Helena Kent

Design Engineer

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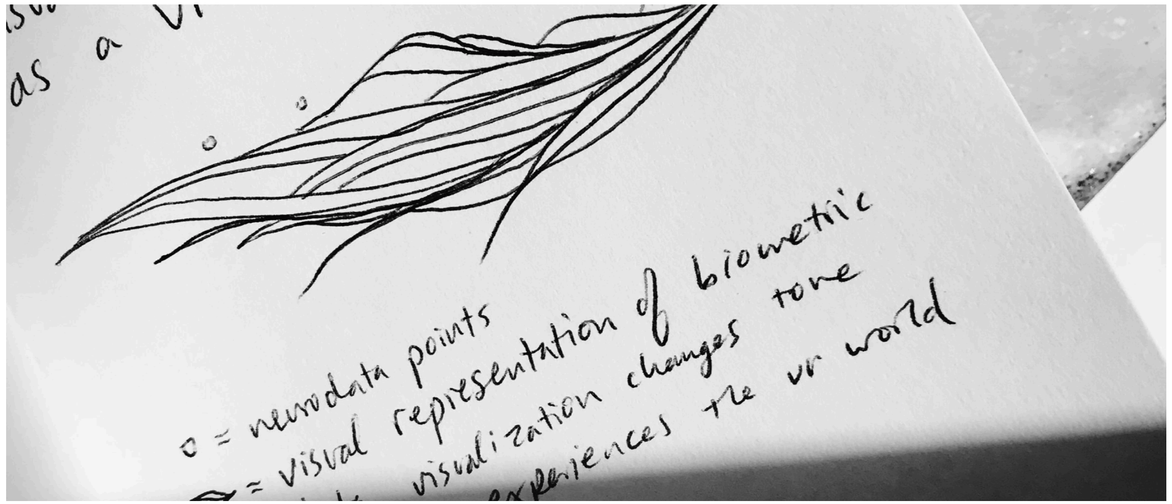
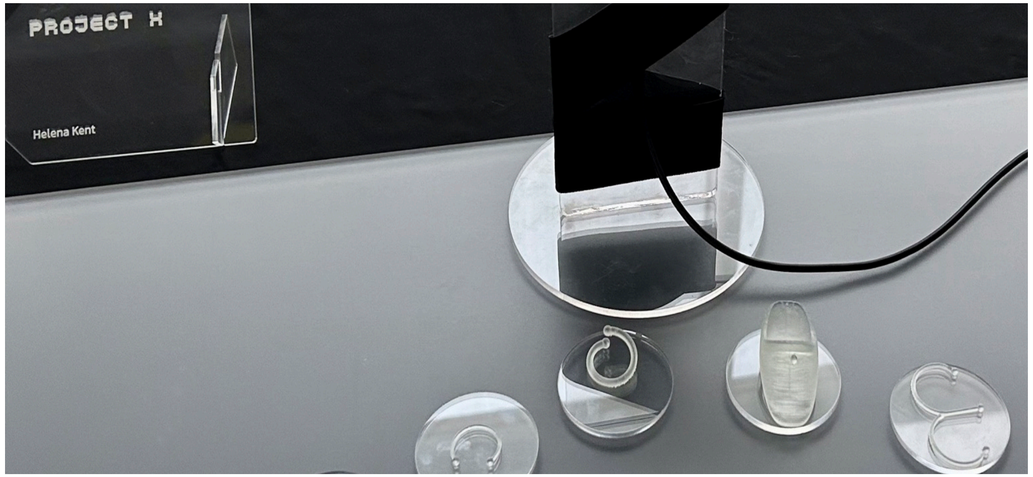


