DANIEL A. LOPEZ

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ACADEMICS

B.S. Computer Science and Mathematics   Aug 2019 - Dec 2023
University of Maryland, College Park, GPA: 3.7/4.0

Relevant Coursework: XR, Graphics, HCI, Vision, Data Structures, UX/UI, Algorithms, Linear Algebra, Real Analysis, Object Oriented Programming, Machine Learning, Data Science, Database Design, Compilers, Networking
Computer Science Teaching Assistant: Advanced Data Structures (CMSC420), 2022
Honors College: Gemstone Research Program, 2019 - 2023

SKILLS

Languages	Java, C, C++, C#, Python, JavaScript, HTML, SQL, Ruby, OCaml, Rust, MATLAB
Software	Unity, Git, Unreal, PyTorch, Keras/Tensorflow, Docker, Blender, OpenCV, React, Snowflake

RESEARCH

Persistent Distractor-based Redirection for Natural Walking in Small Physical Environments
UMD Geometric Algorithms for Modeling, Motion, and Animation (GAMMA) Lab   Sep 2023 - Current

- Collaborated with PhD Candidate Niall Williams and advised by Dr. Aniket Bera and Dr. Dinesh Manocha to develop a procedurally-generated 3D Unity scene that demonstrates the practicality of persistent distractors in virtual environments for VR applications.
- Employed splines and diegetic distraction techniques to navigate users within complex, non-standard physical settings.

BCIPRO: A non-invasive Brain-Computer Interface for a 3D-printed Prosthetic simulation
UMD Gemstone Honors College   May 2020 - May 2023

- Developed a 3D simulation environment in Unity with realistic physics-based interactions for an operational upper-arm and hand prosthetic to be used in rehabilitation.
- Created a multimodal, customizable, and accessible immersive VR interaction system for the Oculus Quest 2 and HTC Vive using SteamVR, OpenVR, and Unity XR Interaction Toolkit, integrating with our brain-computer interface.
- Collaborated as part of an interdisciplinary team of undergraduate students to test and train existing neural networks, processing acquired EEG signals from OpenBCI headset into mechanical operations for a 3D-printed prosthetic.

Rendering Large Point Cloud Data for Virtual Reality in Unity using LOD Techniques
NASA/UMD Immersive Media Design (IMD) Lab   Oct 2022 - May 2023

- Collaborated with UMD's Immersive Media Design (IMD) Lab, focusing on the NASA Mixed Reality Engineering Toolkit (MRET). Project led by Dr. Roger Eastman and Research Assistant Daniel Brown.
- Explored point cloud rendering methods, including octree structures for level-of-detail (LOD) reduction, frustum and occlusion culling, and point decimation.
- Utilized multiple open-source renderers to develop an end-to-end system capable of streaming large point cloud data (80 million points) in Unity while ensuring real-time performance (60 FPS) for VR display.

Decluttering the Stars: A Study in AR Space Interface Minimalism
NASA SUITS (Spacesuit User Interface Technologies for Students) Challenge 2023   Sep 2022 - May 2023

- Member of the UMD TerpVISIO team that proposed and designed a comprehensive UX for an AR user interface, intended for use by Artemis astronauts during a simulated lunar test mission.
- Developed and implemented a feature-rich UI in Unity for the Microsoft Hololens 2, leveraging the Microsoft Mixed Reality Toolkit (MRTK), including visual and interactive elements for navigation such as customizable waypoints and pathfinding.
- Invited to conduct testing and iterative refinement of our system during on-site trials as Selected Finalists for the NASA student competition at the Johnson Space Center in Houston.

PROFESSIONAL EXPERIENCE

Google - Software Engineering Intern, *Kirkland, WA*   Jun 2023 - Sept 2023
- Implemented and tested back-end features for Google Cloud Platform's Meet application, developing a Timer service API.
- Leveraged internal Java async libraries, injection frameworks, and databases for handling RPC request operations.

Salesforce - Tableau Software Engineer Intern, *Seattle, WA*   May 2022 - Aug 2022
- Developed a containerized python application to facilitate interaction with an internal agile development tool from Slack.
- Enhanced app with Okta authentication, writing data to a Snowflake database, and by deploying on an AWS cloud service.

Booz Allen Hamilton - Cyber Intern, *Annapolis Junction, MD*   Jun 2021 - Aug 2021
- Trained PyTorch machine learning vision models to identify image attributes for countering adversarial artificial intelligence.
- Integrated optical character recognition software into vision models using OpenCV for improved data analysis capabilities.

Textron Systems - Software Engineering Intern, *Hunt Valley, MD*   Jan 2021 - May 2021
- Developed and tested C++ Windows console application employing multi-threading and socket engineering to simulate dynamic distributed algorithms for IP address allocation in a mobile ad hoc network with interconnected VM nodes.

Division of Information Technology, UMD - Software Engineer, *College Park, MD*   Mar 2020 - Sep 2020
- Maintained and optimized Payroll/HR web-apps and server-side utilities using J2EE, SQL, HTML, and JavaScript.

LEADERSHIP ROLES

- **Society of Hispanic Professional Engineers (SHPE) - UMD.** President 2021-22. SHPE is a national organization fostering Hispanic/Latino student success in STEM. As president of the UMD chapter, spearheaded professional, social, fundraising and outreach events that promoted the community and connected students with job opportunities.
- **XR Club - UMD.** Mentor 2023. Facilitated AR/VR-related workshops and assist students with XR-related projects, offering technical support and feedback during office hours at the XR Lab.

AWARDS

- **NASA SUITS AR/UI Design Challenge Finalist** *with UMD XR Club's TerpVISIO team, May 2023*
- **Best Thesis Conference Presentation** *for BCIPRO, Awarded by Gemstone Honors Program, May 2023*
- **Dean's List** *for Academic Excellence, Awarded by UMD Computer, Mathematical, and Natural Sciences, Spring 2023*
- **Leadership Award** *for role as SHPE President, Awarded by UMD Clark School of Engineering, May 2022*
- **International Baccalaureate (IB) Diploma** *Awarded by IB Program at Richard Montgomery HS, Jun 2019*