The Digital Futures Graduate Exhibition is an annual event, hosted by Graduate Studies at OCADU and our industry partners at the CFC Media Lab. The show features Master of Design, Master of Fine Arts, and Master of Arts thesis projects that encompasses a wide range of topics, including: augmented and virtual reality, digital and electronic fabrication, digital art, artificial intelligence and communicative domains, post-physical sculpture, therapeutic devices, participatory multimedia, video, information visualization, educational video games, gesture technologies, civic media, immersive audio-visual environments, performances and more.

OCAD University acknowledges the ancestral and traditional territories of the Mississaugas of the New Credit, the Haudenosaunee, the Anishinaabe and the Huron-Wendat, who are the original owners and custodians of the land on which we stand and create.
DIVERGE:

1. To develop in a different direction.

2. The evolution of different forms or structures in related species as they adapt to different environments.

3. In a series, increasing indefinitely as more of its terms are added.
A growing excess of electronic waste (e-waste) is being produced worldwide due to sudden changes in technology and media, falling prices of digital devices, and planned technological obsolescence. In 2017, close to 50 million tonnes of e-waste were produced worldwide, and this figure continues to rise at a rate of 8% each year. The social, economic, and environmental consequences of e-waste have proven to be extensive and complex, affecting multiple aspects of human, animal, and plant life.

The focus of Samaa’s thesis project is to create an immersive experience where audiences are confronted by the scope of, and the urgent need to better address, e-waste issues on a global scale. Using principles of critical design, Samaa has created a series of vignettes that allow users to visualize the tangible and complex connections between familiar digital devices, and the overall lifecycle of e-waste.
Objects in the Age of Virtual Reproduction: Aura and the Elusive Third Axis

This project contributes to the body of scholarship on Walter Benjamin, his ideas about aesthetics and the political implications of technologically mediated art. It disambiguates the concept of aura, by connecting aura's prerequisite of physical presence, to the perceptual presence offered by Virtual Reality (VR). It also explores Benjamin's ideas around aura and authenticity, through the reproduction of toys and sculptures, exhibited in both physical and virtual space. The thesis takes a Research-Creation approach, using art making as methods to navigate theory and vice versa. Specific technologies include VR, 3D printing and scanning, CNC, and photogrammetry. Outputs include two large (physical) lion sculptures, a VR exhibition featuring the same lion models (digital) and a vending machine providing inexpensive artist multiples. Findings highlight the unique affordances of positional tracking in VR, and emphasize the potential of art as a vehicle for ideas, instead of as a trophy/market commodity.
Bijun Chen is a multimedia designer, and a Master’s of Design candidate in the Digital Futures program at OCAD University. She received her Bachelor of Science degree in Digital Arts from the University of Oregon, and her Associate degree in Computer Science from Cascade College. With her background in film and video production, her current research focuses on art and cultural preservation using immersive storytelling.

Masters of Laoting Shadow Play: Experience traditional art practice in virtual space

As a child growing up in Beijing, China, Bijun experienced traditional art forms such as shadow plays, sugar people, and paper cutting, which were popular and spiritual arts. After a few years studying abroad, Bijun found that such cultural treasures could no longer be found in public or during major festivals; everything seemed to be replaced by forms of digital entertainment like cell phones, TVs, and tablets. As traditional art forms in Beijing are part of Bijun’s childhood, it would be such a pity to see those intangible cultural practices vanish. For this thesis project, Bijun used field research to interview and understand the current landscape for one living master artisan in China who still practices an art form at the brink of extinction. To retell the artisan’s story, Bijun produced an immersive 360 documentary short that recreates a viewer’s experience of these forms from an observer’s perspective, as a way of preserving these important traditional arts.
Mudit Mali Ganguly is a UX/UI designer, maker and artist. He has been designing mobile and web applications since 2014. As the recipient of the OGS graduate scholarship, his research revolves around our mobile phones and the data they give away to third parties.

