

Image Descriptions

UIC Images of Research 2018

Liz Thomson, PhD candidate, Disability Studies

lthomson@uic.edu

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1st Place

Title: KNEEL

Submitted by: Kaleb Dean

Program: Graphic Design

Division: Arts and Humanities

Description: A vertical, color photograph of a man in an art gallery. He looks at the art piece, which is the word, "KNEEL" in thick green material in the shape of the U.S. flag rotated 90 degrees to the right. Long, thick green stripes run from the wall down to the wooden baseboard outward on the wooden floorboards.

This image is from an exhibition called Typeforce 9 in which Chicago designers are encouraged to create works coming out of their research and practice. I've been studying typographic forms and materials as they relate to identity at colleges and universities. KNEEL comes out of the 2016 NFL season's controversy surrounding Colin Kaepernick and presents the authoritarian view of a graphic emblem, their jersey numbers which identify the players, and the official Flag Code in vinyl on the wall.

2nd Place

Title: Not a cell, not quite an organ

Submitted by: Tara McCray

Program: Pathology

Division: Life Sciences

Description: A color photograph of a bright, glowing translucent object. Its shape is rounded with two holes. From the inside out, there are colors – pink, blue, and green. The background is a dark blue with bright specks of blue.

My research explores how to culture and characterize prostate organoids. These exciting new "organs in a dish" can reproduce the function and morphology of the prostate in a laboratory setting. The cells are obtained directly from the tissue of UIC hospital radical prostatectomy patients. Next, they are grown from single cells in 3D culture conditions to form a miniature model of the patient's tissue that can mimic the secretory activity of the gland and retain the gene expression of the patient's organ. The image shown is from our lab. A patient's cells were expanded into an organoid and then stained to visualize the intricate pattern of ductal branching. The red color stains epithelial cell junctions, the green and blue colors show two different cell populations of epithelial cells. This cell culture technique is the focus of my thesis and is what I believe to be the future of personalized medicine. Organoids have the potential to be used prior to therapy as a neoadjuvant screening of drugs to predict patient response to treatment. 3D culturing of patient samples exemplify the bench to bedside goals of our university.

3rd Place

Title: In a Small Window

Submitted by: Jeremy Schultz

Program: Chemistry

Division: Engineering, Mathematics, and Physical Sciences

Description: A vertical, color photograph of a multitude of gears, pens, and metal cylindrical rods. The pieces are layered and towered like a shiny, metal densely populated city. Here and there, copper pieces are intermixed offering a bit of warmth to the image.

Initially the instrument I use in my research is disorienting. It is a mass of jutting metal parts, nuts, bolts, and viewports akin to a diving bell. However, every part was engineered to serve a specific purpose, creating a supremely clean vacuum environment. Despite the instrument's size, it is used to study the interactions of the vibrations of individual molecules with light. Light is effectively confined at the apex of an atomically sharp metal tip located imperceptibly close to molecules on a surface. The actual experiment is barely visible through the small window in the bottom right of the image, where the green of the laser light illuminates the tip and sample. It is so easy to lose a sense of scale over the months and years of research. But it is critical to always retain an appreciation for the work previously done by others and where current research may contribute to ever developing technologies and methods.

Honorable Mentions

Title: Stroke Activated Microglia

Submitted by: Matthew Tobin

Program: Neuroscience

Division: Life Sciences

Description: A color photograph with a small, bright, blue glowing oblong object in the center. Long, bright yellow, orange, and green colored tentacle like strands extend outward. The background is a deep midnight blue with patches of translucent blue.

I study the interaction between inflammation and neurogenesis following ischemic stroke. More specifically, I am interested in the interplay between the response of microglia (the resident immune cells of the brain) to stroke and how that impacts the ability for neural stem/progenitor cells to provide long-term functional recovery following stroke. I am also interested in the potential for bone marrow-derived mesenchymal stem cells to alter the response of both microglia and neural stem/progenitor cells to promote and enhance functional recovery after stroke. The image here depicts a microglia from the brain of a rat that was given a stroke and then treated with mesenchymal stem cells. The cell is stained for Iba1 (green) which marks all microglia, CD68 (red) which labels specifically activated microglia, and for DAPI (blue) which stains all cell nuclei. Following mesenchymal stem cell treatment, rat brains have substantially fewer activated microglia and animals demonstrate a more rapid and sustained functional improvement over animals that do not receive treatment.

Title: Resonant Design: The Transparent Speaker

Submitted by: Nuzhat Binte Arif

Program: Industrial Design

Division: Arts and Humanities

Description: Against a white studio background, a color photograph of a clear rectangular box with white metal siding. Two circles on square metal plates are mounted on the side of the box. On the inside, colored wire connects the circles to a small electrical board on the opposite side of the box. A long, thick green coated USB cable winds from the box on the outside.

I read Jonathan Chapman's Emotionally Durable Design and was appalled to learn that 80% of objects get thrown out into landfills because people aren't able to form a strong enough emotional bond with them. Sometime landfills don't have the right environment for microbes to be able to break down material, so landfills keep piling up with things. We won't stop buying objects I think, but as a designer I can be conscious of this.

We typically look at a speaker's design in terms of its external form. But as I was researching speakers, I was fascinated by the internal components: the feat of engineering that creates sound. I wanted to flip the form in my design and highlight the internal components, things that are typically designed to be hidden.

My intention is that perhaps through this, a truer relationship can be formed between the user and the object, and we will see that it is more than its shell. I chose to create a simple clear box that is almost like a museum case and highlight the functional aspects of the speaker through art. My hope is to extend the life of the speaker by designing for emotional sustainability.

