

Eduardo Davalos

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 🌐 [edavalosanaya](https://edavalosanaya.github.io)

Summary

A PhD Student focused on scalable multimodal learning analytics and AI, through the use of off-body sensors and other non-invasive techniques.

Education

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|-----------|--|------------------------|
| MS | St. Mary's University, San Antonio, TX, USA , Electrical Engineering | July 2019 to Apr. 2021 |
| | <ul style="list-style-type: none"> GPA: 4.0/4.0 Thesis: FastPoseCNN: Real-Time Monocular Category-Level Pose and Size Estimation Framework | |
| BS | St. Mary's University, San Antonio, TX, USA , Electrical Engineering | July 2015 to Apr. 2019 |
| | <ul style="list-style-type: none"> GPA: 3.93/4.0 Thesis: SKORE: Smart Keyboard Operated by Robotic Educator | |

Experience

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| American Red Cross | Fullstack Software Engineer - Intern | May 2019 to July 2019 |
| | <ul style="list-style-type: none"> Project Description: Developed a web-based application for the American Red Cross to manage and monitor the status of edge devices deployed in the field. Technologies: Python, Wordpress, Arduino, Docker. | |
| St. Mary's Engineering Department | Robotics Teaching Assistant | May 2016 to July 2016 |
| | <ul style="list-style-type: none"> Mentored, directed, and guided students throughout a summer program, teaching them principle components in mechanical design, electrical circuitry, and software development aimed at robotics. | |
| St. Mary's Learning Assistance Center | Programming and Physics Tutor | July 2016 to Mar. 2018 |
| | <ul style="list-style-type: none"> Instructed and guided students in the subjects of classical physics and C programming. | |

Publications

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| 3D Gaze Tracking for Studying Collaborative Interactions in Mixed-Reality Environments | Apr. 2024 |
| Eduardo Davalos, Joyce H. Fonteles, Yike Zhang, Ashwin T. S., Umesh Timalisina, Gautam Biswas | |
| Monocular Microscope to CT Registration using Pose Estimation of the Incus for Augmented Reality Cochlear Implant Surgery | Mar. 2024 |
| Yike Zhang, Eduardo Davalos, Dingjie Su, Ange Lou, Jack H. Noble
10.48550/arXiv.2403.07219 🔗 | |
| A First Step Using Machine Learning Methods to Enhance Interaction Analysis for Embodied Learning Environments | Apr. 2024 |
| Joyce H. Fonteles, Eduardo Davalos, Ashwin T. S., Yike Zhang, Mengxi Zhou, Efrat Ayalon, Alicia Lane, Selena Steinberg, Gabriella Anton, Joshua Danish, Noel Enyedy, Gautam Biswas | |

[10.48550/arXiv.2405.06203](https://arxiv.org/abs/10.48550/arXiv.2405.06203) 

ChimeraPy: A Scientific Distributed Streaming Framework for Real-time Multimodal Data Retrieval and Processing

Dec. 2023

Eduardo Davalos, Umesh Timalisina, Yike Zhang, Jiayi Wu, Joyce H. Fonteles, Gautam Biswas

[10.1109/BigData59044.2023.10386382](https://arxiv.org/abs/10.1109/BigData59044.2023.10386382) 

Identifying Gaze Behavior Evolution via Temporal Fully-Weighted Scanpath Graphs

Mar. 2023

Eduardo Davalos, Caleb Vatrall, Clayton Cohn, Joyce Horn Fonteles, Gautam Biswas, Naveeduddin Mohammed, Madison Lee, Daniel Levin

[10.1145/3576050.3576117](https://arxiv.org/abs/10.1145/3576050.3576117) 

Prediction of Students' Self-confidence Using Multimodal Features in an Experiential Nurse Training Environment

June 2023

Caleb Vatrall, Madison Lee, Clayton Cohn, Eduardo Davalos

A Tale of Two Nurses: Studying Groupwork in Nurse Training by Analyzing Taskwork Roles, Social Interactions, and Self-Efficacy

June 2023

Caleb Vatrall, Clayton Cohn, Eduardo Davalos, Gautam Biswas, Madison Lee, Dan Levin, Eric Hall, Ho Ellen Holt

[10.22318/cscl2023.102810](https://arxiv.org/abs/10.22318/cscl2023.102810) 

Using the DiCoT framework for integrated multimodal analysis in mixed-reality training environments

July 2022

Caleb Vatrall, Gautam Biswas, Clayton Cohn, Eduardo Davalos, Naveeduddin Mohammed

[10.3389/frai.2022.941825](https://arxiv.org/abs/10.3389/frai.2022.941825) 


FastPoseCNN: Real-Time Monocular Category-Level Pose and Size Estimation Framework

2021-5

Eduardo Davalos, Mehran Aminian


Projects

RedForest

[code](#)  2023-10-01

- Project Description: Developed a EdTech platform for scalable multimodal learning analytics and AI, providing self-regulating feedback to teachers and students.
- Technologies: TS/JS, NextJS, Tailwind, TensorFlow, D3.

SyncFlow

[code](#)  2024-01-01

- Project Description: Developed both a cloud and IoT platform for scalable multimodal analytics, including streaming, storage, processing, and AI logic of multimodal data.
- Technologies: Rust, Python, WebRTC, NextJS, Tailwind.

ChimeraPy

[code](#)  2021-06-01

- Project Description: Developed a scientific distributed streaming framework for real-time multimodal data retrieval and processing.
- Technologies: Python, ZeroMQ.

SKORE

[code](#)  2018-06-01

- Project Description: Developed a smart keyboard operated by a robotic educator.
- Technologies: Python, Arduino.

Technologies

Languages: Python, JS/TS, Rust, C++, Java

Services: AWS, Vercel, Supabase, GitHub Pages, Wordpress

Libraries: PyTorch, TensorFlow, ReactJS, NextJS, FastAPI, Flask, Numpy, Pandas, D3, Matplotlib