**PHONOPTICON: The Age of Mobile Surveillance**

Smartphones play an intimate role in everyday life. What many users don’t know is that these devices have unparalleled access to their data. Companies like Facebook, Apple and Google commodify and share personal data with third parties. This data passes back and forth between third parties but also makes its way to governments (McMullan, 2015). The controversy that followed Edward Snowden’s revelations is an ideal segue into current problems of surveillance and privacy. Mudit’s project argues that knowledge about privacy breaches carried out by mobile applications leads to awareness about privacy. Research through design was used to create the Phonopticon, an immersive installation that gives viewers knowledge about privacy breaches. Just like Jeremy Bentham’s panopticon enables guards to observe prisoners without their knowledge (Foucault, 1979), the applications on our smartphones gather and share our data without our knowledge. This thesis contends that we’re living in a Phonopticon—the age of mobile surveillance.
SARA ASIM GAZZAZ

Sara Gazzaz is a Master’s of Fine Arts candidate in the Digital Futures program at OCAD University. She is an artist and a designer who holds an honours BA in Graphic Design. Gazzaz has exhibited her mixed media work both locally and abroad, in Toronto, Jeddah and London. She co-created an immersive installation called ‘The Living Room’ for The Royal Ontario Museum. Her practice interests are in developing digital installations and interactive projects.

Fitrah: A Spiritual Journey

Sara's project addresses the notion of preserving self-identity using personal experience as a Muslim immigrant with cultural concerns of maintaining the practice of Islamic prayer rituals in a secular environment. It explores how the use of art practices in conjunction with digital technology can create a work that presents a deeper understanding of a Muslim immigrant's need for a space to practice their prayer rituals. It discusses works by Edward Said, Stuart Hall and Frantz Fanon that are tied to acts of resistance and inequalities in various global settings. Sara's project uses autoethnography and practice-led research that led to the creation of an installation that conceptualizes the experience of an Islamic prayer. Fitrah is a digital interactive installation, which uses Islamic artifacts, light and audio to express Sara's spiritual journey to preserve her Islamic prayer rituals in shared spaces.
Manik Gunatilleke is a designer and artist working with emerging technology for immersive spatial design. With an interest in exploring the manifestation of posthuman experiences, her current work explores immersive virtual space and urban architecture.

bodies–cities

*bodies–cities* explores what constitutes embodied spatial knowledge in an urban setting, and how this knowledge can influence immersive virtual design spaces. The work presents the multisensory complexity of the human embodied mapmaking process in a layered interactive virtual reality (VR) palimpsest. A palimpsest is a space that holds multiple layers of experience. In this project the layers present the perceived uniformity of public space, knowledge of the sensing body, and the historical and translocal significance. The project takes the urban site of St James Town West in downtown Toronto for its exploration. The research is an entanglement of people, places, methodology, and methods that reflect the complex nature of embodied spatial knowledge. This entanglement is examined and presented through the application of Karen Barad’s feminist new materialist theory on the performative nature of being in the world, and through the apparatuses of sensory ethnography and virtual reality. The virtual reality experience draws on the interactive affordances of VR to present the entanglements that take place between the sensing body and the urban environment.
YAWEN GUO

Ginger (Yawen) studied drawing and painting before exploring digital solutions for art in OCAD University. Her studies in the Digital Futures program revealed to her new methodologies for creation. She is very interested in the Chinese and English languages, and tries to include her exploration of the pleasure of text in her artwork.

ImprovChat: An AI-enabled Dialogue Assistant Chatbot for English Language Learners (ELL)

Yawen's thesis asks, how can an AI-enabled Dialogue Assistant in the form of a chatbot suggest new and unexpected forms of response to English Language Learners? The thesis draws upon theories of improvisation and play, alongside computer science and programming, to facilitate text-based conversation in English for non-native speakers. ImprovChat is a digital solution for communication issues that Yawen encounters every day. Yawen's research focuses on developing ImprovChat by implementing an API on top of the customized software powered by machine learning to generate AI phrases from a word-embedding model. This model is pre-trained using literature, as well as the Twitter feeds created by people who speak English as a first language. ImprovChat could be used in online chatting scenarios where participants have two different native languages, or it can be used to inspire unexpected and playful forms of response.
Afaq Ahmed Karadia is a designer, audiovisual artist and music researcher. He is interested in exploring intersections between art and technology. He now forge a new path that transitions his creative coding skills towards developing installations and interactive arts projects. His current practice evolves around audiovisual art and music technology.

