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Immersive Inoculation: Testing if Architecture can become a form of Emotional Supplementation

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Advisory Group

AIaiAG

Artificial Imagination

Question

How can architecture critically engage and creatively build on this wide range of imaging practices to productively, practically, speculatively, knowingly, enthusiastically, and skeptically construct, challenge, alter, and imagine actual and novel realities?

AG Statement

The astounding imaging capacities of digital technologies and the imaging practices they have generated – from printing and fabricating to screening and scanning to modeling and animating, from the ubiquitous and banal to the rarified and esoteric – are extreme alterations in human culture and experience that engage and immerse us, as casual and expert users, in imaging products and environments.

This AG will collectively pursue design theory and design research. We will employ synthetic (human/machine) imaging to explore the 'latent space' of artificial imagination as media of architectural design:

- within the broader context of social, political, aesthetic, and economic issues
- while encouraging iterative experimentation with open-source machine learning tools as imaging media
- by connecting machine learning to evolving and novel approaches to architectural design and discourse
- by challenging seemingly (but not actually) moribund issues such as authorship, authenticity, and representation

Through the creation and interrogation of synthetic imaging, we will:

- question the role and redefine the identity of the architect
- re-imagine the architect as a curator and editor of language, data, prompts, and outputs
- perform design as real-time collaboration with synthetic intelligence and imagination

Fukushima to Sea Ranch, Emily Pellicano, 2021

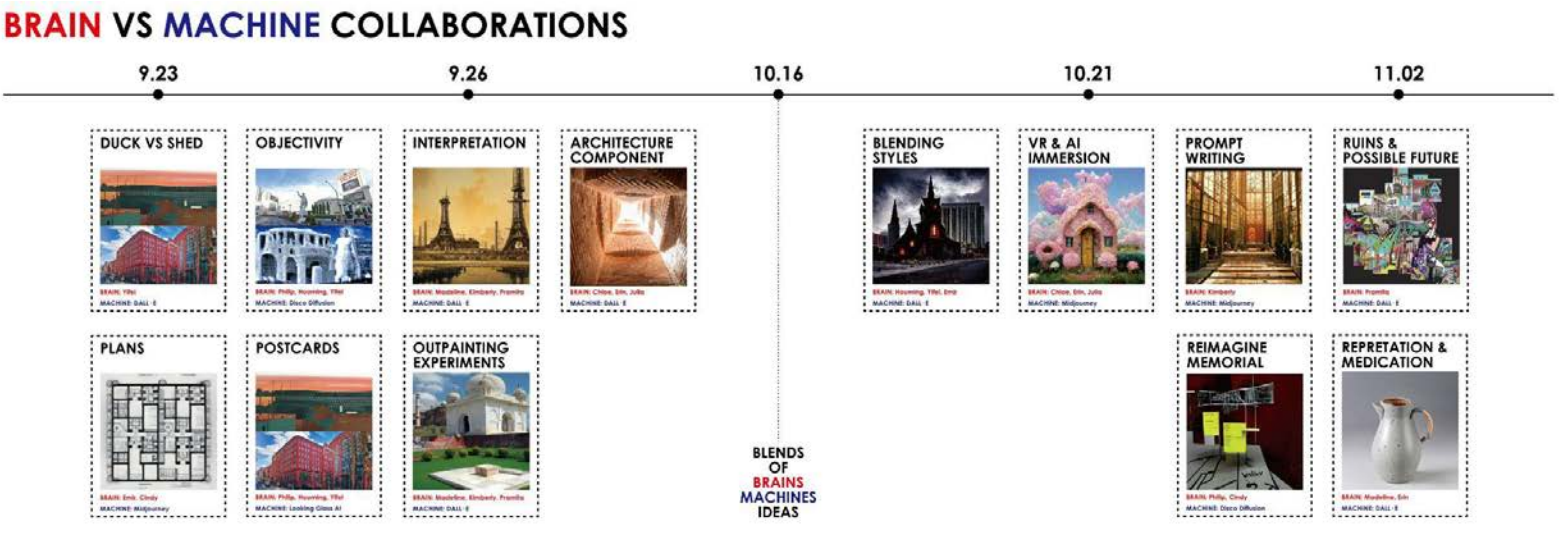
AiAG as a Research Lab

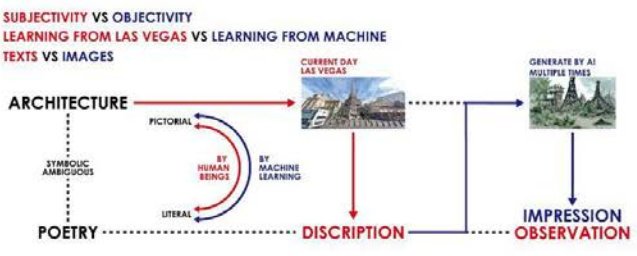
affiliated, overlapping, curated, related, speculative investigations

