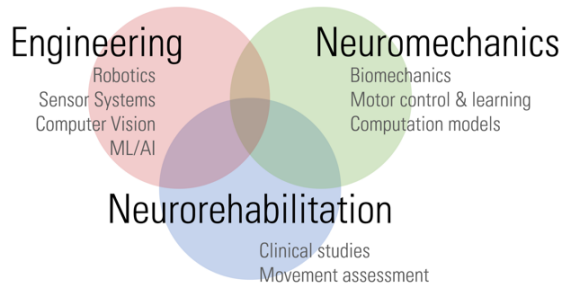


Sivakumar Balasubramanian

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Honorary Assoc. Professor, School of Health & Rehabilitation Sciences, The University of Queensland, Brisbane, Australia.

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Personal: <http://siva82kb.github.io> | Lab: <http://biorehab.github.io> | Blog: [Repairing Broken Movements](#) | ORCID: [0000-0001-5915-1346](#)



Research Interests

Neurorehabilitation Engineering & Science, Quantitative Sensorimotor Assessments, Precision Neurorehabilitation.

Technical Interests

Mechatronics, Linear Algebra & Optimization, Neuromechanics, Instrumentation, Causal Inference.

Work Experience

May '21 – Present	Professor & Head, Department of Bioengineering, Christian Medical College Vellore, India
Jan '23 – Present	Honorary Associate Professor, School of Health & Rehabilitation Sciences, University of Queensland, Australia
Jul '22 – Dec '22	Principal Research Fellow, School of Health & Rehabilitation Sciences, University of Queensland, Australia
Aug '19 – May '21	Professor, Department of Bioengineering, Christian Medical College Vellore, India
Aug '15 – Aug '19	Associate Professor, Department of Bioengineering, Christian Medical College Vellore, India
Aug '14 – Aug '15	Lecturer, Department of Bioengineering, Christian Medical College Vellore, India
	- Head the activities of the Biological Learning & Rehabilitation Group. PLUTO hand robot commercialized by Thryv Rehab Solutions Pvt. Ltd. as PLUTO-H. NOARK arm skateboard commercialized by Dhariki Labs Pvt. Ltd. - Novel, clinically translatable rehabilitation robots for upper-limb neurorehabilitation. - Wearable systems, data analysis, and visualization methods for real-world arm-use assessments. - EMG interface for movement intention detection in severe stroke. - Organized NeuroRehack hackathon in neurorehabilitation engineering. - Created the Monalysa movement analysis python library. - Attracted about 11 Crores INR of research funding for developing neurorehabilitation technology.
Nov '12 – Jul '14	Researcher, Health Technologies Division, Tecnalia Research & Innovation, San Sebastian, Spain
	- Multi-electrode array-based FES for rehabilitation applications. - Participated in three industrial and academic grant proposals.
Feb '10 – Oct '12	Post-doctoral Research Associate, Human Robotics Group, Imperial College London, London, UK
	- Chief architect of an interactive table-top workstation for UL neurorehabilitation commercialized by Tyromotion (Austria) as Myro. - Novel movement smoothness measure. - Isometric assessment of UL strength and control in MS patients.

Education

Aug '05 – Nov '09	PhD in Bioengineering, Arizona State University, Tempe Thesis: Development of a Wearable Assistive System for Upper-Extremity Neurorehabilitation. - Developed and evaluated two adaptive “assist-as-needed” controllers for RUPERT – a wearable exoskeleton, to train arm reaching movements in stroke patients. - Developed and evaluated a hybrid assistive system – combining RUPERT and a two-channel electrical stimulator – for assisted training of reach-and-grasp tasks in stroke patients.
Aug '03 – Jun '05	MTech in Biomedical Engineering, Indian Institute of Technology Bombay, Mumbai Thesis: Automatic FES System for Correcting Foot Drop Developed and evaluated an automatic FES foot drop correction system using a custom-built electrical stimulator, and a gait phase detection system using an off-the-shelf dual-axis accelerometer.
Aug '99 – May '03	BTech in Electronics & Communication Engineering, Pondicherry Engineering College, Pondicherry

