

Nikhil Churamani

Postdoctoral Research Associate

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🏠 NikhilChuramani in NikhilChuramani R^G NikhilChuramani ✕ NikhilChuramani

Dedicated AI/ML Researcher devoted to pushing the boundaries of Artificial Intelligence and Robotics and ensuring its constructive influence on human society. Specialising in Continual Machine Learning and Human-Robot Interaction, my focus lies in developing versatile and adaptive systems tailored for dynamic environments. My research centres on advancing sensory perception and behavioural learning in autonomous robots, with a strong emphasis on promoting *fairness* and *equity*. I boast of a track record of successful interdisciplinary collaborations, actively engaging with experts from diverse fields. Committed to leveraging AI and ML for innovation, I am dedicated to addressing real-world challenges.

🎓 EDUCATION

Doctor of Philosophy (Computer Science)

Oct 2018 – Sep 2022

University of Cambridge [↗](#)

Cambridge, UK

Research focussed on developing (deep) Lifelong and Continual Machine Learning solutions for personalised and continual perception and context-appropriate behavioural learning for robots. PhD research funded by the EPSRC International Doctoral Scholarship [↗](#) and Cambridge Computer Laboratory Premium Research Studentship [↗](#).

Thesis: [Continual Learning for Affective Robotics](#) [↗](#)

Supervised by [Prof Hatice Gunes](#) [↗](#)

Masters of Science (Intelligent and Adaptive Systems)

Oct 2015 – Mar 2018

Universität Hamburg

Hamburg, Germany

Research focussed on End-to-End Deep Learning solutions for Multi-modal Perception and Behavioural Learning for Social Robots.

Thesis: [Modelling Affective Cores for Behaviour Modulation in Social Robots](#) [↗](#)

Supervised by [Prof Dr Stefan Wermter](#) [↗](#)

Grade: 1.0 mit Auszeichnung bestanden (Distinction).

Bachelors of Technology (Computer Science and Engineering)

Aug 2007 – May 2011

Punjab Technical University [↗](#)

Chandigarh, India

Excelled in Course Modules on Software Engineering, Relational Databases, Object-oriented Programming and Expert Systems. Final Year Project: Developed and deployed a problem ticket management system for R Systems, India [↗](#) (1000+ employees) for sys-admins to record and resolve IT-related issues.

🧰 PROFESSIONAL EXPERIENCE

Postdoctoral Research Associate

Oct 2022 – present


University of Cambridge [↗](#)

Cambridge, UK



Postdoc researcher at the [Affective Intelligence and Robotics \(AFAR\) Lab](#) [↗](#)

investigating Federated Continual Learning solutions for Affective and Social Robotics. Postdoc project funded by [Google](#) under the [GIG funding scheme](#).


Research Assistant (HiWi)

Universität Hamburg 

Apr 2016 – Sep 2018
Hamburg, Germany

Worked at the Technical Aspects of Multimodal Systems (TAMS).  group (Apr 2016 - Mar 2017) and Knowledge Technology (WTM).  group (Apr 2017 - Sept 2018). Research focussed on developing ML solutions for 3D pose estimation (TAMS) and Multi-modal Affect Perception for Social Robots (WTM). Collaborated on projects funded by the German Research Foundation (DFG) under project Cross-modal Learning (TRR 169).

Project Manager

Chitkara University 

Sep 2014 – Mar 2016
Chandigarh, India

Developed and managed industry-academia collaboration projects ranging from Industrial Automation, IoT, AI/ML, Mobility and Big Data, partnering with industry leaders and government agencies for SME development. Work deliverables also included delivering skill-building sessions for undergraduates on programming for IoT devices such as Arduino and Intel Atom boards.

Centre Head, North India Operations

Steinbeis India 

Dec 2013 – Aug 2014
Delhi, India

Designed, implemented and managed Technology Transfer and Skill-building Projects for Industrial Automation of SMEs in North India.

Systems Engineer, Education and Research

Infosys Limited 

Sep 2011 – Dec 2013
Mysore, India

Provided Project consultation and internal employee training on Programming Languages, Databases and Software Engineering. Designed coursewares for Mainframes (COBOL, CICS) and Relational Databases. Conducted training sessions for new recruits (trainees) on several topics, including OOPS, SQL and Software Engineering principles.

