



Faculty Research Areas & MDes Thesis Opportunities

Bjarki Hallgrímsson

Physical Prototyping Methods and Technologies; Community Based Design (with a focus on prototyping); Design History



Research focus and activity

My main research focus is **prototyping** methodology. This broadly includes *technological aspects of making prototypes* for various stages of the design process using different approaches, processes and materials. Additionally, prototyping extends beyond the purely physical to include *processes and activities that involve many stakeholders in transdisciplinary workflows*. This is more related to design thinking and participatory design as an approach to engage many stakeholders in a project, as opposed to necessarily build physical prototypes.

I also collaborate with the History and Art and Architectural History departments at Carleton on capturing and evolving the **historical narrative** about the *industrial design profession*. We have inherited historical design artefacts from the previous *DX Museum exhibit* in Toronto that is now part of our own collection. Furthermore, the location of Carleton University in Ottawa is a significant cultural advantage for research in this area. This track allows students to build interdisciplinary expertise in theoretical aspects as well as archival research and ethnographic research using oral histories as an example.

Bjarki Hallgrímsson

Physical Prototyping Methods and Technologies; Community-Based Design (with a focus on prototyping); **Design History**



Current Research Focus

xDX Project

In collaboration with the Art and Architectural History and History departments at Carleton University we are researching design history through *research on the DX Museum artefacts*. This project is funded by SSHRC and includes Carleton University, York University and the Royal Ontario Museum of Art and The Museum of History.

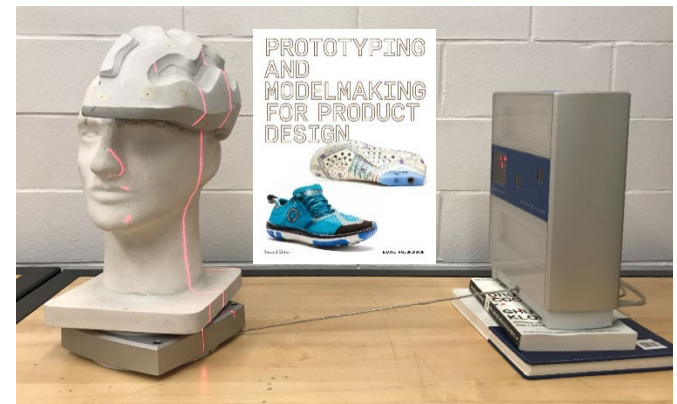
This is a broad reaching and important project that will expose students to interdisciplinary work with a large team of researchers from various institutions, shaping the design history of Canada.

Current students working on this are looking at specializations in Color Material and Finish (CMF), The role of Craft and Design and the relationship between these in production.

My expertise in Prototyping methods also helps guide this research on tangible objects by exposing issues related to material culture and production processes.



Artefacts from DX Museum



Prototyping and Modelmaking for Product Design, 2nd Ed.

Chantal Trudel

Industrial Designer and Human Factors Professional

Domains: Healthcare Facilities, Smart Homes, Transportation Design

Expertise: Systems & Service Design (Interface of Product-Technology-Interior-Architecture-Operations)



Research focus and activity

With communities, our lab advances the development of the **built environment, service design and emerging strategies to support responsible design for health and wellness.**

Working in transdisciplinary teams, students engage in addressing **pressing challenges of our time** through community-based research, leveraging foundational research methods and creative approaches. Transdisciplinary teams include experts from the **community**, and can draw on experts from **healthcare, social work, engineering, human factors/ergonomics, policy, architecture/interior design**, as relevant to the context of study.

Strategic Research Partners:

- Bruyère Research Institute (BRI)
- Children's Hospital of Eastern Ontario (CHEO)
- Centre for Learning Research and Innovation in Long-Term Care (CLRI)
- Canadian National Research Council (NRC)
- Mayo Clinic
- World Health Organization (WHO)

Examples of Project Areas:

- Transforming Care Settings (long-term/assistive, transitional, pediatric, smart homes)
- Emergency/Rapid Response to Infection Prevention and Control (focus on constrained/low-middle income resource settings)
- Aging in Place (residential, transportation and community-based design).