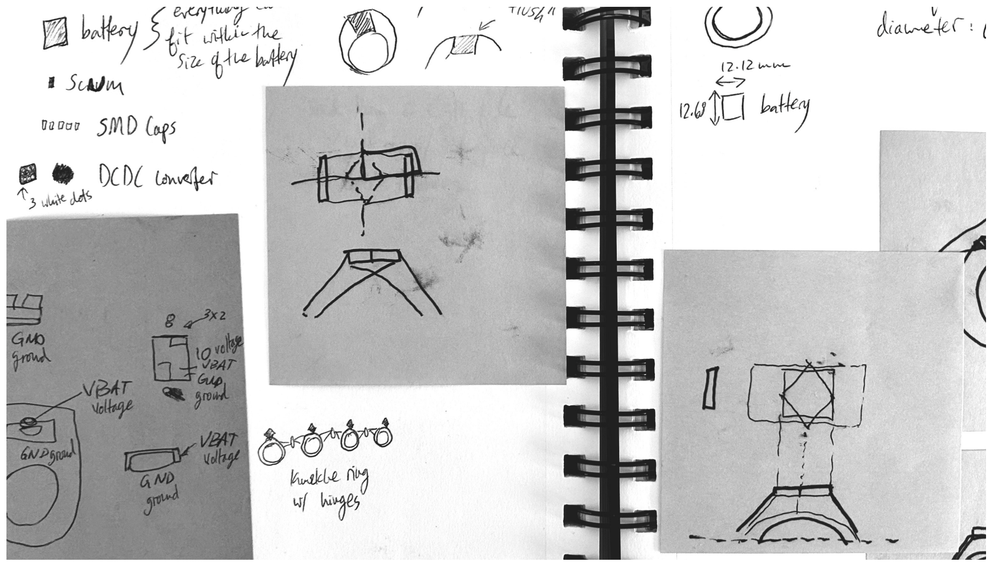
Project X



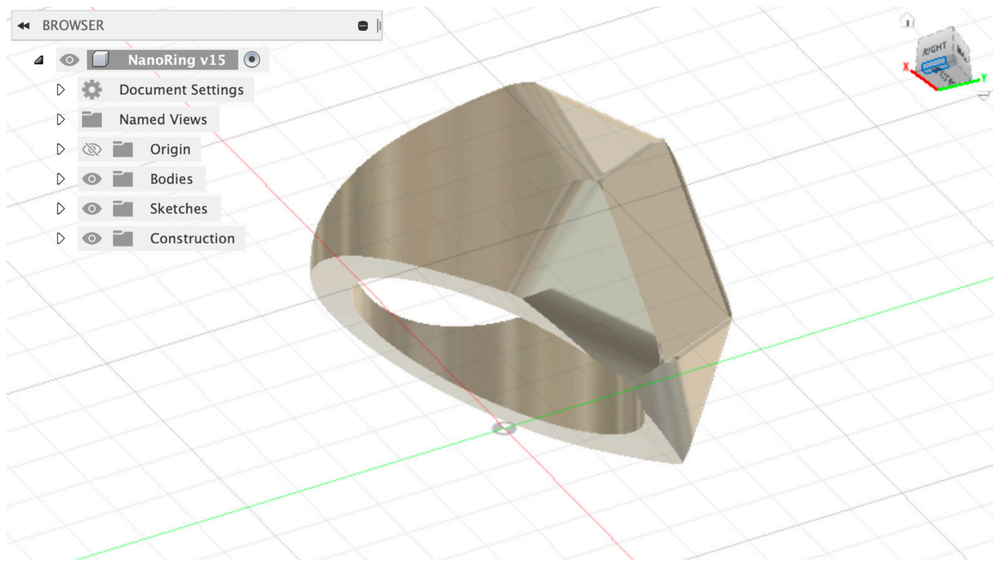
Project Description: Using sensor-based technology and computationally designed wearables, Project X illuminates the relationship between humanity and digital domains by enabling humans to interact with digital interfaces using intuitive gestural interactivity.

Project Type: Individual

Technology: Arduino Nano, 3D Printing, CAD Modeling, Laser Cutting



Project X: Process Part I



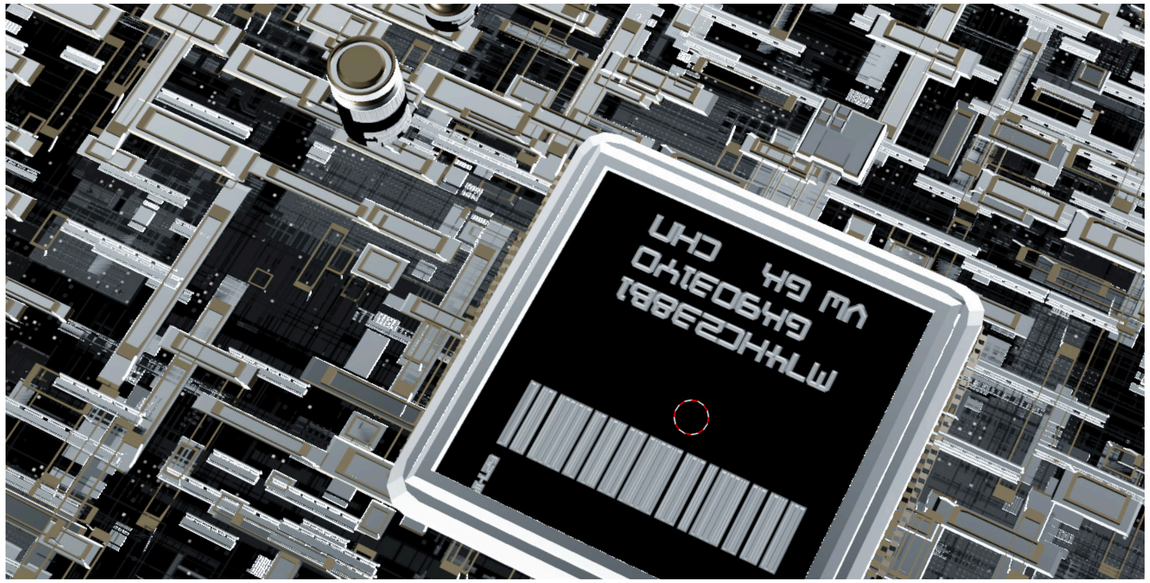
Project X exhibits an array of sensor-based wearable technologies designed for gestural interaction, featuring distinct form factors and materials that range from a flexible garment to engineering grade resin. The wearables provide individuals with the ability to embody their interactions, while allowing them to navigate the digital environment at a high level of fidelity and precision. With Project X, people are able to adorn themselves with a new medium of interaction devices, each with its own unique characteristics, resulting in an advanced level of interaction and immersion for navigating digital environments.

