Curriculum vitae

PERSONAL INFORMATION

Muthukumar Pandaram

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SUMMARY

A versatile and analytical Master's student in Computational Neuroscience with over 2 years of research experience gained through working at different research labs across the world. Possess a Bachelor's in Mechanical Engineering with demonstrated skills in control, sensor interfacing and machine learning techniques. Passionate about working at the intersection of Neuroscience and AI.

EDUCATION AND TRAINING

20 Oct 2020–current

Master of Science – Computational Neuroscience

Technical University of Berlin, Berlin (Germany)

- **CGPA:** 1.65

- Deutschlandstipendium (German National Scholarship) recipient for the academic year 2020-21, awarded by BMBF, Germany and a private sponsor.

21 Jul 2014–30 Apr 2019

Bachelor of Engineering – Mechanical Engineering

PSG College of Technology, Coimbatore (India)

- **CGPA:** 9.52/10 (Batch Topper and Gold Medallist)

WORK EXPERIENCE

01 Nov 2022–Present

Working Student

Manipulator Cluster, Gestalt Robotics, Berlin (Germany)

- Creating a flexible bin picking solution for industrial automation.

19 Mar 2021–31 Oct 2022

Student Research Assistant

Robotics and Biology Lab, Technical University of Berlin, Berlin (Germany)

- Working on a project funded by the Science of Intelligence excellence cluster under Prof. Dr. Oliver Brock.
- Set up the control hardware for soft robotic hands using proportional valves and flow sensors built on ROS framework.

15 Nov 2019–31 May 2020

Research Intern

Centre for Alternate Cooling Technologies, PSG College of Technology, Coimbatore (India)

- Worked on a Department of Science and Technology aided project.
- Developed an experimental apparatus for evaluating the performance of a Solar Assisted Liquid Desiccant based air-conditioning system.

13 May 2019–2 Aug 2019

Undergraduate Research Intern

Robotics and Manufacturing Automation Lab, McMaster University, Hamilton (Canada)

- Was one of around 600 students from around the globe selected through the MITACS Globalink Research Internship Program.
- Modified a custom written open-source numerical solver in MATLAB and C++ for simulating the hyperelastic behaviour of soft pneumatic actuators.

10 Dec 2018–15 Feb 2019

Research Intern

Medical Mechatronics Lab, National University of Singapore, Singapore (Singapore)

- Developed thermo-mechanical finite element models in ANSYS which coupled the viscoelastic behaviour of hydrogels and the shape memory effect exhibited by nitinol wires.
- Interfaced a battery-less NFC based transponder platform to get data from analog sensors developed at the Singapore Institute of Neurotechnology (SINAPSE) through an Android app.

13 May 2018–28 Jul 2018

Summer Research Fellow

Manufacturing Engineering Section, Indian Institute of Technology, Madras, Chennai (India)

- Was one of 20 Summer Fellowship students selected from across the country.
- Developed an algorithm for automated registration of design surfaces (in NURBS surface format) and the manufactured surfaces (reconstructed from 3D LASER scanned Point clouds) for inspection of free form surfaces.
- The proposed algorithm was around 10x faster than the commonly used Iterative Closest Point (ICP) algorithm. It was also independent of the initial orientation of the two surfaces.

15 May 2017–28 Jul 2017

Research Intern

Surgical Technologies lab, University of Leeds, Leeds (United Kingdom)

- Developed a finite element model in ABAQUS to simulate the hyperelastic behaviour of a soft tactile sensor body and compared the different hyperelastic models.

PERSONAL SKILLS

Mother tongue(s): Tamil

Foreign language(s): English (CEFR Level C1), German (CEFR Level A1)

ADDITIONAL INFORMATION

Publication: **Soft Tactile Sensors with Variable Compliance,**
Shehran Azim, Abhinandan Srinivasan, **Muthukumar Pandaram**, Junwai Kow, Greg de Boer, Hongbo Wang, Ali Alazmani, Peter Culmer, IEEE Sensors,2017

Projects:

- **Neural Mechanisms of real world visual categorical decisions**
  - Analysed EEG data to find when and where the decisions made based on visual perception take place in our brain.
- **Motion planning for Autonomous Vehicles:**
  - Developed a motion planning node using the Autoware.auto framework based on ROS2 and simulated the vehicle in LGSVL.
- **Social Robots**
  - Working on a project to find what socials skills make robots appear intelligent.

Relevant Master's courses: Machine Intelligence, Robotics, Applications of Robotics and Autonomous systems

Technical Skills:

Languages Known: C, C++, Python, MATLAB

Middleware: ROS 1 and 2

CAD Modelling Packages: PTC Creo, SolidWorks

Simulation Packages: ANSYS Structural and FLUENT, ABAQUS CAE