- Explore new possibilities of design and architecture with AI as a new technology within a broader context
- Going from general background research on AI (development of technology, the context of social, cultural, philosophical concerns, etc.) to students' personal interests
- Encouraging group learning, working, collaborating, and sharing between students and similarities between projects

Research method

- Groups each explaining why you are "looking forward to collaborating with other bits of INTELLIGENCES." Develop research and analysis on the possibilities of the Ai's generations
- Each team presents the work of another team. To present the work of another team means to clarify its approaches, missteps, and achievements - all related to the ambitions of the AG
- Proposals for long term projects that are related to the body of research previously gathered





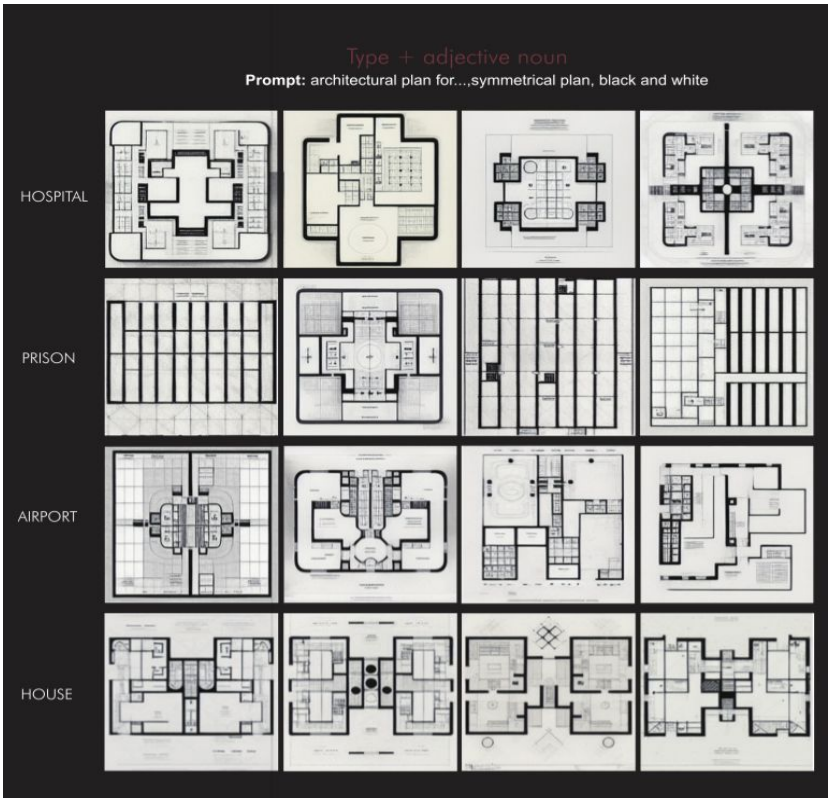
Machine Learning

Understanding the key role of data sets and biases in AI processes

Understanding the role of data sets in machine learning is integral to how collaboration occurs between architect and machine. At the beginning of the semester, we collectively began to question our roles in the design process as we began to work with AI software. We wondered to what degree we need to control the machine in order to have a valuable output –is human-intelligent authorship necessary for machine intelligence to function productively, or is machine intelligence enough of an author on its own?

Questioning who is the architect in a synthetic human machine collaboration and what is their role?

We began to understand that despite our critiques of AI's outcomes as being different than our design intentions, no matter what the AI produced, it was never necessarily "wrong". In communicating with AI, we need to learn to write very differently– "AI is only as good as its input". There is a temptation to criticize the AI for "misunderstanding" a prompt. In reality, the issue is that the author may not know how to accurately communicate with the machine. By understanding the frames of reference from which the AI is drawing data, we can better understand how to more productively interact with the machine.