Research Highlights

Christian Medical
College Vellore

PLUTO – Hand Robot



HyperCube



Arm-use assessment



Romiumeter



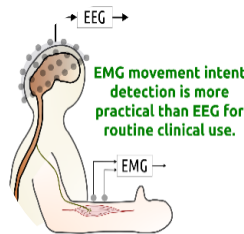
MARS – Arm Robot



NOARK



EMG for assisted rehab



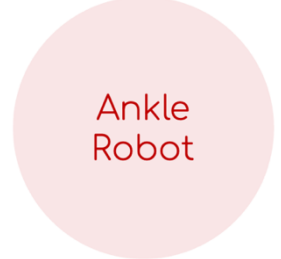
DYNAMBO



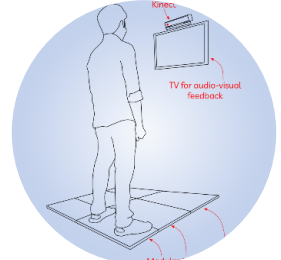
Vision system for rehab



ATOBOT – Ankle Robot



Modular balance boards

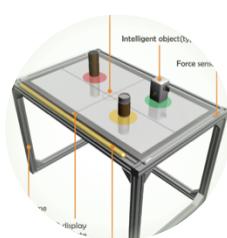


TATARO

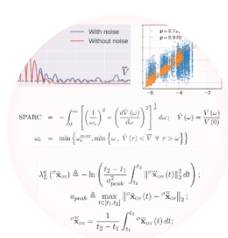


Imperial College
London

SITAR



SPARC



Arizona State
University

RUPERT



Teaching

Christian Medical College Vellore	Applied Linear Algebra in Data Analysis, Linear Systems, Mechanics of Movements, Introduction to Digital Signal Processing, Transducer and Instrumentation, Clinical Attachment offered to engineering graduate students. Introduction to Digital Signal Processing offered to clinicians and students from the clinical departments in CMC Vellore along with engineering graduate students.
Imperial College London	Teaching assistant for the 'Human Neuromechanical Control' graduate course (Spring 2011) taught by Dr Etienne Burdet.
Indian Institute of Technology Bombay	Teaching assistant for 'Biostatistics' (Spring 2005) and 'Biomathematics for Life Scientists' (Fall 2004) by Dr Rajni Joshi.