Title: Firing for the World

Submitted by: Wenpeng Xu

Program: Anthropology

Division: Behavioral and Social Sciences

Description: A horizontal, gray toned photograph of broken pieces of pottery. The pieces fill the frame completely so no ground is shown. Some of the rounded images are upward; others downward.

This image depicts the debris of a 12th-century dragon kiln at Dehua in Southeast China. Thousands of porcelain sherds and broken saggars on the site reveal an industrial scale of porcelain production in the preindustrial era. Located in the coastal mountain region, this kiln was also indispensable to the premodern global market since its products were made exclusively for export. In the summer of 2017, I conducted an archaeological survey at Dehua and found dozens of export-oriented kilns of this scale in an area of 100 square miles. By analyzing the homogeneity and heterogeneity of porcelain products within and between kilns, I am going to examine the production strategies used by local manufacturers to compete in the premodern global market. In so doing, this research will expand the scope of our understanding of the historical development of mass production and globalization.

Title: Mhysa

Submitted by: Rukmava Chatterjee

Program: Mechanical Engineering

Division: Engineering, Mathematics, and Physical Sciences

Description: A horizontal, color photograph that is a dark violet – almost black. In the center is a dark circle with a pinpoint white dot, like an eye pupil. The rest of the image has similar spheres radiating from the center. From a distance, the image seems to come toward the viewer in 3D.

Come winter and the environment is draped in a snowy blanket, immensely diverse yet infinitely monotonous. But there's more to this icy monochromatic beauty, with the ubiquitous menace of icing engendering slippery roads and bald tires. Rock salts are the common choice of chemical deicers, used to steer clear of icy sidewalks and roadways. These salts work by lowering the freezing point of water, precluding ice formation. And it is this working mechanism of salt which the current image (captured as a part of my ongoing doctoral research on anti-icing systems) intends to convey. To demonstrate this, I carried out an experiment with a single sodium chloride salt crystal subjecting it to an extremely humid and frigid atmosphere; conditions favorable for icing. The central salty drop remained unfrozen, untouched by virtue of an annular region of inhibited condensation which occurs due to a variation of water vapor concentration above the salty drop and neighboring population of supercooled water droplets. And this is how, salts prevent ice formation for extended periods of time.

Title: Look Away

Submitted by: Alexander Jendrusina

Program: Psychology

Division: Behavioral and Social Sciences

Description: A vertical, color photograph framing part of Chicago's lake and skyline by a shadowed cement structure on the left side. The sky is a clear blue that goes from light to blue upwards. The lake is calm and reflects the shadows of the building.

My research examines the relationship between discrimination and mental health, which is challenging to safely and humanely photograph. I encourage this piece to be interpreted abstractly as I intentionally symbolize many layers of my work.

The left side of the photograph is primarily black and white, focusing on a rugged concrete wall juxtaposed against the magnificent, colorful Chicago skyline. This clear divide in the photo represents discrimination and mental health. Discrimination creates divides among people and provides some with opportunities while leaving others out. The wall in this photo is also current with the ongoing human rights discussions in our country. Furthermore, discrimination has been strongly linked to depression, a condition that also colors a person's perspective and is represented by motifs of light and dark. The camera angle results in a warped view of the city, symbolizing the pain endured and less understood perspective from those experiencing discrimination and depression.

The viewer's eye can't help but first notice the skyline, then the wall, before being drawn back to the skyline. Returning the viewer's eye toward the aesthetically pleasing is symbolic of the historical difficulty society has speaking about discrimination and mental health; that is, we look away.

Title: Environment

Submitted by: Martin Murungi

Program: Architecture

Division: Arts and Humanities

Description: A vertical, color photograph that is a downward perspective of a tree against a dark flooring, which diagonally cuts the image's top third from left to right. On the top left, there are small pieces of leaves and branches. The bottom third, features an extended root protruding above the flooring structure. A lined, green leaf comes from the tree.

This Spring semester I studied how our natural environment and created environment tend to clash as each try to maintain or take new ownership of the spaces available. I took this image of a floor when my graduate class visited The Ford Residence in Aurora, Illinois built in 1948. The home owner decided not to cut the intruding root, but instead decided for it to grow and encroach into the house as much as possible. It is a simple example of how this conflict has existed, will continue to exist and how maybe it alright for the two environments to co-exist.

Title: Advanced 3D printed casting molds for facial prostheses

Submitted by: Yu-hui Huang

Program: Clinical and Translational Science

Division: Life Sciences

Description: A square, color photograph of a person holding an open gray mold with an artificial, light beige human ear on it.

The traditional fabrication process of facial prostheses is laborious and expensive. Applying new technologies to stages of the fabrication process may provide a way to improve the quality of the prosthesis while reducing the cost and time required. Traditional mold making techniques rely heavily on the sculpting ability of clinicians to create forms that are realistic and proportionate to the existing patient anatomy. Computer-aided design and computer-assisted manufacture that employ medical data offer benefits to patient treatment by eliminating some this reliance and contributing more reliable outcomes in prosthetic restoration. This report demonstrates the use of a 3D technological pathway for virtual casting mold design through prosthesis fabrication for a silicone auricular prosthesis. The auricular prosthetic mold is modeled using the patient's medical scan, designed in a 3D modeling software, and printed with a desktop 3D printer. Medical grade silicone is then casted and cured in the 3D printed mold. Utilizing the digital workflow, soft tissue prostheses with complex anatomy can be fabricated more accurately in less time and at a lower cost. The implementation of 3D technology and printing in prosthetic restoration improves throughput, cost effectiveness, accuracy, and most importantly patient outcome.