TEACHING EXPERIENCE

Teaching Assistant

University of Cambridge

2019 – present
Cambridge, UK

Assisted in Undergraduate/Graduate modules on Mobile Robot Systems (2019, 2020), Interaction Design (2019, 2020), Affective Computing (2020, 2024) and Further Human-Computer Interaction (2022).

Course Supervisions

University of Cambridge

2019 – present
Cambridge, UK

Designed and conducted Cambridge Undergraduate/Graduate supervisions on Interaction Design, Further-HCI and Affective Computing.

MPhil Supervisions

University of Cambridge

2020 – 2023
Cambridge, UK

Co-Supervised Cambridge MPhil student projects on:

- Continual Reinforcement Learning for Social Robot Behavioural Learning
- Latent Generative Replay for Resource-Efficient Continual Learning
- Learning Socially Appropriate Behaviours for Humanoid Service Robots

SKILLS

Machine Learning

Deep Learning

Computer Vision

Continual Learning

Multi-modal Learning

Human-Robot Interaction

Affective Computing

Robotics

Federated Learning

Reinforcement Learning

Python

Tensorflow

PyTorch

Jupyter

Pandas

Scikit-Learn

Git

Agile Development

C++

Java

Flower

Robot Operating System


Data Visualisation (Matplotlib, Seaborn, Plotly)

Robot Platforms (Pepper, Nao, NICO, iCub)

AWARDS

Wiseman Award 	Oct 2022
Department of Computer Science and Technology, University of Cambridge	
DAAD AI-Net Fellowship 	Mar 2022
German Academic Exchange Service (DAAD)	
RSJ/KROS Distinguished Interdisciplinary Research Award (Finalist)	Aug 2021
IEEE RO-MAN 2021	
Best Doctoral Consortium Paper Award	Nov 2020
IEEE Face and Gestures 2020	
EPSRC International Doctoral Scholarship 	Oct 2018
Engineering and Physical Sciences Research Council (EPSRC), UK	
Best Graduate Student 2018 	Jul 2018
Department of Informatics, Universität Hamburg	
IEEE CIS Travel Award	Jul 2018
IEEE World Congress on Computational Intelligence, 2018	
DAAD Leistungsstipendium	Nov 2016
Universität Hamburg Merit Scholarship for International Students	

CONFERENCE/WORKSHOP ORGANIZATION

IEEE International Conference on Affective Computing and Intelligent Interaction 	Sep 2024
Glasgow, UK	
Visa and Registration Chair	
Contributing to IEEE ACII 2024 as the Visa and Registration chair.	

LEAP-HRI Workshop at IEEE/ACM HRI 2024

Mar 2024

Organiser

Main organiser for the Lifelong Learning and Personalization in Long-Term Human-Robot Interaction (LEAP-HRI) workshop to be held at the IEEE/ACM International Conference on Human-Robot Interaction 2024.

Causal-HRI Workshop at IEEE/ACM HRI 2024

Mar 2024

Boulder, CO, USA

Organiser

Main organiser for the Causal-HRI: Causal Learning for Human Robot Interaction workshop to be held at the IEEE/ACM International Conference on Human-Robot Interaction 2024.

Continual AI Unconference

Oct 2023

Virtual

Talks Chair

Contributed as the Talks Chair for the 1st ContinualAI Un-conference aimed at speeding-up the long desired inclusive and sustainable progress of the Continual Learning community with an open-access, multi-timezone, 24 hours long event.

CLVision Workshop at CVPR 2020

Jun 2020

Organiser

Co-organiser for the CLVision: Continual Learning in Computer Vision workshop held at the IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR) 2020.

IEEE International Conference on Affective Computing and Intelligent Interaction

Sep 2019

Cambridge, UK

Volunteer Coordinator

Managed volunteer coordinators for the IEEE International Conference on Affective Computing and Intelligent Interaction (ACII) 2019. Key deliverables included helping schedule and organise the paper and poster presentations, preparing venues and coordinating with the tech-team for the smooth running of the conference.

Empathy Modelling in Real-World Scenarios Workshop at IEEE FG 2019

May 2019

Lille, France

Organiser

Organiser for the Workshop on Empathy Modelling in Real-World Scenarios: Lessons Learned from the OMG Empathy Prediction Challenge held at the International Conference on Face and Gesture Recognition (FG), 2019.

OMG Empathy Prediction Challenge at IEEE FG 2019

May 2019

Lille, France

Organiser

Organiser for the OMG Empathy Prediction Challenge held in conjunction with the International Conference on Face and Gesture Recognition (FG), 2019.