Chantal Trudel

Industrial Designer and Human Factors Professional

Domains: Healthcare Facilities, Smart Homes, Transportation Design

Expertise: Systems & Service Design (Interface of Product-Technology-Interior-Architecture-Operations)



Current research/ research opportunities

Electronic Memory Support System

With Bruyère Research Institute and the Mayo Clinic (USA), we are developing a digital calendar system to support executive functioning for people with Mild Cognitive Impairment.

Rethinking Long Term Care Design

Funded by the Canadian Institute for Health Research, Foundation for Health Environments Research (USA), and Ontario Centre for Learning and Research in Long-Term Care (LTC), we work with Canadian LTC homes designing services, environments and products to support this underserved sector of health design.

Aging in Place Research Program

Working with the National Research Council Centre for Air Travel Research, this program is examining inclusive and usable door-through-door travel experience for older Canadians.

Infectious Disease Treatment Module

Working with the World Health Organization INITIATE² program, we are developing the rapid response infrastructure to address emerging infectious outbreaks in resource constrained settings.



Denise Pong designing with a Bruyère resident.



Dr. Kelsey, Prof. Trudel & Rob Shudra at the NRC CATR

Chiara Del Gaudio

Participatory Design; Political Design; Gender and Design; Strategic Design for Social Innovation, Speculative and Critical Design; Decolonising Design

<https://www.urbanimaginarieslab.com>



Research focus and activity

Chiara Del Gaudio's work focuses on Design for Socio-Cultural Innovation and in Design approaches for Transition towards a more inclusive, resilient, and sustainable society. One of her main areas of study is the exploration of **how Design can prevent dynamics of discrimination, exclusion and marginalization**. Overall, her research focuses on **designers' contribution towards more democratic scenarios**.

Her work takes place at the intersection between the areas of **Participatory Design**, **Strategic Design**, and **critical studies in Design**, being her main research and practice interests: *Design as a political process*, *Participatory and Collaborative design approaches*, *Strategic Design for Social Innovation*, *Decolonising Design*, *Gender and Design*, and *Speculative and Critical Design*.

She leads the '**Urban Imaginaries Lab**' (www.urbanimaginarieslab.com). She is one of the investigators in the research program 'A Safe and Affordable Place to Call Home' (2023-2028), where she looks into alternatives to address the housing crises. She was an investigator in 'Gendered Design in STEAM in Low and Middle-Income Countries', a research program that aimed to identify, support and promote a community of experts engaged in exploring Gendered Design in Low and Middle-Income Countries (LMICs) in Latin America, Africa and Asia.

She also is an **active member of the design research community at international level**: she has been organizing the Participatory Design Conference since 2020, she is Associate Editor of the journal Design and Culture, she has edited books and special Issues and published in renowned journals such as CoDesign, the International Journal of Design, among several others.

Chiara Del Gaudio

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Current research projects

A Safe and Affordable Place to Call Home

This project aims to assess the Canadian National Housing Strategy and to identify alternatives to address the housing crises.

Urban Imaginaries

The project seeks to promote the collective creation and discussion of new urban imaginaries for Ottawa. It will do this through a series of public events aiming at catalyzing collaborative knowledge sharing and building. <https://www.urbanimaginaries.com/>

Unveiling Co-design

This research project aims to strengthen the democratic potentialities and dimensions of co-design processes. Its main goal is to promote an understanding of where and when co-design processes are not democratic and promote awareness about how the decisions taken by the participants of a co-design process can influence the wider context.

Research Assistant opportunities for students

- Supervised students that show interest, appropriate skills and a pro-active approach will be offered the opportunity to join my research activities and will receive an RAship for this.



Home First Edition Second Edition
Additional Participation Press



Urban Imaginaries Ottawa: 2nd Edition



Mapping Exclusions within Co-Design processes

Chiara Del Gaudio

Participatory Design; Political Design; Gender and Design; Strategic Design for Social Innovation, Speculative and Critical Design; Decolonising Design

<https://www.urbanimaginarieslab.com>



Current research projects

Cartographic Mapping of 'Design Aberto P2P'

This project aims to identify the main features and design movements that characterized the collaborative design project 'Design Aberto P2P', conducted in Complexo do Alemão and Complexo do Lins, two Rio de Janeiro favelas, between 2012 and 2021. It does that through mapping its micro-dynamics and micro-politics. The project, exploratory in nature, integrates oral history and data visualization methods.