Presentation and Talks

- [1] "Engineering Recovery: From Clinically Relevant Devices to Mechanistic Precision Neurorehabilitation", Invited talk at BioMet Conference, VIT, Vellore. 07 Aug 2026.
- [2] "Neurorehabilitation Technologies for Real-World Impact", Invited talk at Quality Circle, CMC Vellore. 13 Jun 2026.
- [3] "Increasing Dosage with Low-Cost Robotics in Motor Rehabilitation for Neurological Conditions", Invited talk at Motor Rehabilitation Workshop, INFRCON 2026, 14th Annual Conference of IFNR, Mumbai. 09 Apr 2026.
- [4] "Technology for Home-based Therapy: Tackling Neurorehabilitation at Scale", Invited talk at the Robotic Rehabilitation Workshop, INFRCON 2026, 14th Annual Conference of IFNR, Mumbai. 09 Apr 2026.
- [5] "Accessible Technology for Stroke Rehabilitation", Invited talk at the Stroke Rehabilitation Workshop, INSC 2026 19th Annual Conference of Indian Stroke Association, Kochi. 12 Mar 2026.
- [6] "Engineering Recovery: From Clinically Relevant Devices to Mechanistic Precision Neurorehabilitation", Invited talk at Rewire and Recover Conference, Vallamai Foundation, Chennai. 01 Mar 2026.
- [7] "Flipping the Status Quo in Robot-Assisted Upper-Limb Neurorehabilitation: Simple Robots, Sophisticated Training", Invited talk at Centre for Neuroscience, Indian Institute of Science, Bengaluru. 25 Feb 2026.
- [8] "Introduction to Neurorehabilitation Engineering", Invited talk at PMR CEP on "Management of Persons with Cervical SCI", CMC Vellore, 06 Dec 2025.
- [9] "In Search of Rigour in Neurorehabilitation: Speculative Ideas for Speculative ideas for Robot-assisted Therapy and Quantitative Movement Measurement", Bioengineering Seminar Series, CMC Vellore, 01 Dec 2025.
- [10] "Accessible Technology for Stroke Rehabilitation in Low-Resource Settings", Invited talk at the Global Consortium for Stroke Rehabilitation, 28 Oct 2025.
- [11] "Rehabilitation Robots: Made as simple as possible", Talk as the Design and Development of Rehabilitation Robotic Devices: Healthcare Challenges tutorial at IROS 2025, Hangzhou. 24 Oct 2025.
- [12] "Innovations in device-based therapy to improve hand function", Invited talk at SRM International Hand Conclave, Chennai. 29 April 2025.
- [13] "Cut Costs, Not Corners: Designing Low-Cost Neurorehab Tech Without Compromise", Talk at the workshop on Low Cost Technology for Neurorehabilitation, IFNRCON25, Ludhiana. 27 March 2025.
- [14] "Advancing Rehabilitation Robotics through Simple Robots & Difficult Questions", Invited talk at NTT Atsugi R&D Centre, Japan. 18 December 2024.
- [15] "Creating High ValueCreating high-value solutions: Human-centered design", Invited talk by the IEEE Engineering in Medicine & Biology Society (QLD Chapter) and the QBIC Technology & Innovation, Brisbane, Australia. 12 July 2024.
- [16] "Feasibility of Home-Based Robot-Assisted Hand Therapy in India: Barriers and Facilitators", Invited talk by the IEEE Engineering in Medicine & Biology Society (QLD Chapter) and the QBIC Technology & Innovation, Brisbane, Australia. 12 July 2024.
- [17] "Advancing Neurorehabilitation through Simple Robots & Rigorous Measurements", Invited talk at the Department of Brain and Cognitive Sciences, Indian Institute of Technology Gandhinagar, India. 11 June 2024.
- [18] "Advancing Neurorehabilitation through Simple Robots & Rigorous Measurements", Talk at the Human Robotics Group, Department of Bioengineering, Imperial College London, United Kingdom. 05 June 2024.
- [19] "Feasibility of Home-Based Robot-Assisted Hand Therapy in India: Barriers and Facilitators", Invited talk at the ICORR Workshop at IFNRCON 2024, Puducherry. 12 April 2024.
- [20] "Robotics, Computational Models, and Machine Learning in Physical Medicine", Invited talk Symposium on Physics and Engineering in Medical Sciences, North East Regional Multi-Disciplinary Paramedical Institute, Dimapur. 23 March 2024.
- [21] "Can ML help in Assessing Upper Limb Functioning using Wearable Sensors?", Invited talk ICBSII 2024, SSN College of Engineering, Chennai. 22 March 2024.
- [22] "Introduction to Neurorehabilitation Engineering", Invited lecture for the Neural Engineering course coordinated by Dr Nebojsa Malesevic at Lund University, 22 February 2024.
- [23] "Can simplifying rehabilitation robots improve their clinical uptake?", Invited plenary talk at RV PGPHYSIOCON, 16 February 2024.
- [24] "Introduction to Neurorehabilitation Engineering", Lecture at the "Understanding Neurorehabilitation Technology" workshop organized at RV PGPHYSIOCON, 15 February 2024.
- [25] "Can ML help in Assessing Upper Limb Functioning using Wearable Sensors?", Invited talk IEEE SPS Summer Seasonal School on Deep Learning and Its Applications to Biomedical Signal and Image Processing, IIITDM, Kancheepuram. 20 December 2023.
- [26] "Can simplifying rehabilitation robots improve their clinical uptake?", Invited talk GPMRT Series (Webinar) coordinated by Dr Rochelle Mendonca (Columbia University) and Dr Michele Johnson (University of Pennsylvania), 15 November 2023.
- [27] "Introduction to Neurorehabilitation Engineering", Invited lecture for the Neural Engineering course coordinated by Dr Nivethida Thirugnanasambandam at IIT Bombay, 10 November 2023.
- [28] "Rehabilitation Robotics: How much can we simplify them?", Invited talk at the NAMSCON 2023, MS Ramaiah Medical College, Bengaluru, Karnataka, 07 October 2023.
- [29] "How simple can a hand robot be?", Invited talk at the Rehabilitation Robotics workshop at the Kokilaben Dirubhai Ambani Hospital, Mumbai, IFNRCON 2023, Mumbai, Maharashtra, 13 April 2023.
- [30] "Rehabilitation Robotics: Made as simple as possible, but not simpler", Invited talk at the Centre for Comprehensive Stroke Rehabilitation and Research, Manipal College of Health Professionals, Manipal Academy of High Education, Manipal, Karnataka, 9 February 2023.
- [31] "Wearable Sensors and Machine Learning for Assessing Upper Limb Functioning: How much do patients use their limbs in daily life?", Invited speaker at Artificial Intelligence in Medical Diagnostics workshop, JIPMER, November 26 & 26, 2022.