The prototyping process for Project X utilized multi-faceted approaches involving the fabrication of physical models, computational modeling, 3D printing, and the development of systems diagrams to depict the interaction between the electronics and the wearable devices. The board I had available was an Arduino Nano 33 IoT. I was able to fabricate an elastic garment wearable for the board, and program the connection between the board and my laptop's interface using the Arduino Nano 33 IoT device and public domain gyroscope code from Arduino.

Project X: Process Part II

In order to ideate the wearable devices I used product design and human-computer interaction research methodologies involving semi-structured interviews and user experience research (UXR) tests, aimed at gaining deeper insights into how individuals would engage with sensors as gestural interaction devices. The data collected from the interviews and tests was subjected to thorough content analysis, resulting in a comprehensive understanding of people's interaction needs and preferences which I then categorized into key performance indicators (KPIs). The analysis provided valuable insights that informed the ideation process, leading to the development of more refined and optimized wearable devices.

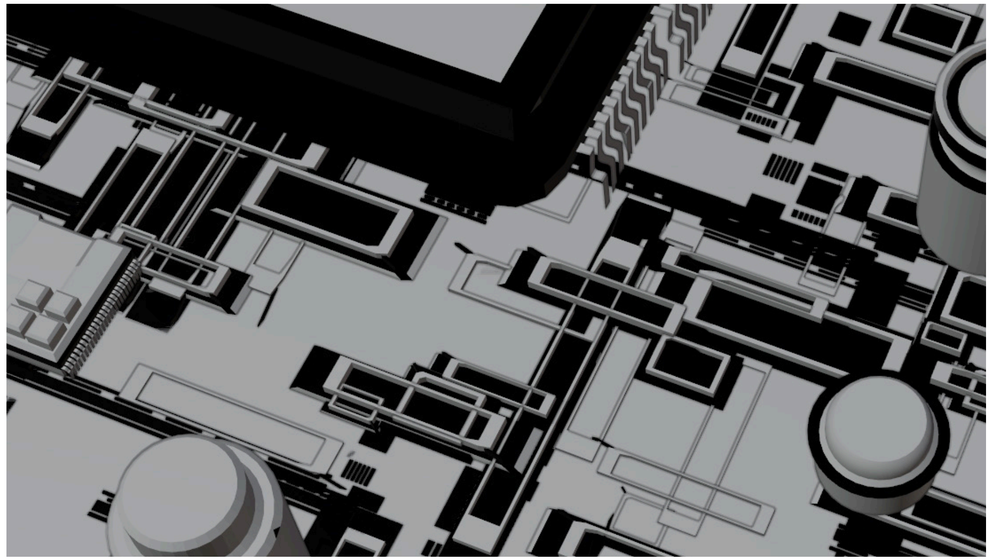
Artifact 2028

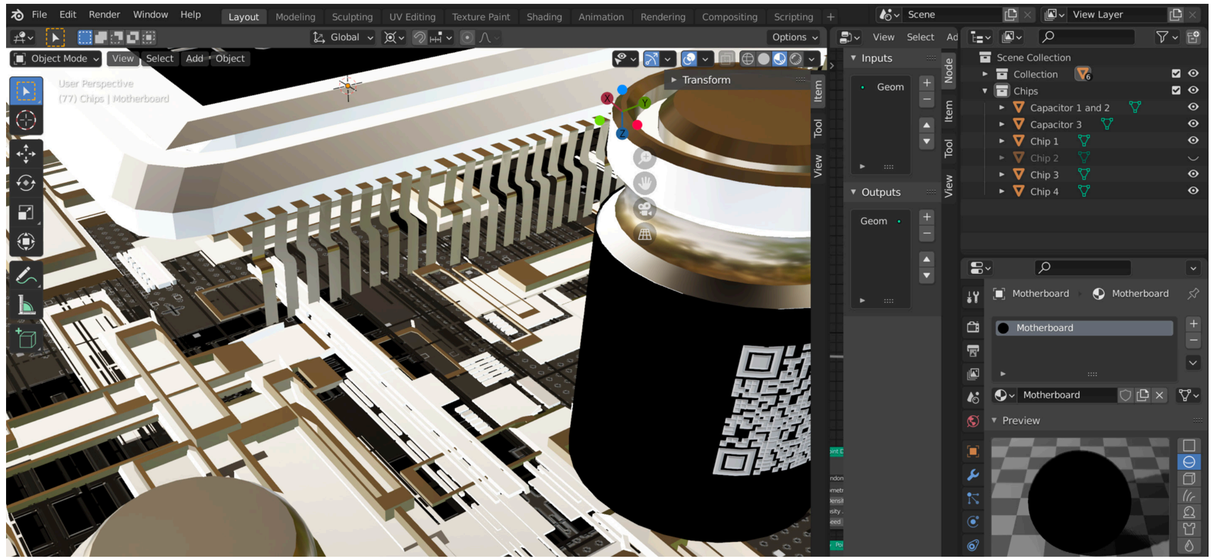


Project Description: I embarked on a journey to re-define the way AI interacts with our environment. I was driven by a vision to leverage AI's potential while minimizing its ecological footprint. Via research and iteration, a chip was developed - a powerful piece of hardware capable of running AI algorithms efficiently and with zero environmental impact. This chip represents a significant step forward in ensuring that AI contributes positively to the environment.

Project Type: Individual

Technology: Blender





