

VIMAL CHANDER

BIOMEDICAL ENGINEER



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SUMMARY

Dynamic Senior Research Fellow with 4.9 years at Christian Medical College and Hospital, and a dedicated research scholar with 4 years at IIT Madras. This individual specializes in Gait Analysis, Functional Anthropometric measurements and Computational Neuroscience. Proven expertise in Machine Learning, Computer Vision and 3D Human Modeling, complemented by strong programming skills in C#, Python, and MATLAB. Adept at driving innovative research and fostering collaborative environments.

EDUCATION

PhD, Biomedical Engineering

IIT Madras, India
Expected in June 2027

MTech, Information Technology

Anna University, India
June 2014

BTech, Information Technology

Anna University, India

EXPERIENCE

Senior Research Fellow, Christian

**Medical College and Hospital,
India**

Oct 2017 – July 2022

Faculty, NIT Trichy, India

Aug 2016 – July 2017

PROFESSIONAL EXPERIENCE

Project #1

Funding: Department of Biotechnology (DBT), India Title: Study of Stimulus Router System using functional electrical stimulation in rat model and its application with denervated sphincter.

Project Description:

Patient with spinal cord injury/stroke often require functional electrical stimulation to regain control of the lost function. This project uses novel approach to study the feasibility of stimulus router system for deeply innervated nerve/muscle. During the tenure of the project, I have worked on the computational neuroscience model to study the flow of current into the tissue using MRI images of human model. Feasibility study in hypothetical, animal and human model was performed. Simulated model was compared with the theoretical understanding.

Environment: COMSOL Multi-Physics, Simpleware, Python, Neuron Software, Octave / MATLAB, Ansys

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SKILLS AND ABILITIES

1. Computational Biomechanics (Gait Analysis)
2. Machine Learning, Computer Vision
3. Computational Neuroscience
4. 3D Human Model and Simulations (Comsol, Simpleware, Ansys, 3D slicer)
5. Programming: C#, Python, Unity (XR), MatLab

COURSE CERTIFICATIONS

Machine Learning,
Stanford Online

Project #2

Funding: DRDO, India

Title: Motion Capture System for Upper and Lower Limb

Project Description:

Calculating kinematics and kinetics for the upper and lower limb using 3D marker data. The lower and upper limb joint motions are tracked using combination of cameras and a set of active or passive markers for kinematic analysis. Inverse dynamics calculations are performed on the kinematics and force-plate data for kinetic analysis. Surface EMG from various lower and upper limb muscles are captured to observe the activity of different muscle group during a gait cycle or lifting task.

Environment: Visual Studio (.Net C#), PhaseSpace, Motion Builder, Unity, DirectX 12

Project #3

Funding: ISRO - HSFC, India

Title: Measurement of functional Anthropometric

Project Description:

This work focuses on developing reliable methods for measuring and predicting human anthropometric parameters and evaluating the variability in anthropometric data that influences human-centered design. It examines how differences in body dimensions affect workplace design, including reach, clearance, functional ability, postural support, vision, and comfort, as well as tool design in terms of size, shape, weight, grip, and usability. The study also emphasizes the use of anthropometric data, along with range of motion and strength measurements, in biomechanical models to improve accuracy in human movement and performance analysis. In addition, it explores methods for deriving functional anthropometric data from static measurements using biomechanical and biokinematic modeling approaches.

Environment: Unity, Python, HTC Vive, IMU