Curriculum Vitae

Raghavendra Selvan

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Research Areas

Resource Efficient Machine Learning (ML), ML for Sciences, Biomedical Image Analysis, Graph Neural Networks, Quantum-inspired ML, Approximate Inference and Multi-object Tracking Theory

Current Employment

Tenure Track Assistant Professor — June 2023 – present
Machine Learning Section, Dept. Computer Science, University of Copenhagen (UCPH)
Data Science Laboratory, UCPH

Education

PhD, Medical Image Analysis — Oct. 2015 – Nov. 2018
Department of Computer Science, UCPH, DK

Master of Science, Communication Engineering — Sep. 2013 – June 2015
Chalmers University, Göteborg, SE

Bachelor in Engineering, Electronics and Communication — Sep. 2005 – Aug. 2009
BMS Institute of Technology, Bangalore, IN

Funding

Co-applicant: Villum Synergy Grant to study food microstructures with graph neural networks — 3M DKK (2023)
Co-applicant: Villum Synergy Grant to study fundamental physics using transformers — 3M DKK (2023)
Co-applicant: Tenovous Scotland PhD Fellowship to study fronto-temporal dementia with AI — 880k DKK (2023)
Work Package Leader: EU Horizon 2020 project on Resource Efficient ML methods — 4.3M DKK (2022)
Work Package Leader: EU Horizon 2020 project on Low Resource Big Data Pipelines — 2.4M DKK (2022)
Co-applicant: UK Research & Innovation grant in Environmental sustainability in Life Sciences — 890k DKK (2022)
Main Applicant: AI-Denmark Project — 100k DKK (2022)
Co-applicant: UCPH Data+ Synergy Grant — 3.4M DKK (2021)
Scholarship: Swedish Institute Scholarship for Masters education, Sweden — 250k DKK (2013)

Scientific merits

Advisor: 3 Postdocs, 2 PhD Students (de-facto), 3 RAs, 8 MSc & 10 BSc Theses, 4 International Interns (2019–)
Co-Advisor: 5 PhD Students, 2 MSc & 1 BSc Theses (2017–)
Collaborating Advisor: 8 PhD students (including international candidates) (2019–)
Six peer-reviewed publications based on *MSc and BSc projects* in the last 18 months
Student Satellite team member of India's first pico-satellite; launched to orbit on 12 Jul 2010
Carbontracker : Conceptualised & helped develop the first tool to predict the carbon footprint of training deep learning models. It has been downloaded $> 85k$ times with > 320 github stars

Professional activities

Affiliate Member of P ioneer Centre for AI, Denmark (2022–)
Primary coordinator of AI for Green Transition center at UCPH (2023–)
First Chair of Sustainability and Environmental Action Research Pipelines Workgroup, OHBM (2021–2023)
Datascience Consultant for FaunaPhotonics (2021)
Organizing Member of Summer School on Geometric Deep Learning (2021)
Reviewer at several high impact journals and conferences (IEEE-PAMI, MICCAI, NeurIPS, ICLR...) (2015 –)
Active Member of Free Software and Open Science groups (2008 –)

Awards & Distinctions

Received *Associate Professor*-equivalent assessment from Graduate School at UCPH for PhD supervision — 2022
Recognised at UCPH for *Sustained scientific excellence, departmental citizenship & societal impact* — 2021-2023
Dissemination Award at Dept. of Computer Science — 2022
Best Paper runner-up at International Conference on Medical Imaging with Deep Learning — 2020
Winner of Swedish Scholarship challenge out of more than 5000 participants — 2013
Limca Book of Records Award: Team Member of India's smallest satellite project - StudSat — 2011

Previous Employment

Assistant Professor @ Depts. of Computer Science & Neuroscience, UCPH, DK — Sep 2020 – May 2023
Postdoc @ Machine Learning Section, University of Copenhagen, DK — Jan 2019 – Aug 2020
Research Assistant @ Machine Learning Section, University of Copenhagen, DK — Oct 2018 – Dec 2018
Teaching Assistant @ Chalmers University, Göteborg, SE — July 2015 – Aug 2015
Lecturer @ BMS Institute of Technology, Bangalore, IN — Aug 2011 – Jul 2013
Columnist @ The Hindu (2nd largest Indian daily newspaper) and Frontline magazine — Nov 2011 – Aug 2015
Network Solutions Architect @ MRO-TEK, Bangalore — Nov 2009 – Jul 2011