OUTREACH AND TALKS

Negotiations with Pepper Robot Demonstration

Sep 2023

Physics Outreach Event for Schools

Cambridge, UK

Robots for Wellbeing Demonstration

Mar 2023

Cambridge Festival 2023

Cambridge, UK

Tutorial on Facial Affect Recognition for Human-Robot Interaction 
HRI Winter School on Embodied AI 2022

Dec 2022
Ghent, Belgium

Robots for Wellbeing Demonstration
Cambridge Festival 2022

Mar 2022
Cambridge, UK

Robots for Well-being Demonstration
Cambridge Festival

Mar 2021
Cambridge, UK

Seminar: Can Robots have an Emotional Self? Towards Social Robots with Emotions and Personality
McMenemy Seminar, Trinity Hall Cambridge

May 2019
Cambridge, UK

UNIVERSITY SERVICE

Faculty Board Member, Computer Lab, University of Cambridge
PhD Representative

2019 – 2020
Cambridge, UK

Graduate Students Forum Member, Computer Lab, University of Cambridge
Rainbow Group Representative

2018 – 2020
Cambridge, UK

Computing Officer
Trinity Hall Cambridge

2018 – 2020
Cambridge, UK

Research Scholar (Stipend Holder)
PIASTA, University of Hamburg

2017 – 2018
Hamburg, Germany

Examination Board Member
MSc Intelligent Adaptive Systems, University of Hamburg

2015 – 2018
Hamburg, Germany

REVIEWING RESPONSIBILITIES

Frontiers in Robotics and AI (Review Editor)

IEEE Transactions on Affective Computing

IEEE Transactions on Multimedia

IEEE Transactions on Cybernetics

IEEE Robotics and Automation Letters

AAAI

Advanced Robotics

IJCAI

ACM ICM

ACM/IEEE HRI

IEEE RO-MAN

IEEE ICDL-EpiRob

IEEE ICRA

IEEE FG

IEEE ACII

RSS

ICPR

PUBLICATIONS

Affective Computing for Human-Robot Interaction Research: Four Critical Lessons for the Hitchhiker 





2023

IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)

Hatice Gunes, and Nikhil Churamani

Continual Facial Expression Recognition: A Benchmark ↗ ArXiv preprint <i>Nikhil Churamani, Tolga Dimlioglu, German I. Parisi, and Hatice Gunes</i>	2023
Latent Generative Replay for Resource-Efficient Continual Learning of Facial Expressions ↗ IEEE 17th International Conference on Automatic Face and Gesture Recognition (FG), 2023 <i>Samuil Stoychev, Nikhil Churamani, and Hatice Gunes</i>	2023
Towards Causal Replay for Knowledge Rehearsal in Continual Learning ↗ AAAI Bridge Program on Continual Causality, 2023 <i>Nikhil Churamani, Jiaee Cheong, Sinan Kalkan, and Hatice Gunes</i>	2023
Domain-Incremental Continual Learning for Mitigating Bias in Facial Expression and Action Unit Recognition ↗ IEEE Transactions of Affective Computing <i>Nikhil Churamani, Ozgur Kara and Hatice Gunes</i>	2022
Learning Socially Appropriate Robo-Waiter Behaviours through Real-Time User Feedback ↗ ACM/IEEE International Conference on Human-Robot Interaction <i>Emily McQuillin, Nikhil Churamani, and Hatice Gunes</i>	2022
Affect-Driven Learning of Robot Behaviour for Collaborative Human-Robot Interactions ↗ Frontiers in Robotics and AI <i>Nikhil Churamani, Pablo Barros, Hatice Gunes, and Stefan Wermter</i>	2022
Continual Learning for Affective Robotics: A Proof of Concept for Wellbeing ↗ IEEE International Conference on Affective Computing and Intelligent Interaction Workshops and Demos (ACIIW) <i>Nikhil Churamani, Minja Axelsson, Atahan Çaldır, and Hatice Gunes</i>	2022
CVPR 2020 continual learning in computer vision competition: Approaches, results, current challenges and future directions ↗ Artificial Intelligence <i>Vincenzo Lomonaco, Lorenzo Pellegrini, Pau Rodriguez, Massimo Caccia et. al.</i>	2022
Participant Perceptions of a Robotic Coach Conducting Positive Psychology Exercises: A Systematic Analysis ↗ Under Review <i>Minja Axelsson, Nikhil Churamani, Atahan Caldır, and Hatice Gunes</i>	2022
AULA-Caps: Lifecycle-Aware Capsule Networks for Spatio-Temporal Analysis of Facial Actions ↗ IEEE International Conference on Automatic Face and Gesture Recognition (FG) <i>Nikhil Churamani, Sinan Kalkan, and Hatice Gunes</i>	2021
Teleoperated Robot Coaching for Mindfulness Training: A Longitudinal Study ↗ IEEE International Conference on Robot & Human Interactive Communication (RO-MAN) <i>Indu P. Bodala, Nikhil Churamani, and Hatice Gunes</i>	2021