- [32] "Rehabilitation Robotics: Made as simple as possible, but not simpler", Keynote speaker at the Eighth International Virtual Conference on Biosignals, Images, and Instrumentation (ICBSII), March 2022.
- [33] "Robots, Sensors, and Machine Learning for Movement Neurorehabilitation", Invited talk at the International Brain Research Organization (IBRO) Sponsored APRC Associate School on "Modern interventional tools to improve Cognitive behaviour in children with neurodevelopmental disorders", Department of Biomedical Engineering, NEHU, Shillong. 25th to 30th October 2021.
- [34] "Rehabilitation Robots: Made as simple as possible, but not simpler", Invited talk at the Department of Medical Technology, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. 02 August 2021.
- [35] "Neural Time Series Analysis", Invited talk at a Faculty Development Program at TKM College of Engineering, Kollam, Kerala, India. 07 January 2020.
- [36] "Biomechanics and Technology for Sensorimotor Assessment and Neurorehabilitation", Invited talk at the Department of Mechanical & Aerospace Engineering, Nanyang Technological University, Singapore. 25 June 2018.
- [37] "Neurorehabilitation Technology for Task-Oriented Training and Assessment", Invited talk at the 6th Asian-Oceanian Congress of Clinical Neurophysiology (AOCCN), Bengaluru, India. 9-12 November 2017.
- [38] "Role of EEG in Stroke Neurorehabilitation – A tool for therapy and assessment", Invited talk at the Short-Term Training Program for Faculty Development at the Department of Electronics and Communication Engineering, Pondicherry Engineering College, Puducherry, India. 30 June 2016.
- [39] "Neurorehabilitation Technology – New age tools for training and assessing movements", Invited talk at Amalthea symposium in Bioengineering, Indian Institute of Technology Gandhi Nagar, Gujarat, India. 24 Oct 2015.
- [40] "Neural Prostheses – Re-wiring the damaged nervous system", Invited talk for the Students Council inauguration of the Department of Electronics and Communication Engineering, Pondicherry Engineering College, Puducherry, India. 29 July 2015.
- [41] "EMG for motion intention detection in robot-assisted rehabilitation", COST Action TD10009: European Network on Robotics for NeuroRehabilitation, Working group-3 meeting, Madrid, Spain. 12 Nov 2012.
- [42] "Robotic Assessment of Sensorimotor Functions: What Are the Bottlenecks?", COST Action TD10009: European Network on Robotics for NeuroRehabilitation, Working group meeting BioRob Rome, Rome, Italy. 25 Jun 2012.
- [43] "Quantitative Assessment of Sensorimotor Function and Impairment", COST Action TD10009: European Network on Robotics for NeuroRehabilitation, Working group-3 meeting, Imperial College London, UK. 11 May 2012.
- [44] "Artificial Control of Paralyzed Muscle", Lecture Series of the Electrical Engineering Students Association, Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India. Sep 2004.