Outreach

- **Speaker** at the Danish Digital Tech Summit on AI for Green Transitions 2022,2023
- **Press coverage:** Featured in Børsen, Süddeutsche Zeitung, MIT Tech. Review, Prosabladet, etc.[1] (2020–)
- **Expert Panelist** on *Environmental sustainability of emerging technologies* organized by International Risk Governance Center, Switzerland. (2022)
- **Social Media Manager** for the ML Section, DIKU
- **Student outreach** representing ML Section for new incoming students @ DIKU (2022–)
- **Academic Twitter** profile with sustained online engagement
- **Columnist** in Danish and International print media (2011–)

Teaching Experience

University of Copenhagen, DK

- Course Responsible: *Appreciating AI* (2023–)
- Course Responsible: *Introduction to Python* (2019 - 2022)
- Teacher: PhD course on *Machine Learning and Imaging Methods* (2019–2022)
- Teacher: PhD course on *Machine Learning and Projects* (2019–2022)
- Guest Lecturer: PhD course on *Animal models of disease and behavioral analysis* 2022
- Guest Lecturer: PhD course on *Bioimaging* 2019, 2022
- Guest Lecturer: PhD course on *Decision Making in Complex Environments* 2021
- Guest Lecturer: Bachelor course on *Elements of Machine Learning* (2020 - 2021)
- Guest Lecturer: Masters course on *Machine Learning* (2017)
- Teaching Assistant: Masters course on *Machine Learning* (2015 - 2017)

Selected Invited Talks

- *Graph neural networks* , NO (2024)
- *Representation learning for Medical Image Analysis*, NL (2023)
- *On the Carbon Footprint of Deep Learning*, DK (2023)
- *Graph Representation Learning*, DK (2023)
- *Oral Presentation at Workshop on Biomedical Image Registration*, DE (2022)
- *Sustainability of AI*, Confederation of Danish Industry, DK (2021)
- *Recent Trends in Medical Image Analysis.* Guest Lecture at Jönköping University, SE (2021)
- *Graph Refinement using GNNs With a focus on Airway Extraction*, University of Iowa, US (virtual) (2021)
- *Quantum Tensor Networks for Medical Image Analysis*, Cornell University, US (virtual) (2021)
- *Extraction of Airways from volumetric data*, Radboud University Medical Center, NL (virtual) (2021)
- *Machine learning for Medical Image Analysis*, BMS Institute of Technology, IN (2020)

Chalmers University, SE June 2015 – September 2015
Teaching Assistant in Master course on Sensor Fusion

BMS Institute of Technology, Bangalore, IN Aug. 2011 – Jul. 2013
Course Responsible: Bachelor courses on Digital Image Processing (2012), High Performance Communication Networks (2012), Antennas (2012), Electromagnetic Field Theory (2011) and Signals & Systems (2011),

Pedagogical Courses Completed

- Research Project Management Course, UCPH 2024
- PhD Supervision Course, UCPH 2023
- Universitetspædagogikum Course, UCPH 2021–2022
- Introduction to University Pedagogy, UCPH 2018
- Learning how to learn (MOOC), Coursera 2016
- Introduction to PhD course, UCPH 2015

Bibliographic Overview

- 18 journal articles and 22 peer-reviewed conference/workshop proceedings articles.
- First author of 16 articles
- Last or corresponding author of 15 articles
- Total 994 citations (since 2017)
- H-index [2] of 13
- Most cited article (324 citations since 2020) – *Carbontracker: Tracking and Predicting the Carbon Footprint of Training Deep Learning Models.* LFW Anthony, B Kanding, R Selvan. ICML Workshop on Challenges in Deploying and monitoring Machine Learning Systems.

Personal details

- Citizenship Indian
- Date of birth 2nd September, 1987
- Place of birth Bangalore, India

References

Prof. Erik B Dam
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Prof. Marleen de Bruijne
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[1] https://raghavian.github.io/outreach/ for more outreach activities and links to press coverage
[2] Based on Google Scholar (21/10/2022) https://scholar.google.com/citations?user=R9VBQ54AAAAJ&hl=en