"Neural networks cannot invent their own classes; they're only able to relate images they ingest to images that they've been trained on. Their training sets reveal the historical, geographical, racial, and socioeconomic positions of their trainers... The point here is that if we want to understand the invisible world of machine-machine visual culture, we need to unlearn how to see like humans"

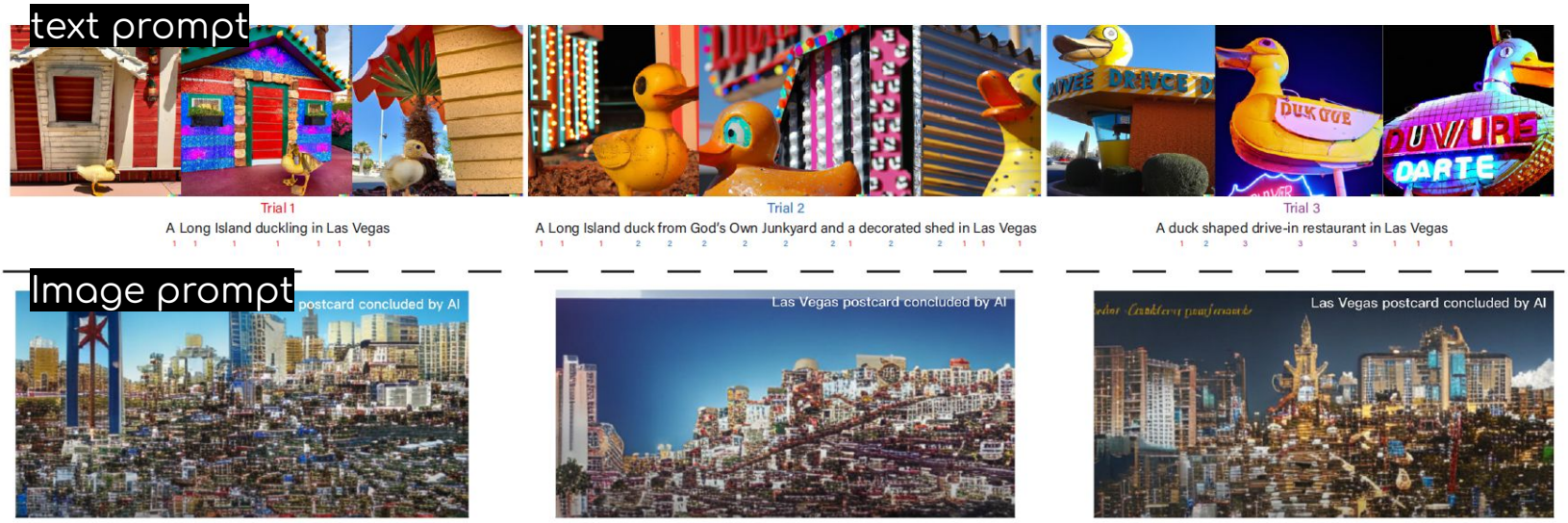
Trevor Paglen

Synthetic *vs* Artificial

Artificial is not human and is a modified version of an organic form. Synthetic is the condition where the machine and human cognition are not separate and the collaboration is clear. Synthetic imagination challenges the so-called human and everything we know about architecture, by generating hybrid outputs of the machine and human intelligences. With artificial, the distinction is stark between the human and machine, with the human thinking of the machine as other than.

What roles do form/content and style play in synthetic design processes?

Form, content, and style are the components we have control over and can manipulate in reaction to the Ai we are collaborating with. Not unlike the intricacies of line weights affecting the intention and image quality of an architectural drawing. For each component the method to communicate our intentions of form, content and style lies with the prompt and the ai tool itself. The text prompt relies on specific language nuances from its own meaning of linguistic style, form and content. Whereas an image prompt affects the desired output as precedent through its unique form, content and style.



The tools: state of the art software – how has/will this affect research, design, workflow?

The machine introduces us to an alternative thinking and liberates the architectural image from its previous constraints of precision and technicalities. This imagination was practiced in the AG, such as using text-to-image Ai to create alternative methods of material mapping for unconventional materials and also forced us to question the way we read and implement traditional drawings.