Past research projects

Weaving Care

This project aims to develop a process able to support anyone interested in forming a care-driven community that fosters welcoming and earnest relationships. It started with the identification of coffee houses as key, but, at the same time, undervalued places for community building at the local level. Together with the local partner, a 'playbook' to support it as well as any other local organization in becoming a platform for promoting a community based on care, hospitality and decolonized practices is being designed.

<https://www.weaving-care.com/>



Weaving Care Playbook

Chiara Del Gaudio

Participatory Design; Political Design; Gender and Design; Strategic Design for Social Innovation, Speculative and Critical Design; Decolonising Design

<https://www.urbanimaginarieslab.com>



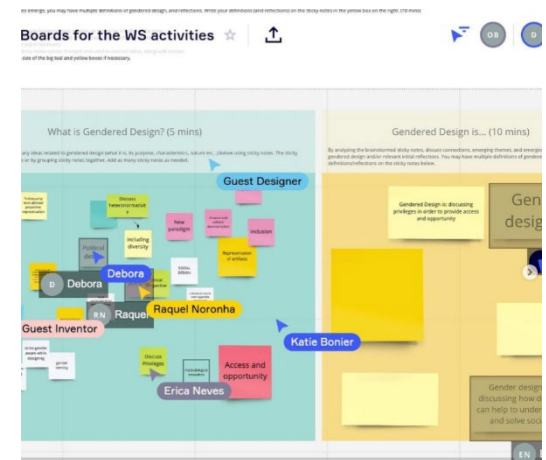
Past research projects

Tackling gender oppression by embracing transgression in Design

This research project, exploratory in nature, aims to understand how Design can support the transgression of socially defined gender norms and, therefore, address gender oppression. It will also reflect on the relevance of embracing transgression in design processes towards increasing the creative potential of design practice and enabling plural possibilities of being.

Gendered Design in STEAM in Low and Middle-Income Countries

a three-year research program financed by the International Development Research Centre (IDRC) Canada and managed by Carleton University (Canada) aiming at identifying, supporting, and promoting a community of experts in LMICs in Latin America, Africa and Asia engaged, or interested in engaging with Gendered Design as a potential field of practice and research.



GDS workshop

Chiara Del Gaudio

Participatory Design; Political Design; Gender and Design; Strategic Design for Social Innovation, Speculative and Critical Design; Decolonising Design



Past research projects

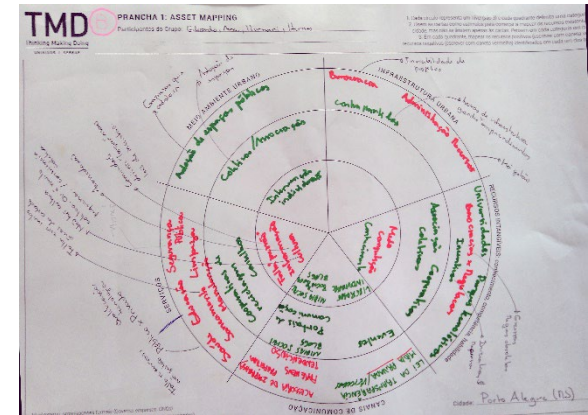
Thinking Making Doing

a project set up in collaboration with SEBRAE-RS in Porto Alegre, Brazil. Through a Service Design and Strategic Design approach, the project aimed at designing new services for 10 local collaborative spaces that could work on an ecosystem level.

Design for Democracy

A series of activities (events, design and research activities) to reflect and promote reflections on the relationship and strong convergence between Design and Democracy, as well as to promote new design practices related to four dimensions of this relationship: (1) design of democracy; (2) design for democracy; (3) design in democracy; (4) design as democracy. The topic was addressed through lectures, round tables and design activities that allowed knowledge exchanges and building between experts from different academic areas and the local community. Here the final statement produced together with the participants:

<http://democracy-design.designpolicy.eu/statement/chiara-del-gaudio/>



Mapping Ecosystem Opportunities



2nd Event: exploring design contribution through Art, Design, Architecture, Music

Chiara Del Gaudio

Participatory Design; Political Design; Gender and Design; Strategic
Design for Social Innovation, Speculative and Critical Design;
Decolonising Design <https://www.urbanimaginarieslab.com/>