Research Grants

Principal Investigator [₹8.65 Crores]

- **HOMER: Home-based robot-assisted upper limb training for stroke in India (IIRPIG-2024-01-00026)**
Funded by ICMR | To begin in 2025 | INR ~4.5Crore.
- **Moving Beyond Static Balance: A Novel Modular Dynamic Balance Board Concept for Balance Neurorehabilitation (IIRPSG-2024-01-00881)**
Funded by ICMR | To begin in 2025 | INR ~1.7Crore.
- **Development of a Portable Robot for Ankle Rehabilitation**
Portescap India Pvt. Ltd. CSR funding | April 2025 to March 2026 | INR 0.20Crore.
- **Development of Robots for Ankle and Balance Rehabilitation**
Portescap India Pvt. Ltd. CSR funding | April 2024 to March 2025 | INR 0.40Crore.
- **Development of Robots for Ankle and Balance Rehabilitation**
Portescap India Pvt. Ltd. CSR funding | April 2023 to March 2024 | INR 0.25Crore.
- **AFFECT - AI for Long Term Monitoring of Hemiplegic Patients**
Funded by DBT (Under the call Artificial intelligence for advancing healthcare across India and Sweden) | February 2021 to January 2024 | INR ~0.63Crore.
- **Pneumatic Robot for Stroke Neurorehabilitation**
Funded by NHHID (DST) | September 2018 to September 2020 | INR ~0.2Crore.
- **A Learning Vision System for Occupational Therapy**
Funded by NHHID (DST) | September 2018 to September 2020 | INR ~0.25Crore.
- **A Plug-and-Train Robotic Kit for Hand Neurorehabilitation**
Funded by DBT | July 2016 to June 2019 | INR ~0.52Crore.

Co-Principal Investigator [₹2.70 Crores]

- **Design, Research, and Development of Assistive Devices**
Tata Elxsi CSR Funding through IIT Madras | April 2019 to March 2021 | INR ~1.9Crore | PI: Dr Sujatha Srinivasan, IIT Madras
- **Arm Rehabilitation Robot for Shoulder and Elbow Training**
Portescap CSR Funding through IIT Madras | April 2019 to March 2022 | INR ~0.5Crore | PI: Dr Sujatha Srinivasan, IIT Madras
- **Development of a Plug and Train Robot (PLUTO) for Hand Rehabilitation**
Tata Boeing Aerospace Limited CSR Funding through IIT Madras | April 2020 to March 2021 | INR ~0.3Crore | PI: Dr Sujatha Srinivasan, IIT Madras

Co-Investigator

- **Smart Orthoses for Improved FES Control of Paralyzed Limbs**
Funded by UKIERI-DST | Jan 2015 to Dec 2016 | PIs: Dr Suresh Devasahayam, CMC Vellore & Dr Ravi Vaidyanathan, Imperial College London.
- **A Wearable Fetal Movement Monitor for Prenatal Care in Community Medicine Practice**
Funded by UKIERI-DST | April 2017 to April 2020 | PIs: Dr Suresh Devasahayam, CMC Vellore & Dr Ravi Vaidyanathan, Imperial College London.

Professional Activities

- Organized a workshop titled "Low Cost Technology in Neurorehabilitation" at the IFNRCON25 at the CMC Ludhiana, Ludhiana (Mar 27 '25).