Brain *vs* Machine

Creativity, Learning, and Understanding among humans and machines:

- Machines can only do what they've been programmed to do. We can program a machine to create a picture, and in that sense it is creative; but we still have to tell it how to create by giving it constraints.
- Raises the question of how we can evaluate the images or whether we should apply the same criteria as for human art.

Brains VS Machines

- The AI generated images only partially overlap with human recognition.
- The distinction between AI information perception and information processing becomes blurred.
- Where they understand the architectural plan in an unhuman way could be a promising beginning. We can explore the machine's visual culture and reconsider the potential of the architectural plan.

What roles do form/content and style play in the synthetic design process?

- The machines are able to understand the words of form and style, but processes and uses the form and style different than human
- The results in different testing of prompts shows that the word choices, style and form could be reflected with the artificial intelligence.

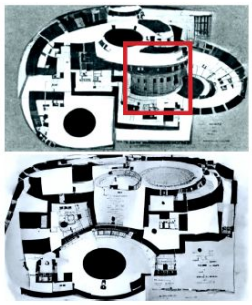
CREATIVITY, LEARNING, AND UNDERSTANDING AMONG HUMANS AND MACHINES

["*A long island duckling and a decorated shed in Las Vegas*"]

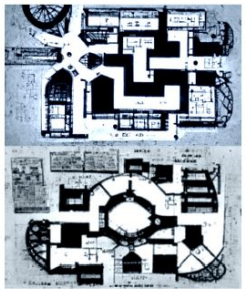
["*A duck shaped drive-in restaurant and a decorated shed in Las vegas, Robert Venturi*"]

["*Casino complex building, the left side ornamented with white and gold decorations in the post-modernist style, the right side of the building formed by a white block lifted up by two white quadrate construction in modernism style*"]

["Architectural floor plan for prison, consists of a rotunda with an inspection house at its center, circular form, panopticism style, black and white"]



["Architectural floor plan for prison, consists of a central hall from which five wings radiated like the spokes of a bicycle wheel, symmetrical form,victorian style, black and white"]



["Symmetrical mausoleum in India made of white marble on a garden with a river"]

["Parisian wrought iron lattice tower of the industrial era"]

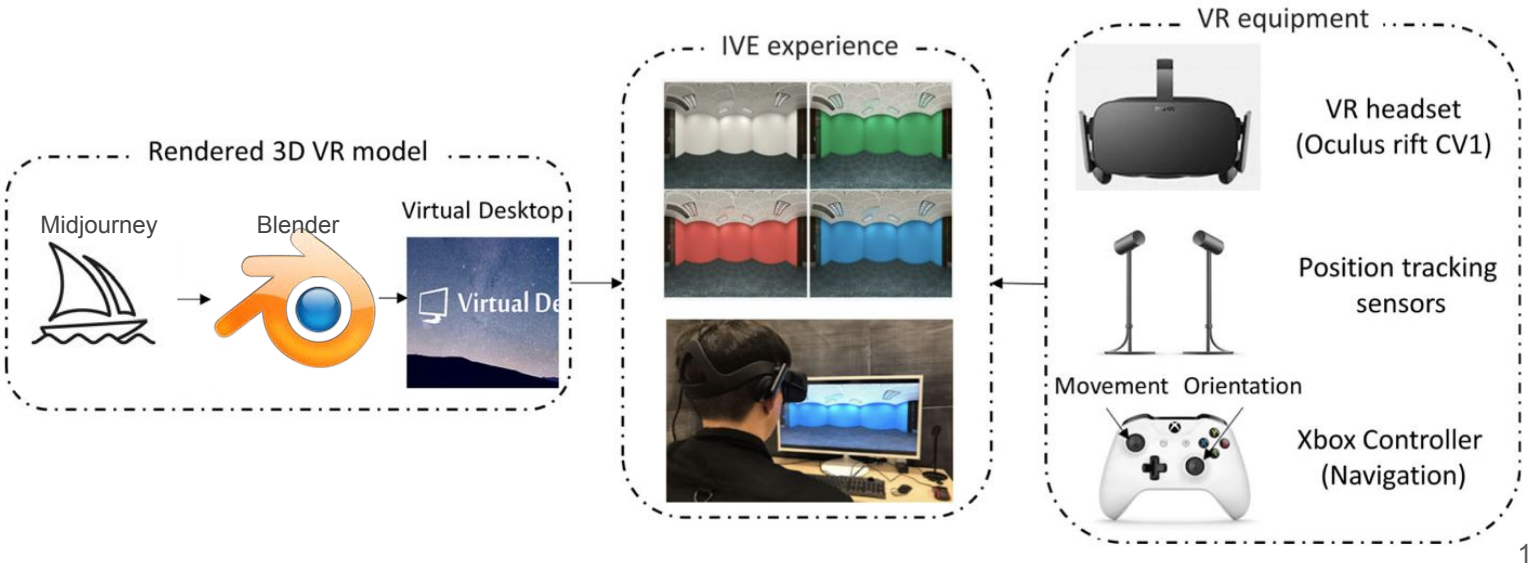
["An opera house in sydney on the shore that looks like sails made of ceramic tiles and concrete"]

