KAUSHALYA PREMACHANDRA

B.Sc. Physical Science (Peradeniya), M.Sc. Physics (Missouri, USA), Ph.D. Physics (Missouri, USA)

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⚲ Department of Physical Sciences,
Faculty of Applied Sciences,
Rajarata University of Sri Lanka

TEACHING AND RESEARCH PHILOSOPHY

Teaching Philosophy

I believe that a good teacher is not only who teaches with passion but also who motivate and teaches students to learn, who listens to the students, be friendly, humble, flexible and willing to learn with the students and most importantly someone who has a vision.
In my opinion education should be holistic where both teachers and students learn together to reach one goal.

Research Philosophy

I believe that a great researcher is not only a creative thinker who is passionate, persistent and patient but also a down to earth life-long learner with a clear vision. My research philosophy is never to limit yourself but to think out of the box and beyond the information at hand in making decisions. Science has more to it than what we see through our naked eye.

WORK EXPERIENCE

- Senior Lecturer in Physics

  Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2014 to date)

- Postdoctoral Research Fellow

  Center for Microphotonics, Swinburne University of Technology, Melbourne, Australia (2017 to 2018)

- Visiting Lecturer in Physics

  Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2012 to 2014)

- Research Assistant

  Center for Neurodynamics, Department of Physics and Astronomy, University of Missouri in St. Louis, St. Louis, Missouri, USA (2008 to 2012)

- Teaching Assistant

  Department of Physics and Astronomy, University of Missouri in St. Louis, St. Louis, Missouri, USA (2006 to 2008)

EDUCATION

Doctor of Philosophy
University of Missouri-St. Louis, USA
🗓 08/2008 – 07/2012

- A five year (through M.Sc.) research based degree
- Research work on: Complex Scaling behaviour in animal foraging patterns and nonlinear phenomena in biological systems

Master of Science
University of Missouri-St. Louis, USA
🗓 08/2006 – 05/2008

- A two year course based degree in Physics
- Research work on: Study of epileptic activity and imaging neural synchronization

GPA

3.93 / 4.0

Bachelor of Science
University of Peradeniya, Sri Lanka
🗓 03/2000 – 12/2003

- A three year degree majored in Physics and Chemistry with a Second Class (Lower Division)

GPA

3.29 / 4.0

Primary and Secondary Education
Hillwood College Kandy and Mahamaya Girls' College Kandy, Sri Lanka

🗓 1984 – 1998

PUBLICATIONS

Tsysarev V., **Premachandra K.**, Takeshita D. and Bahar S. (2008). **Imaging cortical electrical stimulation *in vivo*: fast intrinsic optical signal versus voltage – sensitive dyes**. *Optics Letters,* Vol.33, Issue 9, pp. 1032-1034

Vandercone R., **Premachandra K**., Dinad C., Wijethunga G, Ranawana K. B. and Bahar S. (2013). **Random Walk Analysis of Ranging Patterns of Sympatric Langurs in a Complex Resource Landscape**. *American Journal of Primatology,* Vol. 75, Issue 12, pp. 1209-1219

Premachandra, K., Vandercone, R., Scott, A, Herath, N., Dissanayake, R. Loiselle, B., and Bahar S. **Emergence of Lévy flights in a computationally modelled tropical forest-like environment**. (In revision).

Premachandra, K. and Bahar, S. **Phase transitions behaviour in an array of nearest neighbour coupled neurons**. (In preparation)

ABSTRACTS AND CONFERENCE PROCEEDINGS

Kaushalya Premachandra and Thejan Rajapakshe. (2017). **Emergence of scale-free networks and small-world properties in psychosocial feeling expressed on social media**. *Sunbelt Conference of the International Network for Social Network Analysis, Beijing, China.* (abstract)

Thejan Rajapakshe, **Kaushalya Premachandra**, (2017). **Emergence of scale-free networks and small- world properties in psychosocial feeling expressed on social media**. *International Conference on Computational Modeling & Simulation, Colombo, Sri Lanka.* (conference proceedings)

H. Thilakarathne & **K. Premachandra** (2017). **Predicting Floods in North Central Province of Sri Lanka using machine-learning and data mining methods**. *International Conference on Artificial Intelligence, Colombo, Sri Lanka.* (conference proceedings)

