

Dedigamage Ruchira Praveen Chamal

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I believe that ordinary people can be extraordinary.

Education

Master's Programme in Biomedical Sciences and Engineering [08/2022 -12/2024] – OGPA 4.38/5.0

Tampere University, Tampere, Finland.

Major: Biomedical Micro- and Nanodevices

Bachelor of the Science of Engineering Honours [11/2016 – 12/2021] – OGPA 3.48/4.00

(2nd class Upper Division)

Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.

Field of specialization: Electrical and Information Engineering

Publications

D.R.P Chamal, M.-L. Linne, T. Mäki-Marttunen, "A Novel SNN Framework for Approximating CSP Filtering in Motor Imagery EEG Classification", Manuscript, **to be submitted** in spring 2025 to Neural Networks Journal.

D.R.P Chamal, M.-L. Linne, T. Mäki-Marttunen, "A Spiking Neural Network Based Pipeline For Motor Imagery EEG Classification" LFTY Day 2025, February 13-14, 2025, Tampere University, Tampere, Finland. In Proceedings of LFTY Day 2025.

D. R. P. Chamal, M. I. M. Fernando, W. P. M. W. Kulathunga, K. D. Pathirana and N. W. Prins, "Design of a Novel Current Controlling Module for Functional Electrical Stimulation (FES) System," 2021 6th International Conference on Information Technology Research (ICITR), 2021, pp. 1-5,
[doi: 10.1109/ICITR54349.2021.9657272](https://doi.org/10.1109/ICITR54349.2021.9657272).

Experience

Research Assistantship [12/2024 -Present]

The computational neuroscience (CNS) group, Tampere University

<https://research.tuni.fi/computational-neuroscience>

- Implementing a spiking neural network that can approximate Common Spatial Patterns in Motor Imagery EEG classification

Analog IC design Traineeship [08/2024 – 09/2024]

The NCS group, Institute of Neuroinformatics, University of Zurich and ETH Zurich

<https://www.ini.uzh.ch/en.html>

- Designing an analog front end + Asynchronous Delta Modulator for tactile sensing

Research Assistantship [05/2023 - 08/2023]

The computational neuroscience (CNS) group, Tampere University

<https://research.tuni.fi/computational-neuroscience>

- Reading neuroscience literature on compartmental and network level modeling, GABA-B receptors and neurobiological models of schizophrenia
- Learning NEURON and BRIAN simulators
- Abstract Modeling of Pre-Pulse Inhibition (PPI) by using Brian

Internship as a prototype Engineering trainee [06/2021 09/2021]

Ceylon Business Appliances (Private) Limited, Colombo, Sri Lanka

<http://www.cba.lk/>

- Designed an active dry electrode for Electroencephalography (EEG) data acquisition system
- Worked with biomedical data acquisitions and analysis (Ex: ECG, HR, GSR etc)
- A face recognition application on a Jetson Nano development board
- Developed an Arduino firmware library for an EEG signal acquisition platform
- Studied fundamentals of human physiology and neurophysiology

Internship as a Software Engineering trainee [06/2021 - 09/2021]

effective Solutions (Pvt) Ltd, Western Province, Sri Lanka

<https://effectivesolutions.lk/>

- Implemented an API for the Ionic framework to integrate a smartpen for a mobile application
- A barcode reader was connected to a Point-of-Sale application to read the inputs

Projects

- Designing an analog front end + Asynchronous Delta Modulator for tactile sensing [2024]
- A spiking neural network-based pipeline for motor imagery EEG classification [2024] – **Master Thesis**
- Electric Field Interference (EFI) based closed-loop Deep Brain Stimulation (DBS) Targeting Subthalamic Nucleus – Analyzing EEG signals for estimating the level of Parkinson's as Feedback [2024]
- Compartmental modelling and analysis of effects of GABA-B on specific cortical neurons [2023]
- Implement a network-level abstract neuron model for simulating the PPI phenomena [2023]
- Designed and Implemented ECG acquisition device from scratch [2023]
- Designed an Active EEG electrode [2021]
- Implemented an Attendance marking system with Face-recognition [2021]
- FES based Machine Aided Hand Therapy for Post-Stroke Rehabilitation + BCI [2019 - 2021] 🏆
- Implemented a fuzzy inference system for a room temperature controller [2019]
- Alcoholic and non-alcoholic classifiers based on the recorded EEG data [2019]
- Sleepiness detection system and postural analysis system for an office work environment with image processing [2018]
- Intelligent Irrigation System for Hydroponic farming [2018]
- Web-based patient Management System [2018]
- Designed a SQL database to store critical data on hyperglycemia [2018]

Skills

- The Virtual Brain (TVB)
 - C/C++
 - Finite Element Analysis
 - Git/GitHub
 - NEURON
 - Python
 - Machine Learning
 - PCB Designing
 - NEST
 - LaTeX
 - Data Analysis
 - IC Designing
 - Brian 2
 - Image / Signal Processing
 - Web Development
 - 3D Modeling
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Conferences and workshops

- LFTY DAY 2025 – Organized by Finnish Society for Medical Physics and Medical Engineering [13/02/2025 – 14/02/2025]
 - ICNCE 2024 - International Conference on Neuromorphic Computing and Engineering [03/06/2024 – 06/06/2024]
 - 10th EBRAINS Baltic-Nordic Summer School on Neuroscience [28/05/2024-31/05/2024]
 - The IEEE Western European Students and Young Professionals Congress, which was held at EPFL University, Switzerland [15/09/2023 – 17/09/2023]
 - IEEE EMBS Clinical System Identification Virtual Mini-symposium [21/10/2021]
 - Workshop on Bionic Limbs, organized by the American Center in collaboration with the BionicsLaboratory, University of Moratuwa [17/09/2021 - 18/09/2021]
 - MERCon - Virtual Conference, organized by the University of Moratuwa [26/07/2021 - 28/07/2021]
 - Virtual BCI & Neurotechnology Spring School 2021, organized and hosted by g.tec medicalengineering GmbH [11/04/2021 - 20/04/2021]
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Scholarships and Awards

- I was honored to receive the Finland Scholarship in 2022, which covered 100% of my tuition fees for two academic years and included a generous 5000 € relocation grant for my master's studies.
 - For my contribution, I have been awarded the gold medal for the best performance in the final year undergraduate research projects of the Department of Electrical and Information Engineering in 2021.
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Recommendations

Docent Dr. Marja-Leena Linne,
Leader of The Computational Neuroscience Group,
Faculty of Medicine and Health Technology,
Tampere University,
Finland

marja-leena.linne@tuni.fi

Dr. Tuomo Mäki-Marttunen,
Academy Research Fellow,
Faculty of Medicine and Health Technology,
Tampere University Finland

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