Artifact 2028 Process: Part I

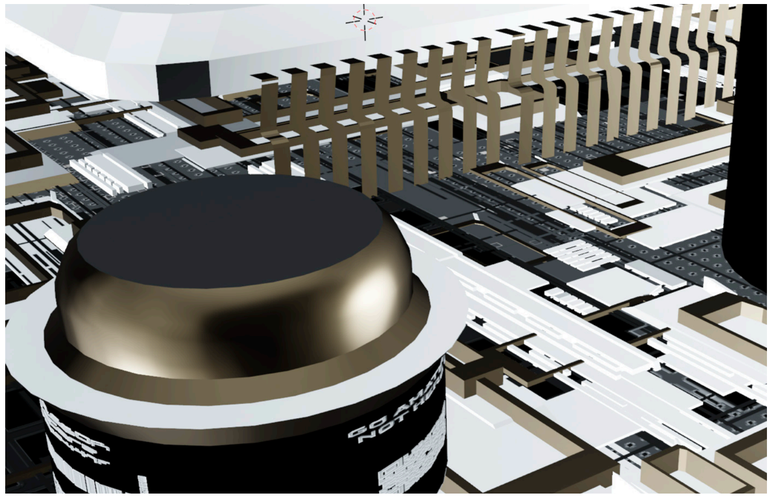
The potential of AI to drive positive change in our environment is undeniable, yet we have also witnessed its unintended consequences that threaten the very ecosystems we strive to protect. I am here to shed light on a solution - a solution that I have diligently worked on to make AI a truly sustainable tool for the betterment of our planet.

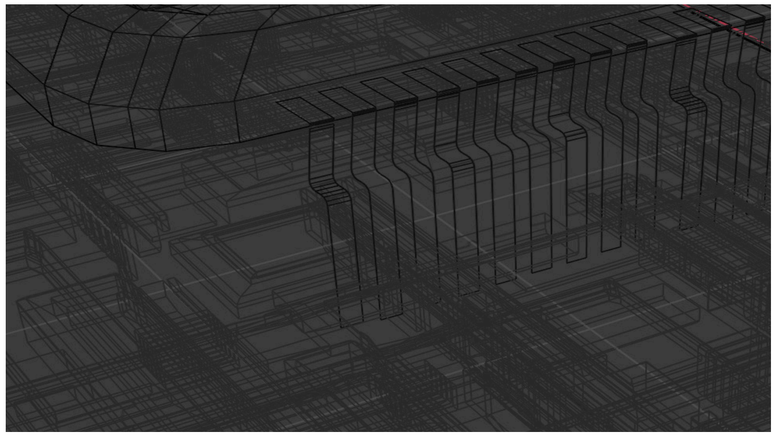
The intersection of AI and sustainability has long been a topic of interest and complexity. We have seen how AI can analyze vast amounts of data to identify trends, make predictions, and optimize processes in ways that humans cannot. However, the exponential growth of AI algorithms has raised concerns about their environmental impact. The nature of AI algorithms can contribute to significant energy consumption and carbon emissions, negating the positive contributions that AI could make towards sustainability.

Artifact 2028 Process: Part II

An example of a discovery enabled by this sustainable chip involves benthic microbes that were discovered within Jupiter's moon (Europa). These microbes have the unique ability to capture carbon from their surroundings. Harnessing this natural process, we have been able to restore the environment here on Earth. The implications of these carbon capturing microbes are vast, and their discovery has prompted the establishment of a global policy aimed at revitalizing our planet's ecosystem.

AI's potential as both an aid and a threat to sustainability is a critical one. Our journey from acknowledging the negative environmental impacts of AI to creating a solution that enables its positive application is a testament to human evolution. With the right tools and an unwavering dedication to progress, we can use AI to not only advance sustainability but to actively restore and protect our planet.