- Organized a workshop titled “[Understanding Neurorehabilitation Technology](#)” at the RV PGPHYSIOCON at the RV College of Physiotherapy, Bengaluru (Feb 15 '24).
- Organized the [ReHackathon India '23](#) – a NeuroRehack event: A week-long multidisciplinary hackathon on developing technologies for neurorehabilitation. Conducted at the Dept. of Bioengineering, CMC Vellore (Dec 04-09 '23).
- [Associate Editor](#) for IEEE Transaction on Neural Systems and Rehabilitation Engineering.
- Co-organized [GCRF workshop on Low Cost Devices for Rehabilitation and Assistance](#) with Imperial College London, IIT Madras, and Mobility India. (Jul 26 – Jul 27, 2021).
- Organized [NeuroRehack](#) – an international summer/winter school and hackathon on Neurorehabilitation Engineering (Jun 28 – Jul 16, 2021).
- [Guest Associate Editor](#) for Frontiers in Motor Neuroscience for the Research Topic: “[Dissociating Sensorimotor Recovery and Compensation Following Neurological Injury](#)”.
- Co-organized a workshop “What do we want from technology-driven sensorimotor assessments? – a multi-stakeholder discussion” at ICORR 2017 (July 2017).
- Co-organized a workshop “Decentralized Neurorehabilitation – the Next Step for Technology Intervention” at ICORR 2015 (August 2015).
- Member of Working Group-3 of COST Action TD10009: European Network on Robotics for Rehabilitation. (2011-2015).
- [Reviewer](#) for: Journal of Neuroengineering and Rehabilitation, IEEE Transaction in Biomedical Engineering, IEEE Transaction of Robotics, Journal of Biomechanics, Applied Bionics and Biomechanics, Journal of Rehabilitation and Assistive Technologies Engineering, Human Movement Science, EMBC conference, and Annual Conference Of The Association For Cognitive Science.

Patents

Granted [2]

- [Modular and portable plug-and-train robot for providing hand rehabilitation](#)
Indian Patent no: 442706; Granted on 3rd August 2023 (Aravind Nehrujee, Sujatha Srinivasan and Sivakumar Balasubramanian).
- [An arm rehabilitation robot and a method for upper-limb training and assessment](#)
Indian Patent No: 466323; Granted on 6th November 2023 (Sandeep Guguloth, Sujatha Srinivasan and Sivakumar Balasubramanian).

Pending [6]

- [A single-DOF Mobile Arm Support for Therapeutic and Assistive applications \(MARS\)](#)
Indian Patent Application no. 202341031441 filed 3rd May 2023 (Prem Kumar, Aravind Nehrujee, Sujatha Srinivasan and Sivakumar Balasubramanian).
- [Multi-Functional Hand Rehabilitation Device](#)
Indian Patent Application no. 202341051049 filed 28 July 2023 (Sriramachandran V, Aravind Nehrujee, and Sivakumar Balasubramanian).
- [An Arm Movement Tracking Assembly for Tracking Movement of a user's Upper Limb or Arm](#)
Indian Patent Application no. 202541006822 filed 28 January 2025 (Sujith Christophe and Sivakumar Balasubramanian).
- [System and Method for Assessment and Training in Balance Rehabilitation](#). Indian Patent Application no. 202541025882 filed 21 March 2025 (Arjun Ram P and Sivakumar Balasubramanian)
- [Intraoperative Peripheral Nerve Monitor System And Method For Identifying And Locating Nerves By Said System](#). Indian Application no. 202541064597 filed 7 July 2025 (Suresh Devasahayam, Suranjan Bhattacharji, M J. Paul, and Sivakumar Balasubramanian).
- [An Apparatus For Rehabilitation Of Ankle And Toe Function](#). Provisional Indian Application no. 202541100905 filed 17 October 2025 (Neelakshi Ganguly, Lishwanth Lee, Manish Anand, Sujatha Srinivasan and Sivakumar Balasubramanian).

Publications

Refereed Journal Publications (* indicates authors contributed equally.)