S. Malluwawadu, **K. Premachandra**, R. Vandercone. (2015). **An investigation of sex differences in feeding and vigilance behavior in Hanuman Langurs using fractal analysis**. *Proceedings of the 35th Annual Sessions, Institute of Biology, Sri Lanka.* (conference proceedings)

K. Pathirana, R. Dissanayake and **K. Premachandra.** (2015). **Emergent patterns in subgroups of computationally modeled school of fish**. *iPURSE, University of Peradeniya, Sri Lanka.* (abstract)

RESEARCH GRANTS

- **Principal Investigator** –University Research, Publications and Higher Degrees Committee Grant RJT/PR & HDC/2015/App./R/02 for "Comparison of phase transition behaviours in an array of nearest neighbour coupled neurons with additional random long-range connections (small world networks)" – 2015

WORKSHOPS AND PROFESSIONAL WORK

2019: Symposium on "Smart Agriculture: Logic and Concepts" organized by the Department of Technology, Rajarata University of Sri Lanka, March 18th – 19th, Colombo, Sri Lanka.

2015: Workshop on "Networks in Biological Science" organized by the Institute for Mathematical Sciences, National University of Singapore, June 1st – June 12th, Singapore.

2015: Reviewer for Journal of Biological Physics, Springer, USA

2014: Reviewer for Proceedings of the Technical Sessions, Institute of Physics, Sri Lanka

TALKS / PROFESSIONAL PRESENTATIONS

2011: Graduate Research Symposium, University of Missouri – St. Louis, Missouri, USA

2010: Graduate Research Symposium, University of Missouri – St. Louis, Missouri, USA

2010: Animal Behaviour Group, Department of Biology, University of Missouri – St. Louis, Missouri, USA

AWARDS AND SCHOLARSHIPS

2017 - 2018: Postdoctoral Research Fellowship (Swinburne University of Technology, Melbourne, Australia)

2006 -2012: PhD Fellowship (University of Missouri – St. Louis, Missouri, USA)

MEMBERSHIPS IN ORGANIZATIONS

- National Science Foundation, Sri Lanka (Registration No. NSF/STMIS/08/6102)

OTHER QUALIFICATIONS

2016: Certificate Course in Teaching in Higher Education (approved by the University Grants Commission) – Rajarata University of Sri Lanka

POSITIONS HELD

- Coordinator of the Data Science Degree Program, Faculty of Applied Sciences, Rajarata University of Sri Lanka – September 2019 to date

- Member of the Ethics Review Committee of Faculty of Applied Sciences, Rajarata University of Sri Lanka – May 2015 to date

- Coordinator of Physics of the External (Online) Degree Program, Faculty of Applied Sciences, Rajarata University of Sri Lanka – March 2019 to date

- Coordinator of the Rajarata International Research Conference, Rajarata University of Sri Lanka 2019

- Chairperson of the Faculty of Applied Sciences Undergraduate Research Symposium 2018

- Coordinator of Physics of the GCE (A/L) practical workshop organized by the Faculty of Applied Sciences, Rajarata University of Sri Lanka – April 2016

- Member of the Curriculum Development Committee, Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka 2016

SUPERVISION OF RESEARCH STUDENTS

Completed

- Ms. Pamoda Vajiramali (AS/11/12/111). *A mechanism to detect risk factors leading to Chronic Kidney Disease* – Final Year Undergraduate, Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2017)

- Mr. Thejan Rajapakshe (AS/10/11/066). *Network patterns of psychosocial feelings expressed on social media - Twitter* – Final Year Undergraduate, Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2016)

- Mr. Harith Thilakarathne (ICT/10/11/031). *Developing a hybrid model for disaster prediction using machine learning with artificial neural networks and data mining approach* – Final Year Undergraduate, Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2016)

- Ms. Kaushalya Pathirana (AS/08/09/116). *Emergent movement patterns in a shoaling school of fish* – Final Year Undergraduate, Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2014)

- Ms. Nilupika Herath (AS/07/08/117). *Optimal foraging patterns of deterministic and central foragers in a complex landscape – computer simulation* – Final Year Undergraduate, Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2013)

- Ms. Sanduni Mallawawadu (AS/07/08/043). *Behavioral complexity in relation to anthropogenic habitat change and resource availability in a wild primate* – Final Year Undergraduate, Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2013)