

Chirag Motwani

Jersey City, NJ, USA • 253-339-8863 • drchiragmotwani@gmail.com
<https://www.linkedin.com/in/chirag-motwani/> • <https://github.com/drchiragmotwani/>

Education

MS, Biomedical Engineering, New Jersey Institute Technology (NJIT), NJ, USA Jan 2021 - Dec 2023

Coursework: Biorobotics involving usage of Unity 3D for 3D simulation of biomedical applications. 3D assets were conceptualized and designed using Blender 3D and Unity 3D

Bachelor of Medicine & Bachelor of Surgery (MD), SSR Medical College, Mauritius Feb 2014 - Jan 2019

Coursework: Human Anatomy, Human Physiology, Biochemistry and para-clinical/clinical courses

Professional Experience

Research Assistant, CNN Lab, NJIT Jan 2022 - Nov 2023

- Pre-processing (transformation and registration) and processing of 3D brain images
- Analysis of functional MRI images in children with ADHD and their comparison with healthy controls for working memory task
- Graph Theoretic Techniques to analyze topological features of functional task networks

Research Assistant, BioDynamics Lab, NJIT Jun 2021 - Sep 2021

- Calibrating pressure sensors using the data points from load cell and pressure sensors
- The data points were collected using OpenScale sensors and Arduino Nano with nRF modules for wireless transmission of data
- Curve fitting was done using MATLAB
- Unity 3D game development for subject data acquisition

Unity 3D Simulation Projects (<https://github.com/drchiragmotwani/>)

- **Robotic Colonoscopy Simulation**
Simulation of robotic colonoscopy in Unity 3D using mouse and keyboard input controls | **Skills:** Blender · Arduino · Leap motion devices
- **Simulation of External Cephalic Version**
Simulation of external cephalic version using simulated 4-point mechanical system with Arduino in Unity 3D | **Skills:** MATLAB · Arduino
- **Simulation of Pendulum Knee Drop Test**
Simulation of Pendulum Knee Drop Test (Wartenberg Pendulum Test) for assessing spasticity in Unity 3D | **Skills:** MATLAB
- **Vial Color Detection**
Simulation of vial color detection demonstrating a use case of raycast in detecting material color in Unity 3D

Unity Game Projects

- **Fuzzy Fly**
Fuzzy fly character flying through the lights as obstacles like flappy a bird | **Skills:** Unity 2D

Skills

Unity 3D (modeling): Textures · Meshes · Sprite Rendering · User Interface (Unity UI) · Shaders · Rigging

Unity 3D (physics): Particle System · Cloth Simulation · Gravity · Springs · Flocking · Scripting (C#)

3D Modeling: Blender · Nomad Sculpt

Development: Arduino · Sensors · Leap Motion Devices · Mobile Game Development · 3D Simulation · C++ ·

Android · iOS · Python · MATLAB · MongoDB · 2D games · 3D games · Visual Studio · Git

Javascript: React · React Native · NodeJS

3D Modeling Projects (<https://drchiragmotwani.webflow.io/>)

- **Renal:** 3D model of renal pyramid showing glomerulus, bowman's capsule, tubules and loops, collecting duct
- **Circulatory:** 3D model of a cross-section of a blood vessel with RBCs within
- **Neurology:** 3D model of cerebral cortex and neuron
- **Colon:** 3D model of transverse colon
- **Microbiology:** 3D model of bacilli with pili and bacteriophage

Research Projects

- Motwani C., Li X., Cao M., Martin E., & Halperin J. M. (2023). Working Memory-Related Neurofunctional Correlates Associated with the Frontal Lobe in Children with Familial vs. Non-Familial Attention Deficit/Hyperactivity Disorder. *Brain Sciences*, 13(10), 1469. <https://www.mdpi.com/2076-3425/13/10/1469>
- Motwani C., Zalavadiya G., Chhabra N.: Risk factors of Diabetes Mellitus – Prevalence and awareness amongst medical students – A pilot study. Sir Seewoosagur Ramgoolam Medical College, Learning styles and health of Medical students: Scientific Poster Session, September 2018.
- Zalavadiya G., Motwani C., Chhabra N.: Awareness and prevalence of risk factors of cardiovascular diseases and attitude towards health practices among medical students. Sir Seewoosagur Ramgoolam Medical College, Learning styles and health of Medical students: Scientific Poster Session, September 2018.
- Motwani C., Mishra M., Barthakur R.: Specialty preference among 1st year students of SSR Medical College, factors affecting it and role of gender. Sir Seewoosagur Ramgoolam Medical College, Learning styles and health of Medical students: Scientific Poster Session, September 2018.
- Motwani C.: Artificial Intelligence: prospects in healthcare and diabetes mellitus bots. Sir Seewoosagur Ramgoolam Medical College, Continuing Professional Development, August 2018.
- Motwani C., Jain D., Chhabra N.: Awareness of diabetes related risk factors amongst Medical students. Sir Seewoosagur Ramgoolam Medical College, Health, habits and attitudes of Medical Students: A review, September 2017.
- Ray (Arora) S., Motwani C., Jain D., Jain J., Motwani V.B., Ray M.K.: Cross-sectional study of diabetes induced dyslipidaemia among residents of North-Western region of India. *International Association of Medical and Biomedical Research, Translational Science and Drug Discovery: Impact on Health, Wellness, Environment & Economics*, July 2015.