Thesis Statement

The environments, objects, and spaces we encounter rub off on us, even if we don't notice. Like a human interaction, every inanimate encounter we have with surrounding objects and architecture has a positive or negative affect on us.

We recognize that ordinary things have a surprising power to create extraordinary feelings and reactions. This thesis proposes a visual medium that bridges the gap between us and the inanimate. Where we meet in the middle is an architectural experience that is emotionally charged, introducing specific emotions to the body. Just as movies, books, and happy pills elicit a response from the user, we hypothesize that utilizing powerful material and formal visuals can act as an alternative form of emotion-altering supplementation.

Using text-to-image Artificial Intelligence, we will generate and curate an exciting palette of emotions, all of which are represented in an unanticipated architectural experience. The text descriptions will utilize objects commonly associated with the emotion as well as organismic descriptions to animate these objects and show that they are just as alive as us. This spatial narrative allows the viewer to connect, respond, and begin to empathize with the embodied emotion. In this way, we begin sharing emotions through the experience of immersive inoculation, which we highlight as an emotional commodity acting as a supplementation for architecture and users.



Phase One

Aesthetically Artificial:
Reimagined Materiality

Hypothesis

To create an image of a building the ai software will visually apply a material texture to the form derived from precedents provided in the original prompt

Question

In using a similar texture mapping process as architects in creating renders, does that mean the ai software is practicing and or contributing to architecture?

Mid-Review Statement

To test our hypothesis, we used a quote by Peter Zumthor, "At the point in time when (material) materials are assembled and erected, the architecture we have been looking for becomes (atmospheric description)". We selected this quote because of its potential to input different materials and atmospheric descriptions into prompt. Initially, we were frustrated that the machine was not producing what we envisioned, prompting us to believe the machine lacked imagination. Based on Trevors Paglen's Reading, we discovered that the AI was never "wrong" in its creations, and "developing visual strategies to defeat machine vision algorithms is a losing strategy".

The machine was doing what was asked, but we did not understand that it was using methods familiar to us through rendering and material mapping softwares, just differently. We are both detaching the material's visual qualities from its physical and structural qualities. However, the aesthetic qualities of a material are intrinsically tied to its physical form. So when we appropriate the visual nature of a material it loses its original understanding and creates a new aesthetic altogether. Similar to the idea that taking an image of something creates a new understanding of the subject frozen in time, proving Goodwins prediction that "typewriters are not cameras for writing but artificial neural networks might be".

With AI we can create non-materials for architecture that can be visually applied onto any form or surface. The AI is able to translate our inputs of everyday materials and apply them in varied scenarios and understandings to the machines' own elaboration of an architecture/building/house.

Because the AI understands material as the same basic unit of grouped pixels (that create patterns and textures), this allows us to assign new and unrelated physical characteristics to the visual nature of a material, a new aesthetic. In not allowing the physicality of material to restrict architecture we can begin to question the cultural, programmatic, and historical notion of traditional building materials. Materiality in architecture shifts to be understood as an image: fully accessible, editable, and duplicable.

This investigation is of interest to architects because this collaboration produces new textures that can expand the scope of "visual materials" utilized for buildings. These textures become a new way of expressing aesthetics and can be then manipulated, which furthers the use of texture mapping in the design process.