[Under Review]

- [1] Yuvaraj, M., Graff, S., Prabhakar A. T., Aaron, S., Ramos-Murguialday, A., Malesevic, N., Antfolk, C., Burdet, E., Varadhan S. K. M., Balasubramanian, S. "What percentage of severely impaired stroke survivors retain residual voluntary EMG?" NNR (Under review)
- [2] Parasuraman, A., Christopher, S., Senthilvelkumar, T., Varadhan, SKM., Balasubramanian, S., "Design and Development of Modular Interactive Boards for Balance Rehabilitation", IEEE TNSRE (Under review)

[Published]

- [3] Vinayagamoorthy, P., Chockalingam, M., Mathew, A., Jerome, DPRJ., Judy, AJ., Prabkar, AT., Varadhan, SKM., Balasubramanian, S., "Protocol for a multi-perspective exploration of technology requirements for home-- based upper-- limb tabletop functional task training with minimal supervision: a mixed-- methods and qualitative descriptive study." BMJ Open 2026;0:e117703.
- [4] Balasubramanian, S., "A Structural Causal Model for Robot-Assisted Upper-Limb Neurorehabilitation." Accepted in Frontiers in Rehabilitation Science (2026).
- [5] Jeyabalan, P.K.M., Thiagu, S., Nehrujee, A., Sujatha, S. and Balasubramanian, S. (2026). Motorized Arm Support (MARS)–An Underactuated Robot for Adaptive Arm De-weighting in Neurorehabilitation. IEEE Access.

