

**Buffett Undergraduate Research Fellowship Opportunity**

*AI Bytes the Ocean*

**Faculty Mentor:** Ozge Samanci, Associate Professor, School of Communication

**Project Synopsis:** Artificial intelligence is rapidly transforming society, offering the potential to extend human lifespans, drive scientific breakthroughs and fuel economic growth. However, its advancement comes at a significant cost to the environment. This project will focus on creating a participatory AI installation to draw parallels between microplastics and data pollution.

Researcher Jesse Dodge notes that a single query to ChatGPT consumes about the same amount of electricity as powering a light bulb for 20 minutes. The exponential growth in data generation demands significant electricity and water for server cooling, leading to rising carbon emissions. This exacerbates environmental challenges tied to fossil fuel dependency, disproportionately affecting vulnerable communities.

AI's environmental impact goes beyond its direct emissions. Currently, AI serves profit-driven economies. For instance, Microsoft's AI optimizes mining technologies, accelerating fossil fuel extraction. This further boosts carbon emissions, intensifying climate change and its effects on ecosystems and societies.

My project will focus on creating a participatory conversational AI installation, where the audience can engage in dialogue with the piece. The interaction will draw parallels between microplastics and data pollution. Just as generative AI contributes to data pollution, excessive fossil fuel use drives microplastic proliferation. Both data production and microplastic accumulation are growing rapidly in the AI era, yet solutions to mitigate either crisis remain elusive.

Microplastics infiltrate human cells, threatening health, while data pollution disrupts collective memory and historical awareness, jeopardizing democratic systems. These issues are interconnected, with AI-driven automation increasing plastic waste, and amplifying the environmental and societal impact.

The piece will be projected on a large scale, either behind panel speakers or on an art gallery wall. *AI Bytes the Ocean* listens to us—or engages in conversation—visually representing the environmental harm AI inflicts in real-time. AI-generated responses materialize as three-dimensional concrete or steel words, falling from the sky and crashing into trees, rupturing the terrain, sinking into the ocean, and fragmenting into smaller pieces that accumulate on the ocean floor. With each interaction, the landscape deteriorates, gradually transforming into a dystopian space.

This system collects and processes data, symbolizing the environmental cost of AI. I am refining its mechanics to create an engaging, poetic, and immersive experience that prompts reflection on generative AI's impact.

The research question: What is responsible AI? How can AI be used in art while minimizing its environmental impact? Are there existing examples of AI-driven art that address sustainability? Possible strategies include donating to carbon offset programs or tracking environmental impact. What other approaches could help reduce AI's footprint in creative projects?

**Project Term:** Summer and Academic Year

**Project Location:** Hybrid, on campus and remote

**Job Description:** We have developed the software component of this piece. I'm looking for one or two students to participate in visual design and initial sound design.

I can hire one or two students for this position.

#### Student #1 – 3D Modeling and Design

This student should be proficient in 3D modeling using Maya or Blender, with a strong understanding of textures and lighting. An interest in data and media art is essential. Familiarity with Unity and Python is a plus but not required.

#### Student #2 – Sound Design

This student should ideally have experience designing sound for interactive environments. Knowledge of Wwise and Unity is a plus.

This project is ongoing, and expectations for potential participants are relatively flexible.

**Time Commitment:** To be determined by student and faculty mentor

**Number of Available Positions:** Two

