EDUARDO DAVALOS

AI & EDUCATION PHD RESEARCHER

ABOUT

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DATA SCIENCE

ADVANCE

MACHINE LEARNING
DEEP LEARNING
REINFORCEMENT LEARNING
COMPUTER VISION
NATURAL LANGUAGE PROCESSING

DATA ENGINEERING

ADVANCE

DATA STREAMING
END-TO-END DATA PIPELINES
MULTIMEDIA DATA PROCESSING
DATA VISUALIZATION

WEB DEV

INTERMEDIATE

FRONT END DEVELOPMENT
BACK END DEVELOPMENT & INFRASTRUCTURE
COMPUTER NETWORKING
IOT DEVICES

LANGUAGES

ENGLISH *(NATIVE SPEAKER)*
SPANISH *(FLUENT)*

EXPERIENCE

08/2021 - PRESENT

ARTIFICIAL INTELLIGENCE AND EDUCATION GRADUATE RESEARCHER - PHD

My concentration is on using AI and web technologies to analyze gaze and other multimodal data to understand how learners interact with technology.

- Improved scalability of AI pipelines for multimodal data analysis in large-scale learning environments via SyncFlow.
- Developed a 3D gaze tracking system supporting over 8+ concurrent users in a mixed-reality environment.
- Created a learning analytics platform for analyzing learner behavior and performance named RedForest supporting 100+ concurrent users.
- Published 10+ papers in journals and conferences related to artificial intelligence and education.
- Mentored 5+ undergraduate students in research projects related to AI and education.

07/2019 - 04/2021

COMPUTER VISION GRADUATE RESEARCHER- MS

For my masters, I focused on Computer Vision and Machine Learning applied to 6D Pose Estimation of house-hold objects.

- Achieved real-time 6D Pose Estimation of common household objects using a monocular webcam and a physics engine
- Improved model accuracy by 10% by training a physics engine with a custom dataset of objects with known poses.

EDUCATION

VANDERBILT UNIVERSITY, NASHVILLE, TN, USA *08/2021 - PRESENT*
PHD IN COMPUTER SCIENCE COMPUTER SCIENCE

ST.MARY'S UNIVERSITY, SAN ANTONIO, TX, USA *07/2019 - 04/2021*
MS IN ELETRICAL ENGINEERING ELECTRICAL ENGINEERING

ST.MARY'S UNIVERSITY, SAN ANTONIO, TX, USA *07/2015 - 04/2019*
BS IN ELETRICAL ENGINEERING ELECTRICAL ENGINEERING

PUBLICATIONS

GAZEVIZ: A WEB-BASED APPROACH FOR VISUALIZING LEARNER GAZE EDUCATIONAL ENVIRONMENT

ICCE 2024

Developed a web-based approach for visualizing learner gaze patterns in online educational env integration, dashboard design, and scalable eye-tracking visualization.

3D GAZE TRACKING FOR STUDYING COLLABORATIVE INTERACTIONS ENVIRONMENTS

ICMI COMPANION 2024

Developed computational pipeline leveraging from off-the-shelf computer vision algorithms to p reality environments.

MULTIMODAL METHODS FOR ANALYZING LEARNING AND TRAINING E SYSTEMATIC LITERATURE REVIEW

ARXIV

Conducted a systematic literature review on multimodal methods for analyzing learning and trai the understanding of advanced analytical techniques in educational settings.

A FIRST STEP USING MACHINE LEARNING METHODS TO ENHANCE INT EMBODIED LEARNING ENVIRONMENTS

AIED 2024

Developed AI techniques and software tools to analyze multimodal data from embodied learning interaction analysis.

MONOCULAR MICROSCOPE TO CT REGISTRATION USING POSE ESTIM AUGMENTED REALITY COCHLEAR IMPLANT SURGERY

SPIE MEDICAL IMAGING 2024

Developed a computational pipeline leveraging from off-the-shelf computer vision algorithms to mixed-reality environments.

CHIMERAPY: A SCIENTIFIC DISTRIBUTED STREAMING FRAMEWORK FO MULTIMODAL DATA RETRIEVAL AND PROCESSING

IEEE BIG DATA 2023

Created a multimedia data processing framework for real-time data retrieval and processing in c

IDENTIFYING GAZE BEHAVIOR EVOLUTION VIA TEMPORAL FULLY-WE GRAPHS

LAK 2023

Identified gaze-based behaviors along the temporal dimension through the use of graphs involvi reality environment.

PREDICTION OF STUDENTS' SELF-CONFIDENCE USING MULTIMODAL F EXPERIENTIAL NURSE TRAINING ENVIRONMENT

AIED 2023

Developed predictive models using multimodal data (eye gaze and speech patterns) to accurate confidence in simulation-based nurse training environments.

A TALE OF TWO NURSES: STUDYING GROUPWORK IN NURSE TRAININ TASKWORK ROLES, SOCIAL INTERACTIONS, AND SELF-EFFICACY

COMPUTER-SUPPORTED COLLABORATIVE LEARNING CONFERENCE, CSCL

Analyzed a mixed-reality, simulation-based training exercise involving three nurses, performing contrast strategies used when patients expressed doubts about their care. Demonstrated conne self-efficacy, and teamwork.

USING THE DICOT FRAMEWORK FOR INTEGRATED MULTIMODAL ANA TRAINING ENVIRONMENTS

FRONTIERS IN ARTIFICIAL INTELLIGENCE 2022

Developed a computational pipeline leveraging from off-the-shelf computer vision algorithms to
mixed-reality environments.

ADAPTIVE SCAFFOLDING TO SUPPORT STRATEGIC LEARNING IN AN O
ENVIRONMENT

2022

Developed an adaptive scaffolding framework for Betty's Brain, an open-ended learning-by-teac
includes an online strategy detector and a conversational adaptive feedback mechanism to supp
Conducted a pilot study with undergraduate students, analyzing activity logs, interactions, and e
behaviors and performance.