- [6] Yuvaraj, M., Prabakar, A. T., SKM, V., Burdet, E., Murgialday, A. R., and Balasubramanian, S. (2025). Identification of Subject-Specific EMG Detectors for Robot-Assisted Therapy Using Rest and Move State EMG Data. *IEEE Access*.
- [7] Neelakandan, P., Varadhan, SKM., & Balasubramanian, S. (2025). Autoencoder-based Approaches for Upper Limb Use Detection. *IEEE Access*.
- [8] Choudhuri, R., Solomon, J., Nehrujee, A., Sujatha, S., & Balasubramanian, S. (2025). Effect of Role of Robotic Assistance on Upper-limb Sensorimotor Recovery: A Systematic Review and Meta-Analysis. *medRxiv*, 2025-04.
- [9] Eswari, B., Balasubramanian, S., & Varadhan, S. K. M. (2025). Comparable neural and behavioural performance in dominant and non-dominant hands during grasping tasks. *Scientific Reports*, 15(1), 14690.
- [10] Jacob, T., Ibrahim, M., Babu, G. V., Pandian, K., Krishnamoorthy, R., Karthikeyan, G., ... & Varadhan, S. K. M. (2025). Carpal tunnel release surgery restores force control but not force coordination in CTS patients. *Scientific Reports*, 15(1), 1-9.
- [11] Eswari, B., Balasubramanian, S., & Varadhan, S. K. M. (2025). Grasp-dependent modulations in EEG-EMG coherence are observed in young but not older adults. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*.
- [12] Eswari, B., Balasubramanian, S., & Varadhan, S. K. M. (2024). Older individuals do not show task specific variations in EEG band power and finger force coordination. *IEEE Transactions on Biomedical Engineering*.
- [13] Yuvaraj, M., Prabakar, A. T., SKM, V., Burdet, E., Murgialday, A. R., and Balasubramanian, S. (2024). An Unsupervised approach to identify patient-specific EMG Detector for Robot-assisted therapy in severe stroke. *medRxiv*, 2024-12.
- [14] Diwakarreddy, B. K. G., Abishek, S., Andrews, A., Vasanthan, L., & Balasubramanian, S. (2024). Romiometer: An Open-Source Inertial Measurement Unit-Based Goniometer for Range of Motion Measurements. *bioRxiv*: 2024-05.
- [15] Balasubramanian, E., SKM, V., & Balasubramanian, S. (2024). Comparable neural and behavioural performance in dominant and non-dominant hands during grasping tasks. *bioRxiv*, 2024-12.
- [16] Balasubramanian, S. (2024). GMAC-A simple measure to quantify upper limb use from wrist-worn accelerometers. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*.
- [17] Yuvaraj, M., Raja, P., David, A., Burdet, E., Varadhan, S. K. M., and Balasubramanian, S. (2024). A systematic investigation of detectors for low signal-to-noise ratio EMG signals. *F1000Research*, 12, 429.
- [18] Nehrujee, A., Prabhakar, A.T., Balaraman, S., Rasika, R., Prakash, H., SamuelKamaleshKumar, S., Aaron, S., Bhattacharya, S., Srinivasan, S. and Balasubramanian, S. (2023). The Facilitators and Barriers to Home-based Robotic Rehabilitation in India: A pilot feasibility study. *Frontiers in Stroke*.
- [19] Mathavan Jeyabalan, P.K.; Nehrujee, A.; Elias, S.; M, M.K.; Srinivasan, S.; Balasubramanian, S. (2023) Design and Characterization of a Self-Aligning End-Effector Robot for Single-Joint Arm Movement Rehabilitation. *Robotics*, 12(6), 149.
- [20] Subash, T., David, A., ReetaJanetSurekha, S., Gayathri, S., Samuelkamaleshkumar, S., Magimairaj, H.P., Malesevic, N., Antfolk, C., Varadhan, S.K.M., Melendez-Calderon, A. and Balasubramanian, S., (2022). Comparing algorithms for assessing upper limb use with inertial measurement units. *Frontiers in Physiology*, 13, p.2611.
- [21] Chockalingam, M., Vasanthan, L. T., Balasubramanian, S., & Sriram, V. (2022). Experiences of patients who had a stroke and rehabilitation professionals with upper limb rehabilitation robots: a qualitative systematic review protocol. *BMJ open*, 12(9), e065177.
- [22] Nehrujee, A.; Srinivasan, S.; Balasubramanian, S. On the Role of Robotic Assistance in Upper-Limb Neurorehabilitation. *Preprints* 2022.
- [23] Nehrujee, A., Andrew, H., Patricia, A., Samuelkamaleshkumar, S., Prakash, H., Sujatha, S., & Balasubramanian, S. (2021). Plug-and-Train Robot (PLUTO) for Hand Rehabilitation: Design and Preliminary Evaluation. *IEEE Access*, 9, 134957-134971.
- [24] David, A., Tanya S., Varadhan, S. K. M., Melendez-Calderon, A., and Balasubramanian, S. (2021). A Framework for Sensor-Based Assessment of Upper-Limb Functioning in Hemiparesis." *Frontiers in Human Neuroscience*.
- [25] David, A., ReethaJanetSureka, S., Gayathri, S., Annamalai, S.J., Samuelkamaleshkumar, S., Kuruvilla, A., Magimairaj, H.P., Varadhan, S.K.M. and Balasubramanian, S., (2021). Quantification of the relative arm use in patients with hemiparesis using inertial measurement units. *Journal of Rehabilitation and Assistive Technologies Engineering*.
- [26] Balasubramanian, S., Guguloth, S., Mohammed, J.S. and Sujatha, S., (2021). A self-aligning end-effector robot for individual joint training of the human arm. *Journal of Rehabilitation and Assistive Technologies Engineering*.
- [27] Melendez-Calderon, A., Camila S., and Balasubramanian, S. (2021). "Estimating Movement Smoothness from Inertial Measurement Units." *Frontiers in Bioengineering and Biotechnology*.
- [28] Nehrujee, A., Vasanthan, L., Lepcha, A., & Balasubramanian, S. (2019). A Smartphone-based gaming system for vestibular rehabilitation: A usability study. *Journal of Vestibular Research*, 29(2-3), 147-160.
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Book chapters

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