Mapping Unconventional Materials

Collaborating with text-to-image Ai to create alternative methods of material mapping for unconventional materials

A building that has the texture of and looks like chewed bubble gum

A building that has the texture of and looks like bubble wrap

A building that has the texture of and looks like blankets

A building that has the texture of and looks like a beehive

A building that has the texture of and looks like a glass of orange juice

A building that has the texture of and looks like a mushroom

A building that has the texture of and looks like chewed bubble gum

A building that has the texture of and looks like a puff of smoke

A building that has the texture of and looks like sheep's fleece

A building that has the texture of and looks like spaghetti

A building that has the texture of and looks like a strawberry

A building that has the texture of and looks like a stuffed animal

A building that has the texture of and looks like a beehive

A building that has the texture of and looks like blankets

A building that has the texture of and looks like bubble wrap

A building that has the texture of and looks like stoned rigatoni

A building that has the texture of and looks like hair

A building that has the texture of and looks like spaghetti

A building that has the texture of and looks like a pinata

A building that has the texture of and looks like a sheep's fleece

A building that has the texture of and looks like a sheep's fleece

A building that has the texture of and looks like a strawberry

A building that has the texture of and looks like stuffed animal

A building that has the texture of and looks like stuffed animal

Projection Mapping

Making the intangible, tangible. Bringing these unconventional materials into the physical world in a scaled and thoughtful manner.

Chewed Bubble Gum

A Pinata

Bubble Wrap

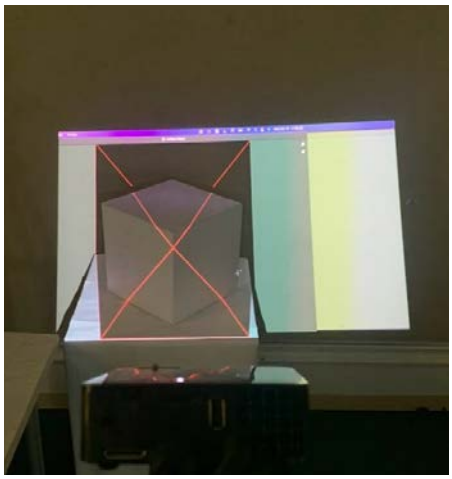
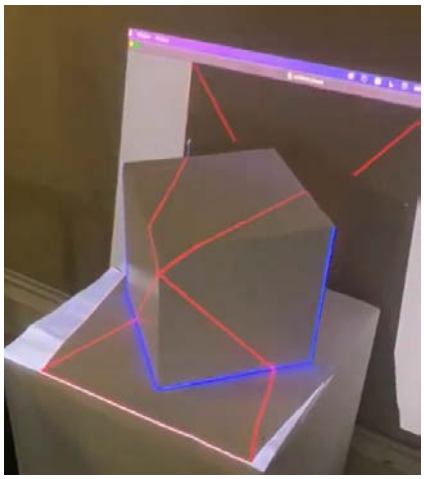
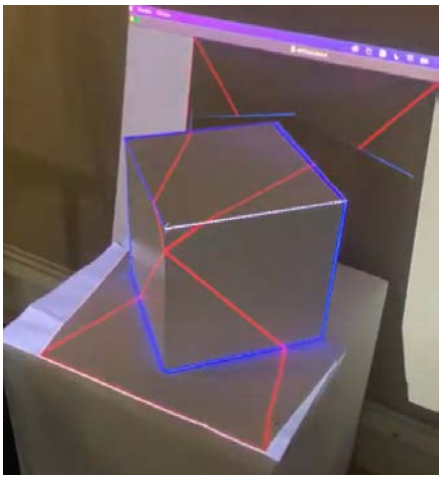
Sheep

