VISHAL KANNAN

Magdeburg, Germany | [vishkann22@gmail.com](mailto:vishkann22@gmail.com) | +4917628787245

**Otto Von Guericke University**| Magdeburg, Germany. Master’s student in MSc. Integrative Neuroscience| 2021-2023

**Current GPA: 1.4**

**SASTRA Deemed University |** Tamil Nadu, India

M. Tech (Integrated) Medical Nanotechnology and B. Tech in Bioengineering | **CGPA: 7.95/10** | Awarded July 2020

**Course Work: Neuroscience**: Theoretical Neuroscience, Systems Neurophysiology, Advanced Statistics in Neuroscience, Learning & Memory | Engineering basics | **Biology:** Biochemistry, Medical Sciences, Neurobiology and Cognitive Sciences | **Electronics:** Analog and Digital electronics, Microprocessor and Microcontroller, Biosignal Processing | **Applied Science:** Cognitive Neuroimaging, Machine Learning, Electrophysiology, Biomechanics, Biomedical Instrumentation, Physiological Control Systems, Biomaterials, Tissue Engineering & Regenerative medicine, Medical Prosthesis, Medical Nano Robotics, Biomedical Nanotechnology, and Animal Models in Biomedical Research

| **Healthcare Management:** Clinical Engineering and Medical ethics

**WORK EXPERIENCE**

**CortXplorer lab, Department of Systems Physiology of Learning, Leibniz Institute of Neurobiology (LIN)**| Magdeburg, Germany | **Master Thesis** & ***Research Assistant (HiWi)*** | (Supervisor: Prof. Dr. Max Happel)

*Aug 2022 – Present*

* “Cortical dynamics during heuristical decision making under uncertainty” – Creating a data analysis pipeline for performing data pre-processing. Performing channel layer specifications and current source density and statistical analysis on local field potential (LFP) signals and behavioural data to identify critical decision features in the rodent cortex.
* Spectral analysis on gerbil LFP data from auditory reversal learning experiment. Developing a General Linear Model (GLM) on to fit the experimental data and predict the decision choice based on spectral features.

**Neuro-cybernetics and Rehabilitation Lab, Institute of Neurology, University Klinikum Magdeburg**| Magdeburg, Germany | **Lab rotation Internship** | (Supervisor: Prof. Dr. Catherine Sweeney Reed) *March 2023 – April 2023*

* Comparison of potential classification features in a brain–computer interface applied to determine timing of functional electrical stimulation in post-stroke rehabilitation.

**CortXplorer lab, Department of Systems Physiology of Learning, Leibniz Institute of Neurobiology (LIN)**| Magdeburg, Germany | ***Research Assistant (HiWi)*** | (Supervisor: Prof. Dr. Max Happel) *Aug 2022 – Present*

* Spectral analysis on gerbil LFP data from auditory reversal learning experiment. Performing channel layer specifications and wavelet analysis to investigate the spectral patterns in each cortical layer.

**Comparative Neuroscience Group, Leibniz Institute of Neurobiology (LIN)**| Magdeburg, Germany

| ***Research Assistant (HiWi)*** | (Supervisor: Prof. Dr. Michael Brosch) *Jan 2022 – Present*

* “Spike sorting of extracellular macaque neuronal data to identify single cell type and population level functional characteristics” – Worked on developing (Semi-) automated offline spike sorting algorithm in MATLAB
* Developing a hardware-software interface in MATLAB for spatial audio setup to investigate localization of sounds in monkeys.

**Centre of Excellence for Road Safety, Indian Institute of Technology Madras** | Chennai, India| ***Project Engineer and Junior Consultant*** | *July 2020 –*

*June 2021*

* Standard work analysis in trauma care centres | Implementing lean principles and developing decision support systems to improve process flow and achieve "Zero wait time" for patients
* Integrated Road Accident Database (iRAD), a World Bank funded Govt. of India project - Consulting and training different stakeholders on interpreting the human factors involved in accident scene investigation | Technical writing of annual reports | Working on grid analysis to identify vulnerable road traffic accident spots across different states
* A non-contact ubiquitous health monitoring system using cECG, respiration and pressure distribution signals | Developed a PCA based signal processing algorithm for enhanced denoising and automated extraction of respiration rate from capacitive ECG (cECG)

**Rehabilitation Bioengineering Group (RBG) Labs, IIT Madras** | Chennai, India *Dec 2019 -June 2020*

| ***Master thesis internship*** *|* “*Evaluating the Effect of Visual Cue on Physiological Tremor using Accelerometer and EMG Sensors”* (Presented at IEA Conference 2021) | Performed real time data collection from 8 healthy subjects and validated the effect of visual cue on physiological hand tremor using statistical analysis under the guidance of Prof. Venkatesh Balasubramanian