- Towards Fair Affective Robotics: Continual Learning for Mitigating Bias in Facial Expression and Action Unit Recognition**  2021
Workshop on Lifelong Learning and Personalization in Long-Term Human-Robot Interaction (LEAP-HRI), ACM/IEEE International Conference on Human-Robot Interaction (HRI)
Ozgur Kara, Nikhil Churamani, and Hatice Gunes
- CLIFER: Continual Learning with Imagination for Facial Expression Recognition**  2020
IEEE International Conference on Automatic Face and Gesture Recognition (FG)
Nikhil Churamani, and Hatice Gunes
- Continual Learning for Affective Computing**  2020
Doctoral Consortium, IEEE International Conference on Automatic Face and Gesture Recognition (FG)
Nikhil Churamani
- Continual Learning for Affective Robotics: Why, What and How?**  2020
IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)
Nikhil Churamani, Sinan Kalkan, and Hatice Gunes
- The FaceChannel: A Fast and Furious Deep Neural Network for Facial Expression Recognition**  2020
Springer Nature Computer Science
Pablo Barros, Nikhil Churamani, and Alessandra Sciutti
- The FaceChannel: A Light-weight Deep Neural Network for Facial Expression Recognition**  2020
IEEE International Conference on Automatic Face and Gesture Recognition (FG)
Pablo Barros, Nikhil Churamani, and Alessandra Sciutti
- The OMG-Empathy Dataset: Evaluating the Impact of Affective Behavior in Storytelling**  2019
IEEE International Conference on Affective Computing and Intelligent Interaction (ACII)
Pablo Barros, Nikhil Churamani, Angelica Lim, and Stefan Wermter
- The OMG-Emotion Behavior Dataset**  2018
IEEE International Joint Conference on Neural Networks (IJCNN)
Pablo Barros, Nikhil Churamani, Egor Lakomkin, Henrique Sequeira et al.
- Learning Empathy-Driven Emotion Expression using Affective Modulations**  2018
IEEE International Joint Conference on Neural Networks (IJCNN)
Nikhil Churamani, Pablo Barros, Erik Strahl, and Stefan Wermter
- An Affective Robot Companion for Assisting the Elderly in a Cognitive Game Scenario**  2018
Workshop on Intelligent Assistive Computing (WIAC), IEEE World Congress on Computational Intelligence (WCCI)
Nikhil Churamani, Alexander Sutherland, and Pablo Barros

- The Impact of Personalisation on Human-Robot Interaction in Learning Scenarios**  2017
ACM International Conference on Human Agent Interaction (HAI)
Nikhil Churamani, Paul Anton, Marc Brügger, Erik Fließwasser et. al.
- Hey Robot, Why Don't You Talk To Me?**  2017
IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)
H. G. Ng, P. Anton, M. Brügger, Nikhil Churamani, et. al.
- Teaching Emotion Expressions to a Human Companion Robot using Deep Neural Architectures**  2017
IEEE International Joint Conference on Neural Networks (IJCNN)
Nikhil Churamani, Matthias Kerzel, Erik Strahl, Pablo Barros, Stefan Wermter
- iCub: Learning Emotion Expressions using Human Reward**  2016
Workshop on Bio-inspired Social Robot Learning in Home Scenarios, IEEE/RSJ International Conference on Intelligent Robots and Systems

REFERENCES

Prof Hatice Gunes, *Professor*, University of Cambridge
Hatice.Gunes@cl.cam.ac.uk

Prof Dr Stefan Wermter, *Director*, Knowledge Technology, University of Hamburg
stefan.wermter@uni-hamburg.de

Prof Dr Sinan Kalkan, *Associate Professor*, Middle East Technical University
skalkan@metu.edu.tr

Prof Angelica Lim, *Assistant Professor*, Simon-Fraser University
angelica@sfu.ca

Dr Pablo Barros, *Senior ML Researcher*, Sony AI