

SELECTED PORTFOLIO

Relevant AI and Engineering Education Work

Supporting Materials for the Digital Minds Career Development Fellowship

Andrea Ramírez-Salgado, PhD

Program Lead for Convergent Engineering Education Initiatives

Department of Engineering Education | Herbert Wertheim College of Engineering | University of Florida

Purpose of this portfolio

This portfolio presents four selected examples that demonstrate my readiness to translate digital minds scholarship into engineering education. Together, the materials show a consistent pattern across my work: I design technically rigorous learning experiences, study how learners engage with intelligent systems, communicate complex AI ideas to varied audiences, and build institutional pathways for broader implementation. These examples establish the technical, educational, research, and leadership foundation from which I can make a focused and credible career transition into questions of AI sentience, welfare, moral status, and responsible treatment under uncertainty.

Selected evidence

1 AHA! Curriculum Curriculum design and AI ecosystem building	2 ASEE Research Paper Empirical study of Edge AI learning
3 Teaching Video Accessible public communication of AI	4 UF Department Profile Institutional reach and scalable leadership

Technical depth • Educational translation • Empirical scholarship • Institutional leverage

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NSF AHA! CURRICULUM

From smart devices and sensors to Edge Intelligence for Real-World Impact

SELECTED ARTIFACT

AHA! Curriculum Introduction

PROJECT

AI Hardware Adventures, NSF Award 2405373

MY ROLE

Co-Principal Investigator and curriculum collaborator

What the artifact shows

The AHA! curriculum is a hands-on pathway for learning how intelligent physical systems sense, process data, recognize patterns, and respond to real-world conditions. It contains five modules, 11 activities, and a culminating project designed to benefit others. Learners progress from smart devices and sensor exploration to microcontrollers, cloud-to-edge distinctions, multimodal intelligence, model training, and the design of Edge AI solutions for community needs. The facilitator guidance emphasizes inquiry, experimentation, collaboration, and reflection rather than direct delivery of answers.



AHA! five-module learning progression.

CAPACITY DEMONSTRATED

- Translates microelectronics, sensors, embedded systems, and Edge AI into a coherent learning progression.
- Connects technical AI learning to community-centered problem solving through adaptable, hands-on materials.

RELEVANCE TO DIGITAL MINDS

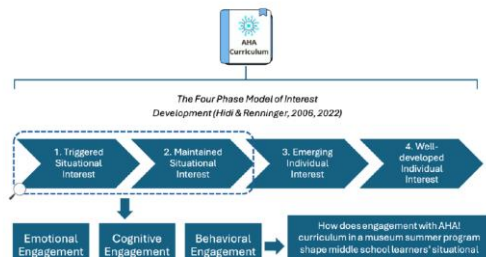
- Demonstrates that I can convert an emerging, interdisciplinary AI domain into teachable concepts and experiences.
- Provides an existing pathway for moving digital minds competencies into curriculum, professional learning, and community engagement.

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SELECTED ASEE RESEARCH PAPER

Studying how learners engage with microelectronics and Edge AI in an informal setting

Ambarwati, Y. E., Ramírez-Salgado, A., Hwang, W., et al. (2026). *Exploring Situational Interest in Microelectronics and Edge AI Among Middle Schoolers in a Museum Program (Research to Practice)*. American Society for Engineering Education Annual Conference & Exposition.



The paper combines the Four-Phase Model of Interest Development with emotional, cognitive, and behavioral engagement.

STUDY AT A GLANCE

- Context: a two-week museum program focused on embedded systems, multimodal sensing, AI, Edge AI, and community-relevant design.
- Participants: 11 middle school learners, ages 11 to 13.
- Design: convergent mixed methods using structured observations, semi-structured interviews, and a situational interest survey.
- Purpose: examine how engagement with the AHA! curriculum shaped situational interest in microelectronics and Edge AI.

Selected findings and design implications

HANDS-ON MATTERS

Creative, collaborative, and sensor-based tasks most consistently triggered and maintained interest.

PURPOSE MATTERS

Pride and participation increased when learners began community-relevant Edge AI projects and presentations.

DESIGN MATTERS

Activities perceived as too school-like were associated with greater boredom, reinforcing the need for active, meaningful learning.

Why this is strong evidence for the fellowship

This paper demonstrates that my contribution is not limited to creating AI learning materials. I also participate in the systematic study of how learners engage, what instructional features shape their responses, and how evidence can guide revision. That experience is directly relevant to the proposed fellowship plan, which includes expert validation and scenario-based curriculum probes focused on moral uncertainty about advanced AI systems. The paper also shows experience working across engineering education, informal learning, museum partnerships, and mixed-methods research.

An honest foundation for transition

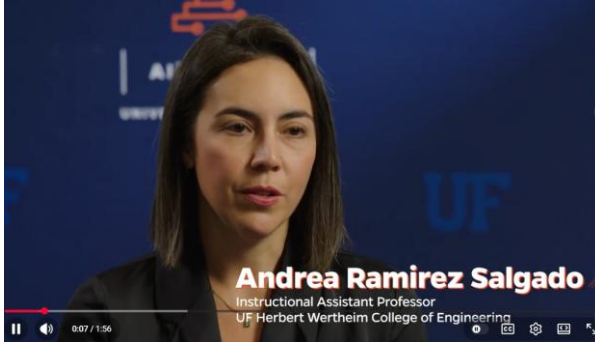
The study does not address digital sentence directly. Its value is methodological and translational: it shows my ability to develop and study educational experiences around complex AI systems, then use evidence to improve how learners reason and engage.

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PUBLIC COMMUNICATION AND INSTITUTIONAL REACH

Evidence that fellowship learning can move beyond a single research project

AI teaching video: Making AI accessible through foundational teaching



SELECTED EVIDENCE

This video profile documents my commitment to making AI accessible in the classes I teach, including foundational courses. It provides a concise public-facing example of how I communicate technical ideas and frame AI learning for broader participation.

Fellowship relevance: Digital minds scholarship will require careful translation for engineers and educators without sacrificing conceptual precision.

[Open the video profile](#)

Department news profile: Professor empowers students with cutting-edge AI training



SELECTED EVIDENCE

- Faculty participation in UF graduate programs in Artificial Intelligence Systems and Applied Data Science.
- Leadership in a \$1.5 million NSF initiative designed to engage approximately 500 students and 25 teachers across three states.
- Commitment to open, no-prerequisite curriculum and hands-on Edge AI learning for K-12, informal, undergraduate, and graduate audiences.
- Partnerships that include the Cade Museum for Creativity and Invention and community-focused applications of AI.

[Read the UF department profile](#)

Materials included or linked

- AHA! Curriculum Introduction
- ASEE 2026 paper: Exploring Situational Interest in Microelectronics and Edge AI Among Middle Schoolers in a Museum Program
- [Video profile: Andrea Ramirez-Salgado discusses making AI accessible in the classes she teaches](#)
- [UF Department of Engineering Education profile: Professor empowers students with cutting-edge AI training](#)