**Tissue Engineering and Additive Manufacturing (TEAM) Lab SASTRA**, Thanjavur, India (Guide: Dr. S Anuradha)

* *“Development of 3D printed fracture specific orthopedic cast as a replacement for conventional casting systems”* (Submitted for patency) | Developed different CAD models and performed Finite Element Analysis to validate the best design with respect to both mechanical and material properties | Patent writing *Jun – Nov 2019*
* *“Additive manufacturing of biodegradable porous orthopaedic screw”* (Published) | Developed different head designs for the screw using CAD modelling and performed dimensional analysis for precise anatomical fitting *Jun – Nov 2018*

**SASTRA**, Thanjavur, India *Dec 2017- April 2018*

*“Design and development of PORT-AQ, A portable EEG acquisition kit”* | Designed and fabricated an EEG acquisition hardware using dry electrodes and developed an algorithm to detect mental alertness of an individual under the guidance of Dr. K Adalarasu

**RELEVANT EXPERIENCE / ACTIVITIES**

**Chairman,** Bioengineers at SASTRA **"BE@S' -** A student association of Department of Bioengineering and Medical Nanotechnology *June 2019 – June 2020*

**International Genetically Engineered Machine (iGEM)** | *Silver Medallist* in iGEM 2019 | Head of Sensor team –

|  |  |
| --- | --- |
| Development of an early-stage diagnosis tool for cervical cancer detection using toehold switches | *2019* |
| **Product Lead** at **3D Implants** – an incubatee at SASTRA’s Technology and Business Incubator (TBI**)** | *2019* |
| **SASTRA**| “BE@TS” member | Head organiser of the National Seminar on Stem Cell Biology, “REGENESIS” | *2018* |

**DST & Texas Instruments India Innovation Challenge Design Contest (IICDC)**, India | *Quarter finalist* in IICDC 2017| Development and productization of "E-Buzz" an antidozing system for detecting real time drowsiness in drivers under the guidance of Dr. K. Adalarasu *2017*

**PUBLICATIONS**

1. Kannan V., Adalarasu K., Natarajan P., Balasubramanian V. (2022) *Analyzing the Effect of Visual Cue on Physiological Hand Tremor Using Wearable Accelerometer Sensors. Proceedings of the 21st Congress of the International Ergonomics Association (IEA 2021).* https://doi.org/10.1007/978-3-030-74614-8\_66
2. R. Dhandapani, P.D. Krishnan, A. Zennifer, V. Kannan, A. Manigandan, M.R. Arul, D. Jaiswal, A. Subramanian,

S.G. Kumbar, S. Sethuraman*, Additive manufacturing of biodegradable porous orthopaedic screw, Bioact. Mater. 5 (2020) 458–467.* https://doi.org/10.1016/j.bioactmat.2020.03.009. **(Impact Factor : 8.724)**

1. A. Manigandan, M. Vimalanadhan, R. Dhandapani, S. Bagewadi, V. Kannan, S. Sethuraman, A. Subramanian, *Marigold-like tyrosinase-embedded nanostructures - a nano-in-micro system, Dalt. Trans. 49 (2020) 11329– 11335.* https://doi.org/10.1039/d0dt02358b. **(Impact Factor : 4.174)**

**PATENTS**

*Fabrication of 3D-printed fracture specific orthopedic cast.* Patent Number: WO/2021/156894

**PROFESSIONAL TRAINING**

* + Certified Machine Learning course by **Stanford University** through online platform Coursera | Grade: **95% |**

Awarded September 2020

**SOFTWARE**

Python | MATLAB & SIMULINK | GitHub | SPSS | Microsoft Power BI | ANSYS | Solidworks | Blender | Autodesk Meshmixer | Origin | MS Word | MS power point | MS Excel

**SKILLS**

* **Research Skills** - Design of experiments | Technical writing for journals and conferences | Machine learning | Data processing and management
* **Soft Skills** - Leadership | Project management | Technical documentation | Critical Thinking | Problem Solving

| Ability to quickly create and apply ideas and solutions

**EXTRA CURRICULAR ACTIVITIES AND HOBBIES**

* + Member of Entrepreneurship Development Cell **(ED Cell**) at SASTRA during 2017-2019
  + An explorer with a zeal to travel: activities like trekking, hiking; biking and badminton interest me

**REFERENCES**

* 1. **Prof. Dr. Max Happel**, Professur für Physiologie, Medical School Berlin, Berlin, Germany Email ID: [*Max.Happel@lin-magdeburg.de*](mailto:Max.Happel@lin-magdeburg.de)
  2. **Prof. Dr. Catherine Sweeney Reed**, Universitätsklinik für Neurologie, Magdeburg, Germany Email ID: [*catherine.sweeney-reed@med.ovgu.de*](mailto:catherine.sweeney-reed@med.ovgu.de)
  3. **Prof. Dr. Michael Brosch**, Leibniz Institute of Neurobiology, Magdeburg, Germany Email ID: [*Michael.Brosch@lin-magdeburg.de*](mailto:Michael.Brosch@lin-magdeburg.de)