Embodied Expressions

Embodied Expressions is an exploration into the possibilities of creating live and immersive audiovisual performance systems with the aim of expanding artistic practice. Afaq’s thesis investigates how a performer could express themselves more intuitively with physical and mechanical audiovisual interfaces, and stands in revolt against the total digitalization of live electronic music. Afaq argues that modern electronic music performance has led to a decoupling of sound from its traditional origins in real physical objects and has created a limitation in the live performer’s ability to express themselves through the embodied aspects of their live musical expression. An artifact of Afaq’s project is a set of heard and seen mechanical instruments placed about the audience’s environment that are controlled by the performer using a custom-designed gesture-based control system. Afaq’s project contributes to knowledge regarding embodiment in the creation and use of musical interfaces that combine both digital and analog elements.
MAHSA KARIMI

Mahsa is a Master of Design candidate at OCAD University with an interest in designing for mental health. Her background is in industrial and visual communication design. As an industrial designer with a user-centric mindset, Mahsa drives inspiration from the interactions between people, objects and spaces, aiming to facilitate seamless relationships between them through intuitive design solutions.

SENSUM: An Ambient Environment For Mental Self Support Practices

The reality of today’s fast paced environment has created emotional challenges for everyone. In order for us to overcome these emotions, we might be required to look within ourselves. Mahsa's thesis project uses methodologies such as “Research through Design” (RtD) to investigate and reflect on the application of Ambiguity in Design, Colour Therapy and “Calm Technology” in addressing the impacts of daily life challenges. This thesis project introduces an ambient environment to its users, encouraging them to disconnect from their busy daily activities and focus on themselves for a short period of time at the end of a busy day. Mahsa created Sensum Light, a prototype that incorporates a set of tangible products including a stationary object at the user’s home and a mobile piece that is carried by the user throughout the day. Sensum Light aims to inspire users with their emotional well-being.
These technologies are being brought to market by using the concept of the useless machine. The research is organized around the creation of four prototypes: SAD Blender, Home Hub, Calendar Creep, and Fortune Tasker, and a personal web server nicknamed Punchy. Each of these prototypes seek to critique the current corporate agenda of productivity, efficiency, and consumption, by creating machines that have no utilitarian function. This work investigates and defines useless machines in the contemporary context of personal assistants, and documents the development of each of the prototypes and server. Overall the research shows that whilst it is not possible to completely divorce these devices from their parent corporations, they do serve as an important vehicle to explore the changing landscape of ubiquity, and our shifting ability to work and live with these connected objects.

Working With Useless Machines: A look at our shifting relationship with ubiquity through personal assistants

Nadine’s project explores how a nihilistic approach to the development of personal assistants can problematize the ways
Ania Medrek is an editorial designer. She graduated from Ryerson University’s journalism program in 2012 and has worked in news production and presentation since. She is interested in the intersection of research, journalism and design and how the three can be used together to create engaging experiences for news readers. Ania has been recognized by Canada’s National Newspaper Awards and the international Society for News Design for her work in the National Post. She is a Master’s of Design candidate in the Digital Futures program.

**News By Association: Designing a Way Out of the Echo Chamber**

Ania’s project is an investigation of the echo chamber phenomenon in news consumption on social networking sites. It incorporates elements of Actor-Network Theory, Bruno Latour’s ‘matters-of-concern’ and Participatory Design (PD) methodology to identify and unpack contributing factors to the formation of echo chambers. As part of the research, a design piece called Echology was conceptualized and developed during a series of PD workshops with news industry professionals. The goal of Echology is to challenge readers to step out of their personalized news feeds and think critically about the selective algorithms that govern online news experiences.
KATIE MICAK

Katie Micak is an artist and researcher looking at the impact of emerging technologies. She is also one of the curators for Toronto’s digital art festival, Vector. Katie is an educator of video art and its history, and is interested in the future trajectory of domestic robotics.