A Pinata

Chewed Bubble Gum

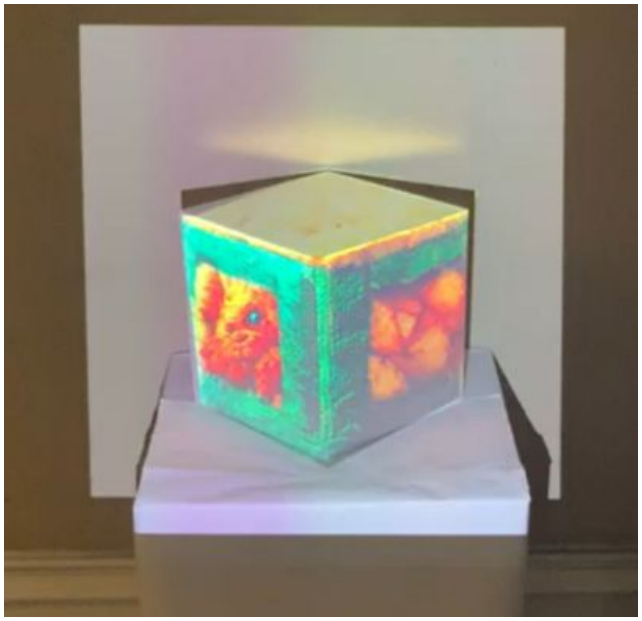
Stoned Rigatoni

A Stuffed Animal

Mapping the coordinates of the projection






Projection artificial imagination onto our build

Phase Two

Immersive Inoculation

Testing if Architecture can become a form of Emotional Supplementation

Hypothesis

By using Immersive Inoculation, we believe users will have a heightened ability to empathize with inanimate objects and share their given emotions.

Question

Can Architecture and AI act as a tool for emotional supplementation by creating a narrative that is capable of altering the emotions of the viewer?

Final-Review Statement

We are proposing an architectural experience that introduces your body to a new medium of feeling, capable of building your visual and expressive imagination. Just like when people watch a horror movie, read a sad book, or buy happy pills, this will be another form of a mind-altering administration. We want to highlight this experience as an emotional commodity and test if architecture can act as a new form of emotional supplementation. Immersive Inoculation is medicine for the individual seeking a feeling and a medicine for architecture that is lacking an emotional discourse.

We chose to use houses as the object to represent these emotions because they can establish a baseline sense of comfort between the user and system, since we all inherently connect with homes. Architecture tends to overlook the surprising power of ordinary things to create extraordinary feelings - so we are trying to capitalize on everyday objects in our descriptions and physical qualities.

We want to be able to empathize with these object houses so that their experience starts to become our own, transcending the experience beyond a first person narrative into third person - meaning that we start to visually see and understand the inner workings of the object houses themselves. The architecture acts as the assistive tool for displaying these emotional states, allowing us to begin to visualize and understand these emotions tangibly. Through this immersive inoculation, by viewing the object house and going into its soul, we can start to see what makes it what it is at its core.


DELIGHT

Catalog

We represent our wide array of Immersive Innoculations through a catalog format. The intention is to allow the user to have control in choosing their desired experience. The houses cataloged are intentionally chosen to evoke the most extreme representation of the given emotion. The specific emotions are first represented through the facade of a house, which teases the anatomy of the emotion on the inside, where the user confronts a 360 immersion governed by the characteristics of that emotional feeling.

We are organizing the chosen emotions using conventional genres used in literature and film. We use Comedy, Romance, Thriller, and Drama as the overarching themes and divide the wider pallet of emotional experiences among them.

Each emotional house will be generated through a script that describes the house as a living organism. Since living beings are emotional entities and we want to give life to our houses, we are writing the prompt with human-like characteristics, like windows as eyes, mouth for door, roof as head, and walls as skin. We also added in materials and objects that correlate with the given emotion, such as bubbles, wet tissue, spiders, etc.

For each text to image generation, the Ai gave us 4 outputs and we decided to run with the one that gave us a reaction and surprised us most, incorporating our human intelligence into this synthetic design process.

ROMANCE

AROUSAL

A building that looks like and has the texture of arousal, walls made of silk bedding, roof made of chains and latex, lace windows and red lips doors

SERENITY

A building that looks like and has the texture of serenity, lily pad door, roof made of lavender cucumber, knitted cotton walls, and falling water

TENDER

A building that looks like and has the texture of tender, teddy bear roof, chocolate walls, blanket door, candle like windows

SENSATIONAL

A building that looks like and has the texture of sensational, gin and tonic windows, disco ball walls, firework roof, spark door

THRILLER

SPINE-CHILLING

A building that looks like and has the texture of spine-chilling, a hairy door, spider roof, bone walls and barred window

INSIDIOUS

A building that looks like and has the texture of insidious, cracked wood walls, rag-doll roof, antique windows, hollow door

HYSTERIA

A building that looks like and has the texture of hysteria, bruise door, hospital gown roof, artery walls, and needle window