Parallax

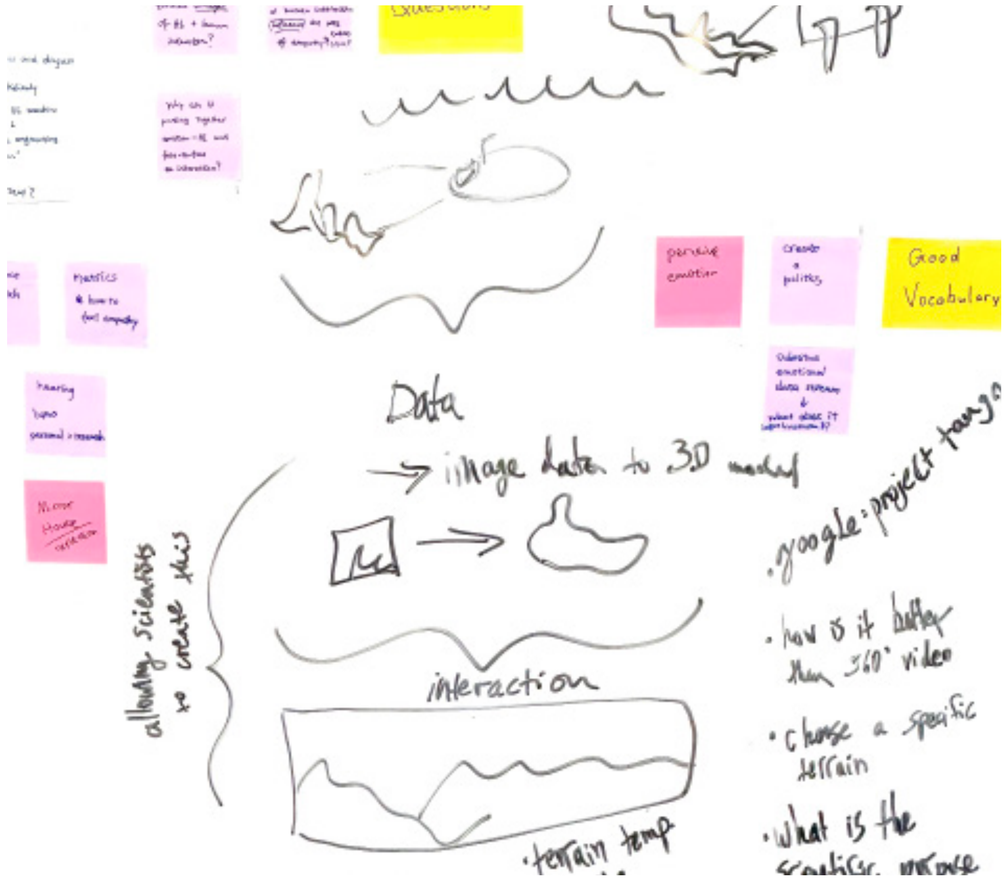
An HCAI Approach to Visual Data Analysis Software for Space, Earth and Ocean Exploration

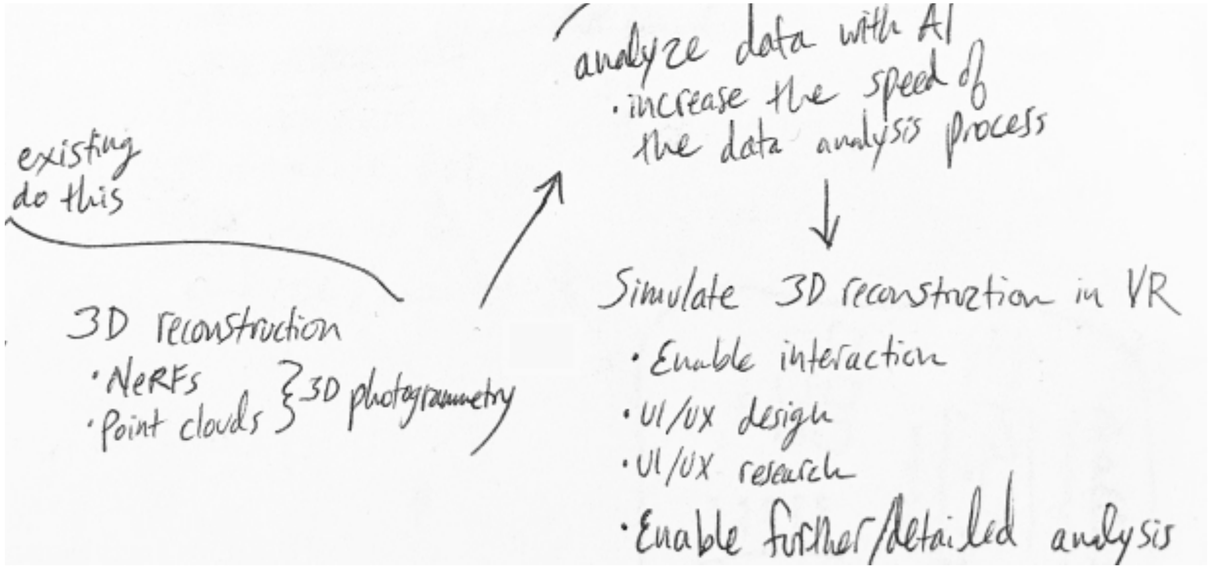
Project Description: Parallax enables the intelligent processing and analysis of visual data from remote environments using human-centered AI.

