NSW 2006, Australia. Email: jody.webster@sydney.edu.au
4. Prof. Christian Omlin, Centre for Artificial Intelligence Research, Universitetet i Agder, Norway. Email: christian.omlin@uia.no
5. Prof. Edward Anderson, Associate Dean, Business School, The University of Sydney, NSW 2006, Australia. Email: edward.anderson@sydney.edu.au

6. Prof. Yew-Soon Ong, Chair and Professor in Computer Engineering, School of Computer Engineering, Nanyang Technological University, 50 Nanyang View, Singapore. Email: asysong@ntu.edu.sg
7. Prof. Maurizio Cirrincione, Head of School and Professor in Electrical Engineering, School of Engineering and Physics, University of the South Pacific, Suva, Fiji. Email: maurizio.cirrincione@usp.ac.fj  
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