

Eric Osorio

OsorioAppliedMath@gmail.com
Eric.XRSystemsLLC.com
(813) 816-4830

Mechanical Engineer, Roboticist, Mathematician and VR Virtuoso

Objective: To disrupt the field of virtual, augmented, mixed and extended reality systems

Work Experience

- CEO, XR Systems LLC** Apr 2020 - Present
- Founded a software and games publisher that manages 3 in-house development studios using the lean startup methodology
 - Managed and coordinated a talented and diverse team across the globe
 - Implemented an ad service that generates thousands of impressions daily
 - Developed full stack solutions to enable students to learn and work in VR
 - Scaled software that supports hundreds of simultaneous users
 - Invited to submit a full proposal to the NSF seed fund after a successful pitch
- Project Manager, Wireless Devices and Electromagnetics Laboratory (WiDE Lab)** Jul 2019 - May 2020
- Simulated and rendered the propagation of electromagnetic waves in a waveguide using MATLAB
 - Serialized MATLAB data and graphical objects into a binary file that can be loaded into a Unity build at runtime
 - Created Augmented Reality (AR) display of the animated TE, TM, and TEM mode simulations generated in MATLAB for use in the graduate course Antenna Theory with Space and Aviation Applications
 - Mentored and trained graduate students that would assist in my research and prepared them to continue development and long term support of the software
- Software Design Engineer Intern, TECHFIT Digital Surgery** May 2019 - Aug 2019
- Developed a Vuforia AR mobile app and accompanying .NET multithreaded tcp server application to speed up the custom implant design validation process
 - Created custom .TF3D filetype for fast network transfer of Unity meshes
 - Exceeded development time expectations resulting in the app being chosen for continued development over the app made by 5 engineers at the parent company
- VR Lab Director, Embry-Riddle Industry Outreach & Research Education** Mar 2019 - Dec 2019
- Educated students about virtual reality and its applications in industry
 - Designed simulations, productivity software, and games for students to gain experience with the technology
 - Developed VR interfaces for 3D visualization of ANSYS results
 - Demonstrated VR hardware to interested students and teachers
- XR Department Manager, Embry-Riddle Makerspace** Jan 2018 - Dec 2019
- Directed a diverse team of project managers
 - Developed in-house customizable VR/AR solutions
 - Negotiated terms of research partnerships with student organizations and faculty
 - Consulted and assisted graduate students and faculty with implementing their research on VR/AR devices
 - Developed a VR flight simulator of the B2 Spirit that we presented to Northrop Grumman to demonstrate our lab's capabilities
 - Implemented VR NASCAR training software in Unity utilizing MATLAB vehicle dynamics simulation
 - Created a MR architectural visualization program for the Microsoft HoloLens
 - Realized a Vuforia Android app to display an interactive AR CATIA assembly

Project Experience

SIAM Eco-Dolphin Supported by the US Air-Force

- Determined the stresses on the structure by using NASTRAN
- Demonstrated progress to representatives from the US Air Force

VR Teleoperated Robotic Arm

- Designed and integrated a VR GUI made using Unity with an Arduino controlled robotic arm via USB
- Implemented multiple methods of user control including direct joint angle control using forward kinematics and tooltip pose control using inverse kinematics

Research Project in Industrial Mathematics - Simulation Environment for Autonomous UAV

- Developed a software-in-the-loop simulation software using C# and Unity for the UAV company Embedded Control Designs, LLC (ECD) for use in the development of their swarm technology

Unity VR F35 Flight Simulator

- Estimated aerodynamic properties using publicly available data and programmed a VR Oculus flight simulator for the 2019 ERAU Hackathon

Makerspace VR Headset Prototype

- Built a prototype low-cost PC VR headset from a LCD screen mounted to a helmet tracked in 6DOF by webcam using magenta targets on the headset

MATLAB 3D Physics Engine

- Designed a development environment GUI to edit imported 3D models and simulate physics
- Established workflow pipelines to load data and variables created in various developer tools

MATLAB Air Pollution Simulation

- Developed a software to simulate air pollution using a 3D box model
- Compared the obtained results from AERMOD and my MATLAB-based simulation

MATLAB Arduino 3D Scanner

- Programmed Arduino to read, filter, process, and forward sensor data to MATLAB via USB
- Animated real-time graphical display of the point cloud in MATLAB

Leadership Experience

President, Embry-Riddle College Democrats (ERCD)

- Founded the organization and recruited initial executive board
- Represented our chapter in the Florida College Democrats spring conference and elections
- Networked with other chapters in the Central Region and participated in events on their campus
- Organized fundraisers and events to promote campus awareness of our organization
- Worked with the president of the College Republicans to advance bipartisan interests such as veteran care

Secretary, Society of Black Physicists (SBP)

- Recorded meeting minutes and distributed action item reminders
- Assisted the president in planning events and organizing logistics
- Created branding and promotional material used to promote the newly formed organization
- Represented our organization as a liaison to the president of the university

Advisor to the President, Society of Industrial and Applied Mathematics (SIAM)

- Prepared agenda and presentations for the president
- Conversated with prospective members and recruited new members at campus events
- Created and presented promotional and informational material for conferences and outreach opportunities
- Mentored and guided new president during reorganization

Skills

- **Languages:** C/C++, C#, R, BASIC, Fortran, x86 assembler, ARM assembler, HTML, PHP, JS, SQL, jQuery
- **Platforms:** Windows, macOS, Unix, Linux, Apache, ROS, Android, iOS, WebGL, Web Assembly (WASM), LLVM, Microsoft HoloLens, SteamVR, Oculus, OpenVR, Vuforia, ARCore, ARKit, Arduino/Microcontrollers, Raspberry Pi/Single-Board Computers, Embedded Systems
- **Software:** Unity, MATLAB/Simulink, AutoCAD, Inventor, SolidWorks, CATIA, Blender, ANSYS, NASTRAN, AERMOD, CPanel, Wordpress, OBS Studio, Paint.NET, GIMP
- **Manufacturing:** Woodworking, Sheet Metal, TIG and MIG Welding, Additive Manufacturing, Composites, Soldering, CNC/G-Code, Casting, Sewing
- **Mathematics:** Numerical Analysis, Calculus, Differential Equations, Linear Algebra, Number Theory, Information Theory, Cryptography, Data Mining, Applied Mathematics
- **Engineering:** Mechatronics, Model Based Control System Design, Finite Element Analysis, Unmanned Systems, Robotic Arms, Heat Transfer, Instrumentation and Data Acquisition, Air Pollution Control Engineering, Construction Engineering, Electrical Engineering, Machine Design, Business Application Development

Awards

- ERAU Engineering Fundamentals Student of the Year, Spring 2018
- Hackathon-HackRiddle 1st Place Hardware Hack, Fall 2017
- SBP “Outside the Box Award” for the creation of their logo, Spring 2017
- ERAU Presidential Scholarship, 2015-2019
- Sickles High School Class of 2015 Top 20 (Class Rank 9/500)
- Sickles High School 2014 Junior Marshal (Class Rank 2/500)

Education

Embry-Riddle Aeronautical University (ERAU)
Bachelor of Science, Mechanical Engineering
Track: Robotic Systems Design, Minor: Applied Mathematics

Daytona Beach, FL
Dec 2019