Project Type: Individual

Technology: Unity

Parallax Process: Part I



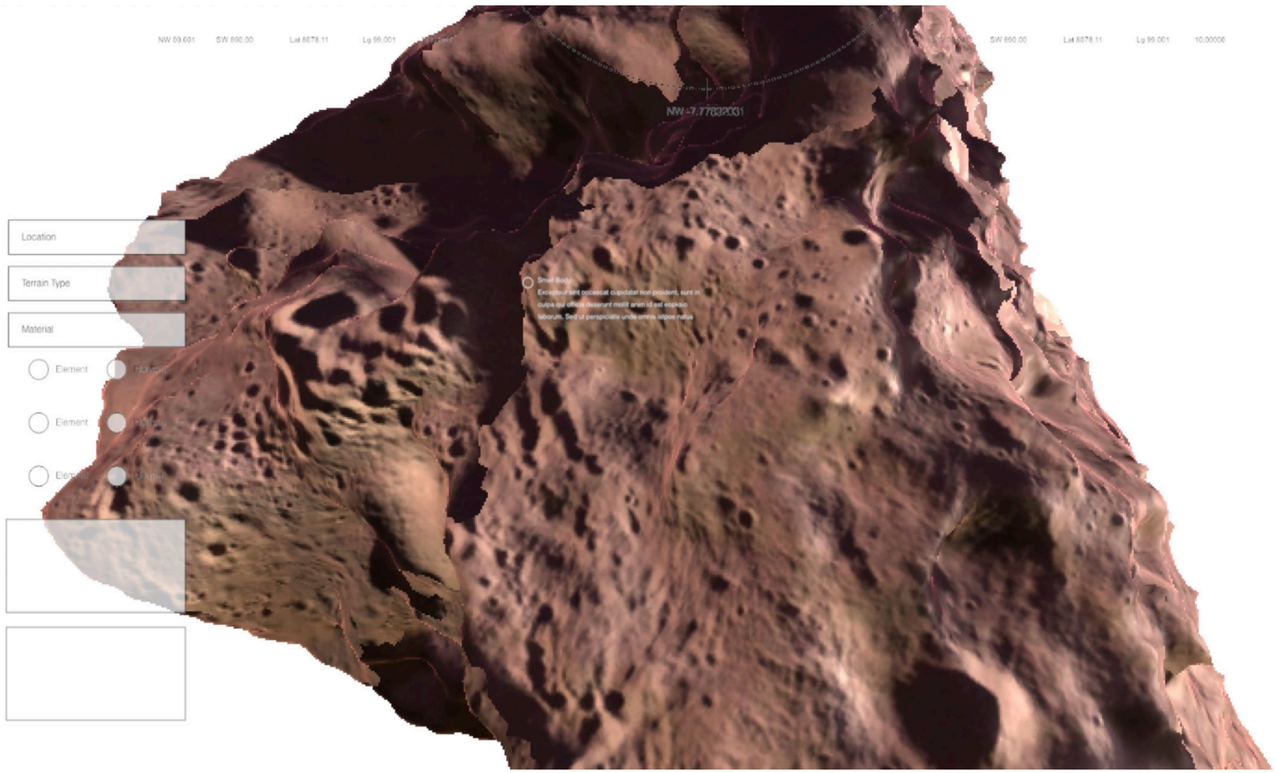


High science-value destinations in space, Earth and in the ocean are often extreme environments that are challenging to access due to their location, and complex to analyze due to the volume of available data. Scientists studying these locations can't physically visit the sites they study, instead conducting research remotely, relying on scientific software to visualize and analyze their data. Exploration mission success is contingent on the use of such software for interpreting information, thus scientists' experience while using these tools is an essential scientific mission enabler. I propose that using human-centered AI (HCAI) methods in the development of software for these applications will contribute to the improvement of remote exploration by supporting scientists' engagement with information, thereby enabling the more effective exploration of new worlds.

Parallax Process: Part II

Visual data of space, Earth, and the ocean is collected daily and scientists need software to effectively analyze it. Remote locations are challenging to access, and scientists are reliant on well-designed data analysis software for enabling their insights. My methods for this project included mixed-methods research, semi-structured interviews, prototyping and codification.

