# Gregory Dsouza

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## Education

**B.Sc. Mechanical Engineering** (CGPA: 3.8/4.0) – Embry-Riddle Aeronautical University 2021 – 2025
**Honors:** Magna Cum Laude
**Awards:** Outstanding Undergraduate of the Year 2025 for Biomedical Systems

## Skills

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| **Technical:** | Biomechanics, Biofluid & Biosolid Mechanics, Numerical Methods, Materials Science |
| **Programming:** | Python, C/C++, C#, Java, Javascript, MATLAB, GLSL, HLSL |
| **Analysis Tools:** | OpenSim, Ansys Mechanical (FEM/FEA), VICON Nexus, 3D Slicer, Git & GitHub, Blender |
| **CAD:** | SolidWorks, Autodesk Fusion, CATIA V5 |

## Experience

**Teaching Assistant (Biomechanics),** Embry-Riddle Aeronautical University Jan 2025 – Apr 2025
- Taught **osteokinematic** motion analysis using **OpenSim** to understand segmental motion
- Guided students in reach area evaluation using MATLAB to build understanding of **arthrokinematics**
- Analyzed motion capture data from **VICON Nexus** using **Python** to assess and interpret gait patterns

**Teaching Assistant (Engineering Dynamics),** Embry-Riddle Aeronautical University Jan 2025 – Apr 2025
- Taught rigid body dynamics using **MATLAB & Python** through mini-projects to plot and evaluate motion paths
- Reinforced lecture concepts using project-based learning to teach dynamic system analysis
- Addressed individual student challenges through office-hours to improve comprehension of dynamics topics

**Teaching Assistant (Numerical Methods),** Embry-Riddle Aeronautical University Sep 2024 – Dec 2024
- Demonstrated Newton-Raphson and Runge-Kutta methods in **MATLAB/Python** to solve engineering problems
- Taught finite difference method in **MATLAB** to simulate nodal temperature distribution through a heated beam
- Used root-finding techniques with **Python** to estimate drag coefficients from experimental data
- Designed and set up lab experiments to integrate numerical simulations with practical engineering applications

## Projects

**Project Lead:** *An Adaptive Kayaking Mechanism For All* Aug 2024 – Apr 2025
- Partnered with Oceans of Hope Foundation and led multidisciplinary engineering team to develop an adaptive kayaking system to improve watersport access for individuals with lower-body physiological impairments
- Applied **biomechanics-driven** refinement of mechanical design using **VICON Nexus** motion-capture data and osteokinematic analysis in **MATLAB** to maximize elbow joint range of motion to support rehabilitation
- Designed PID-controlled **mechatronic** assist system using encoder feedback and sagittal plane stroke modeling
- Mentored a sophomore engineering student by teaching **biomechanical analysis**, FDM 3D printing, **microcontroller programming** (in **C++**), and PID control theory to develop their technical skills
- Presented engineering design to industry advisory board and was ranked among **top 5 posters** that year

**Lead Programmer:** *Indienomicon Mega Health Jam 2024* 06 Sep 2024 – 08 Sep 2024
- Lead team of six who had no prior experience with rapid prototyping to create a game in **under 48 hours**
- Trained team to use an unfamiliar framework (Godot) while also coordinating software design and structure
- Collaborated using Git and GitHub to manage version control and streamline team contributions
- Created and imported 3D assets using Blender, ensuring compatibility with game systems
- Gained experience presenting and demoing projects to industry judges and a peer audience