ANXIETY

A building that looks like and has the texture of anxiety, boiling water roof, sweaty hair door, white scratchy chalk door, and ticking clock windows

DRAMA

HEART WRENCHING MISERY

A house that looks like and has the texture of Heart Wrenching Misery, walls that look like soggy blankets, roof that looks like damp tissues, door made of ripped up photos, and broken abandoned windows

BREATH-TAKING

A building that looks like and has the texture of breathtaking, sandy walls, wave roof, crystal windows, and sunny door

DEPRESSION

A house that looks like and has the texture of depression, cracked concrete walls, tissue roof, tear windows, cloudy door

POWERFUL

A building that looks like and has the texture of powerful, tornado roof, hurricane windy windows, weather structure door, strong brick walls

COMEDY

DELIGHT

A house that looks like and has the texture of delight, pink door, fluffy sheep fur, walls made of field of flowers, and stained glass window

EUPHORIA

A house that looks like and has the texture of euphoria, panoramic mountain door, firework roof, psychedelic walls, and parachute windows

ZEST

A house that looks like and has the texture of zest, bicycle door, lemon roof, pool float walls, and playground swing windows

BUBBLY

A house that looks like and has the texture of bubbly, butterfly door, toy roof, candy walls and bee windows

ROMANCE

AROUSAL

A building that looks like and has the texture of arousal, walls made of silk bedding, roof made of chains and latex, lace windows and red lips doors

SERENITY

A house that looks like and has the texture of serenity, lily pad door, roof made of lavender, cucumber, knitted cotton walls and falling water

Arousal

Serenity

DRAMA

HEART - WRENCHING MISERY

A house that looks like and has the texture of heart wrenching misery, walls that look like a soggy blanket, roof that looks like a damp tissue, door made of ripped up photos, and broken abandoned windows

Initial output

Final output

THRILLER

SPINE - CHILLING

A house that looks like and has the texture of spine-chilling, a hairy door, spider roof, bone walls, and barred windows

Initial output

Final output

COMEDY

DELIGHT

A house that looks like and has the texture of delight, pink door, fluffy sheep fur roof, walls made of field of flowers, and stained glass windows

Initial output

Final output

Ai Animations

The Ai is a valuable asset in creating these atmospheres because it is unpredictable and spontaneous in its generations, allowing the audience to feel an authentic response without any external biases; fully immersing that individual in the show and that world's imagination. The Ai also creates an alternative mode of architectural experience by introducing us to a new framework that is not focused on form & pragmatics, but rather on aesthetics. The machine's intelligence gives us new perspectives and building blocks for our own imagination - teaching us that how we see the world is not how the world actually is, but how we are.

DELIGHT
https://youtu.be/63lF1HIKlgM

SERENITY

https://youtu.be/AAT3sFUFIUY

AROUSAL

https://youtu.be/sdHOOSvsBhQ

SPINE-CHILLING
https://youtu.be/WBdNPUhdQqo

HEART WRENCHING MISERY
https://youtu.be/enFljZD3sQ8

User Experience

This virtual experience starts with a catalog, from which the user chooses the emotion he/she wants to feel. The specific emotions are first represented through the facade of a house, which represents the anatomy of the emotion on the inside, where the user confronts a 360 immersion which shows the objects we associate with the specific emotion animated. We hope the user can start to connect and empathize with the otherworldly animation they become immersed into, consequently altering their emotions. We are treating these emotions as objects because objects are just as alive and expressive as humans are.

https://youtu.be/6-OPbtBIQK8

Technology as a Prosthetic

We want to use this research to discover how we can incorporate wearable technology as architectural prosthesis. Right now, the virtual reality headset is acting as a prosthetic, an extension of the body, that is needed in order for this emotional supplement to work. It acts as a bridge to the object houses and gives us a way to start to feel the way those objects feel.

We are treating these object houses as living beings, and want to be able to empathize with them so that their experience starts to become our own, transcending the experience beyond a first person narrative into third person - meaning that we start to visually see and understand the inner workings of the object houses themselves. The architecture acts as the assistive tool for displaying these emotional states, allowing us to begin to visualize and understand these emotions tangibly.Through this immersive inoculation, by viewing the object house and going into its soul, we can understand what narrative makes it what it is at its core.

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