To improve the analysis of remotely collected visual data, I developed user interface prototypes, performed qualitative and quantitative interviews and prototype tests with scientists, and conducted a survey of related research. There is a vast abundance of visual data, and recent advancements in AI technology and human-centered AI will help scientists process the data in order to support scientific discoveries.



enano

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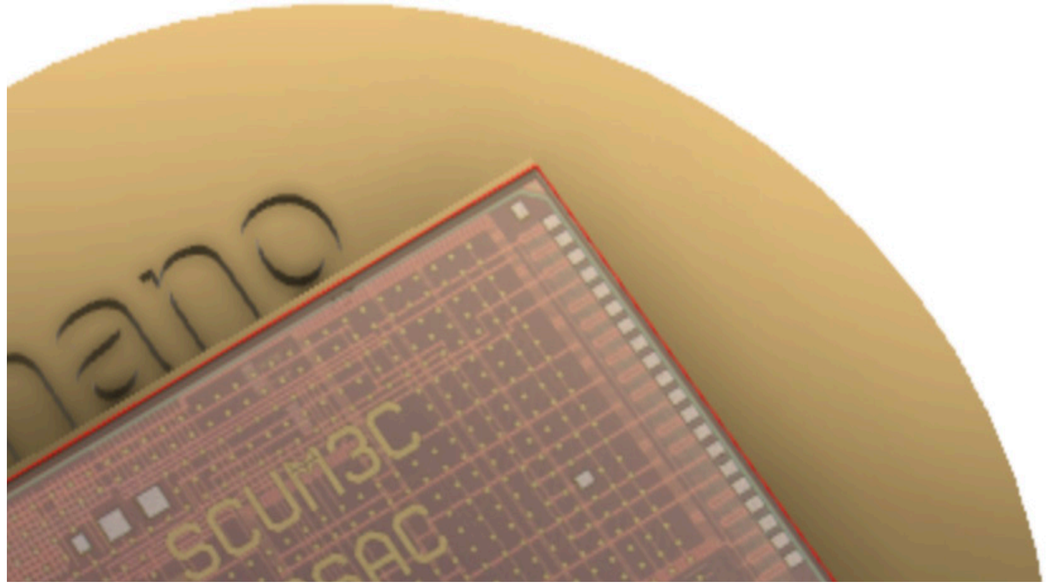


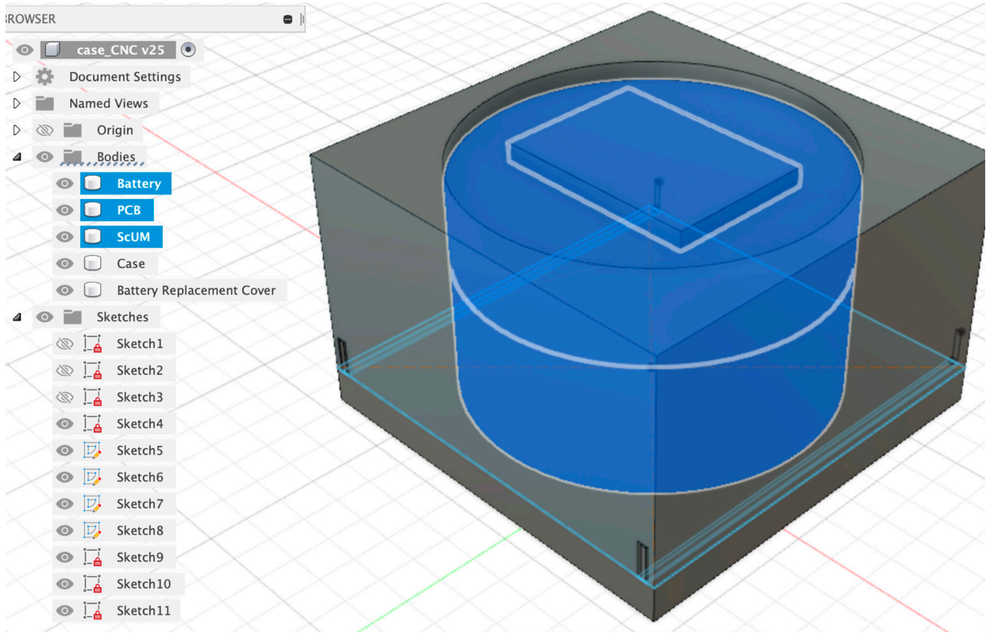
Project Description: enano offers a cutting-edge solution to the challenges of medication delivery with our real-time tracking and monitoring system.