The Alexa Experiment

“The Alexa Experiment” explores what it’s like to live with the artificially intelligent, personal home assistant, the Amazon Alexa. Over a six-month study period, Katie created mini-documentaries and a companion-writing piece evaluating the device’s function and design against its possible nefarious or spectacular uses. Considering that Alexa is as an object hyperlinked to wider legal, political, or social systems, Katie wanted to understand its impact outside of intended consumer uses. Katie’s documentaries highlight specific topics; initial impressions of the device, her thoughts regarding it as a surveillance device, what it’s like to ‘talk’ to Alexa, the evolution of our relationship, and finally, Katie’s central finding that the Alexa holds the potential to deliver a form of talk therapy that could benefit the user. “The Alexa Experiment” asks what we can learn about ourselves through speaking to the Alexa.
Natasha Mody is a seasoned creative professional in the television and film industry whose work comprises award-winning brands such as ESPN’s SportsCenter, College Gameday and Star TV’s Star Sports Network and Hotstar. Currently completing a MDes, Digital Futures, her focus is on disruptive digital innovation and technology, which is instrumental to her career leap into the digital space.

Demystifying the Future of the Screen

Volumetric display (VD) is a graphical display device that produces three-dimensional objects in mid-air, unlike traditional devices like televisions, movie screens, and cell phones, that simulate depth in two dimensions. Demystifying The Future of the Screen explores the creation of a 3D representation of volumetric display (which is essentially a technology that doesn’t yet exist) using current technologies. It investigates the conceptual possibilities and technical challenges of prototyping a future, speculative, technology with currently available materials. Cultural precedents, technical antecedents, economic challenges, and industry adaptation, all contribute to Natasha’s project. It pedals back to the past to examine the probable widespread integration of this future technology. Natasha fabricated a prototype that simulates a volumetric display experience. The prototype creates an immersive 3D optical illusive experience using only 2D technology, with the use of a holographic display fan.
Afrooz holds a B.Sc. degree in Geomatics Engineering and has professional experience in data and visual analytics and tutoring mathematics. Her passion for empowering younger generations with STEM skills motivated her to develop a series of math education video games for her master’s thesis, which focuses on learning abstract symbolic mathematics through video games.

Learning Abstract Symbolic Mathematics Through Digital Games

Over the past years a considerable amount of time has been dedicated to researching the effects of video games on learning. Video games, as extremely engaging experiences, could perhaps provide a productive learning environment to better understand concepts that are challenging to grasp. Mathematics provides one example of such a subject due to its high level of abstraction. A considerable number of video games have been developed to teach students basic mathematical concepts, yet, teaching more advanced mathematics remains a major challenge. Afrooz’s research project explores ways to incorporate high school mathematics in video games and illustrate the applications of those concepts by putting them in to practice within a game environment.
Hammadullah Syed is a multidisciplinary designer with aptitudes in graphic design, photography, and illustration. Additionally, he also has skills in 3D software, UI/UX, storytelling and narrative, and front-end website development. As a Master’s of Design student at OCAD University, his research bridges the gaps between emotions and colours in order to convey one’s affective expressions clearly.

Influx: The Synergies Between Colours & Emotions

Influx investigates the potentials in further developing non-linguistic and gestural languages to communicate emotions coherently. This subset of languages is based on understanding colour as a potential source for communicating emotions. The purpose of this research project is to help people understand the inadequacies that languages currently exhibit when trying to convey subjective topics like emotions. Hammadullah explores Alberto Cairo’s Visualisation Wheel and Robert Plutchik’s Circumplex Model of Emotions in tangent with each other to form what he calls the ‘Cairo Plutchick - Colour Emotion Synergies.’ This is to deconstruct the relationships that emotions and colours can envelop, in turn suggesting that this partnership can become an additive to language. Taking a visual analytic approach, Hammadullah created a tool for this language to help people reconstruct their emotions in the form of colours.
Electronic Textiles: A Tangible Interface for Virtual Reality