Project Type: Team

Technology: Semiconductor chips, CAD Design

NSF

Berkeley SKYDECK



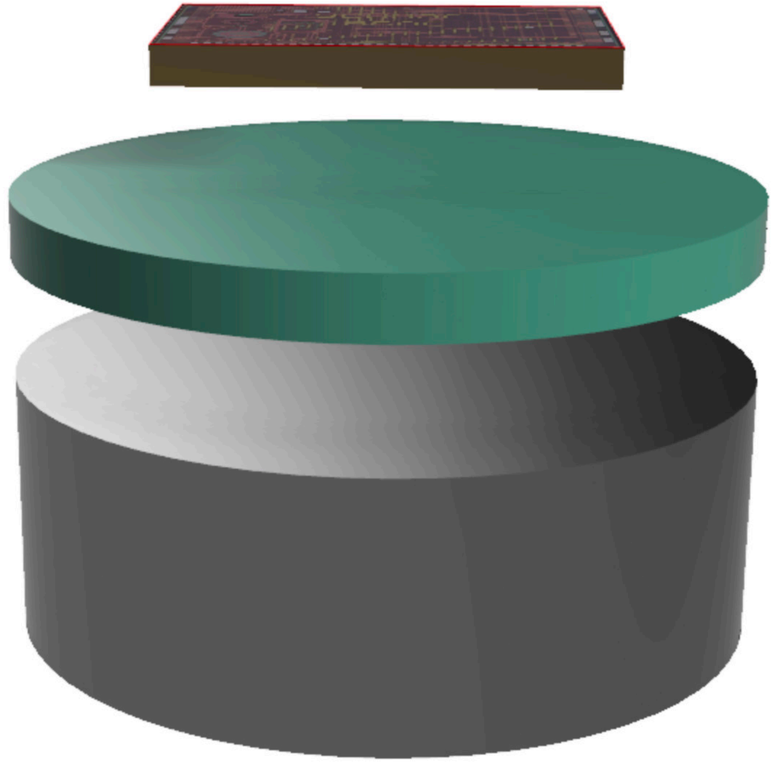
enano Process: Part I

enano's revolutionary wireless sensing technology ensures the freshness and quality of each individual medical shipment, providing customers with the confidence that their medication is being delivered at optimal conditions. enano not only tracks temperature, humidity, and contamination levels but also offers medication reminders for customers to ensure they are taking their medication as prescribed. This technology allows doctors and pharmacists to monitor medication quality, track customer outcomes, and provide timely warnings to customers if needed. enano's user-friendly app provides customers with access to all relevant metrics, including temperature tracking and medication reminders. Customers no longer have to worry about medication going bad during delivery, and doctors and pharmacists can have confidence in the quality of the medication they are giving patients. enano's real-time tracking and monitoring system offers a comprehensive solution to medication delivery challenges, providing benefits to customers, doctors, and pharmacists alike.

enano Process: Part II

Based on our market research findings from over 80 quantitative and qualitative survey studies, we discovered that the key features of tagging technology that mattered most are price, size, privacy, functionality and use. Our findings indicated that people would be willing to pay more for our technology if it cost less than the items they'd like to track, and people would pay a premium if the item was very far away or if the items held personal data.

In the medical industry, we aim to work with hospitals, emergency facilities, medical manufacturers, pharmacies, and distributors to track patients, staff, equipment movement, medication storage, and supply chain monitoring. For tracking expensive pharmaceuticals, we are looking at a global total market size of ~ $9B. We can provide the greatest value-add for medicine that needs to be refrigerated. In the commercial industry, we would like to work with shipping distributors, manufacturing facilities, and enterprise asset tracking to utilize location and temperature tracking for timely delivery, product quality, asset monitoring, and equipment quality management. Additionally, enano would be well-equipped to partner with or develop our own enterprise research software companies to provide valuable data to monitor research equipment and sample movement, ensuring correct storage temperatures for sample viability.



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EDUCATION

UC BERKELEY
MDes Design Engineering
2023

THE NEW SCHOOL
BS Design Engineering
2021

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EXPERIENCE

GRADUATE STUDENT RESEARCHER
UC Berkeley EECS
2022-Present

FOUNDER
Space Earth and Ocean Exlporation Design Lab | SEOE
2023

PAD-13 MEMBER
UC Berkeley Skydeck
2023

CO-FOUNDER
enano
2023

STUDENT HCI RESEARCHER AND XR DEVELOPER
NASA Ames Research Center
2020 - 2021

STUDENT DATA ANALYST
NASA Ames Research Center
2019

FOUNDING MEMBER
GLT | The United Nations
2018

DESIGN ENGINEER
Parsons School of Design 3D Lab
2017 - 2018

STUDENT OCEANOGRAPHIC AND CLIMATE RESEARCHER
Woods Hole Oceanographic Institution
2017 - 2018

PUBLICATIONS

INCORPOPRATING INTERFFACE DESIGN FORMALISM INTO SPACE AND OCEAN EXPLORATION SOFTWARE
NASA ADS
2020

AN EX-CIA OFFICER AND PARSONS STUDENT LEARN THE MEANING OF MENTORSHIP
Forbes
2018

AWARDS

MOST INNOVATIVE AWARD
UC Berkeley Collider Cup
2023

BAY AREA NSF INNOVATION CORPS AWARD
National Science Foundation
2023

DEANS LIST
UC Berkeley
2022 - 2023

SKILLS

Product Design
UX Research
Business
XR Design
Prototyping
Management