Shreya's research project investigates the development of an experimental tangible electronic textile (e-textile) interface to a virtual reality experience using human computer interaction (HCI) approaches. The e-textiles interface is an ‘unconventional controller’ that controls a virtual object (3D visual asset) within a Virtual Reality space. Further, this research has been contained within the context of HCI using the framework of Tangible User Interfaces and within this area of study, the series of interfaces explored are composed of electronic textiles (e-textiles) that represent and control single 3D visual assets in Virtual Reality. Through this research Shreya attempts to understand human touch as related to tangible objects (passive haptics) and how it overlaps with human sight (vision) in Virtual Reality. This has been done using the framework of Tangible User Interfaces and applying the considerations set by the framework to create explorative interfaces. The data collected using Research Through Design methodology from this study has then been applied to an interactive and exploratory piece in textiles that attempts to bridge the gap between physical and virtual worlds using the haptic-visual overlap.

SHREeya TYAGI

Shreya Tyagi originates from India and has lived and travelled in many different countries. Shreya holds a diploma in Textile Design from the National Institute of Design (NID) in Ahmedabad, India, and a post graduate degree in Textile Science from College of Textiles (COT) at North Carolina State University in the United States. Shreya is interested in working within a space where design and technology overlap. Shreya's research interest at OCADU is a confluence of e-textile and virtual reality.
April Xie is a designer with a focus on social design practice, civic media, and information visualization. Her work is grounded in a conviction for breaking silos and bringing more voices to the table. She is 1st generation Chinese-Canadian, West Toronto born and raised. She cares about politics, data, participation, stories of migration, civic tech, and representation in visual and digital storytelling. She likes bad puns.

**Democratic Design: Creating diagrams to draw young citizens together**

April's research explores the possibilities of a democratic design process, in which technology is not treated as a solution to the civic apathy of young people, but a social construction with embedded values that young people negotiate with their own, as a way to draw themselves together as publics. April created a participatory multimedia-making program for young people, in which critical literacy around data and diagram production is fostered as a form of representation they can consider for articulating civic concerns relevant to them. The resulting program, Rise and Visualize, included eight young people in its duration, and was hosted in partnership with youth agency For Youth Initiative, between November 2017 to February 2018. As the focus of this thesis project is the engagement process and issues in design participation, April created a prototype process framework and case study, as opposed to artifacts created by the young people in the program.
Rana Zandi is a graphic designer, interaction designer, blogger, vlogger and transhumanist, researching cyberconsciousness. She assists OCAD University Health Design director, Kate Sellen, with mortality/palliative care research, and OCADU’s Sustainability Forum with outreach. Rana is designing conceptual interfaces to explore consciousness simulation, AI chatbots and “thanatosensitive” HCI for the deceased and bereaved.

The Parallel Mind

Throughout the last century, Western scholars from various fields have contributed to the search of finding a general theory of consciousness that can accurately specify how the human brain processes information, and how it reflects and becomes aware of it. In 2013, Michael Graziano, an American scientist focused on awareness aspects of consciousness, proposed the Attention Schema Theory of Consciousness (AST) to solve why the mind becomes aware of anything in the first place. This work takes a stance that life on the screen, has allowed us to extend our identities through embodiment of a second self in cyberspace, and hypothesises that a digital self that uses AST can potentially become aware of itself. By using textual analysis, thought experiments and conceptual models, Rana’s project formulates parallel mind—as a self-aware entity that uses the content of the digital self and AST to generate self-awareness. The objective of Rana’s work is to provide a solution for the verification of AST, which can lead us one-step closer to understanding our own nature and our place in the universe.
“Our students don’t just make things with emerging technologies — they think creatively and critically about how, why, when — and when we should not — use and engage with these ideas and tools. The artworks, prototypes, demonstrations, and performances in Diverge bring this research to life in a rich interactive format. We invite our colleagues from industry, fellow universities, art, design, and maker communities to come join us for this important and exciting exhibition.”

- Kate Hartman  
  Graduate Program Director Digital Futures
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