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Past research projects

City Visionaries

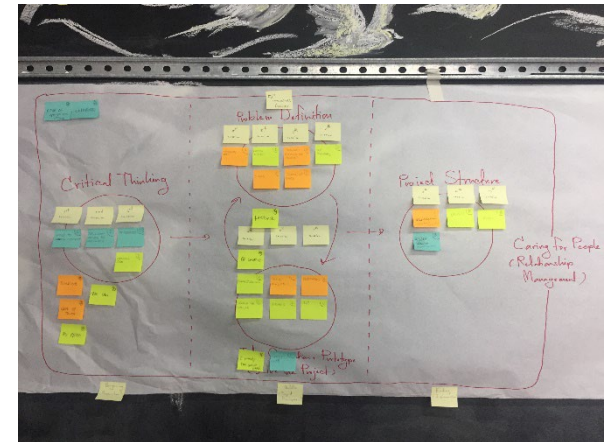
a research project conducted in collaboration by University Brunel London and TransLab (a social innovation laboratory, localized in Porto Alegre, Brazil), and financed by Newton Fund and British Council. The project consisted in the development and implementation of a program for helping NGOs in co-designing with young people from local favelas new businesses that could contribute to the local context.

Transformando o Serviço em PMEs

a research project set up with SEBRAE-RS in Porto Alegre, Brazil. Through a Service Design and Co-Design approach, the project aimed at redesigning the innovation processes of 10 small local businesses.

For more information on current and past research projects:

<https://www.urbanimaginarieslab.com>



City Visionary: the program



Storyboard of the new service

Juan Jiménez García

Human-Computer Interaction (HCI)
Interaction Design (IxD)
Human-Centered Design (HCD)

<https://juanjimenezdesign.com>



Research focus and activities

Designing for personal reflective and persuasive informatics

How can we design technology-mediated solutions that support people's daily life?

The design of technology-mediated solutions that supports people's daily life implies some change to existing routines and lifestyle. An exploration of persuasive vs. reflective personal informatics solutions and how they can be harmonized for user empowerment.

Designing for healthcare and wellness scenarios

How can we design technology-mediated solutions that consider the current digital transformation in healthcare services? Digital transformation in healthcare services is broadly changing from being solely delivered by professionals in hospitals to considering daily-life experiences and patients' personal contexts.

Designing for social innovation

How can we design localized technology-based solutions? The design of digital technologies that embrace a community-based participatory approach to enhancing accessibility of digital technology by closing the gap between design requirements and people's localized needs and values.

Juan Jiménez García

Human-Computer Interaction (HCI)
Interaction Design (IxD)
Human-Centered Design (HCD)

<https://juanjimenezdesign.com>



Current and past research projects

Canadian Futuristic Health Data Visualization Center (New Frontiers in Research Fund – Exploration)

We are designing, developing, and evaluating interactive data-centric systems using large interactive surfaces to enable a) data-empowered collaborations between patients and clinicians and b) the direct manipulation of data by all parties present during clinical visits. Our goal is to explore the design and the use of large interactive surfaces using our proposed data-centric systems within clinicians' offices and standardized hospital meeting rooms.

Socially-inclusive extended reality (XR) systems for multi-user collaboration and communication (Multidisciplinary Research Catalyst Fund)

The goal is to investigate methods to improve interaction in low-fi multi-user XR systems, to make good and effective XR content available to more people across various social-economic statuses, and to study the use of heterogeneous devices in cases where no XR technology is available

Data-Physicalization for Youth Mental Health: A Human-Centered Approach (NSERC – Research Development Grant)

This research aims to explore the design space of digital physicalization, focusing on transforming digital data into human-readable representations through a human-centric approach. This approach aims to foster a deeper understanding of improved mental health by bridging the gap between their digital and physical experiences through more personal and meaningful design values.

Research Assistant opportunities for students:

- I want to work with graduate students who are **keen to create social impact** by designing socio-technical systems that deliver meaningful experiences between people, technology, and data, understanding and representing human needs through digital interactions that improve people's daily life.
- Salary will be defined based on the level of involvement and the funding assigned to a specific project.

Juan Jiménez Garcia

Human-Computer Interaction (HCI)
Interaction Design (IxD)
Human-Centered Design (HCD)

<https://juanjimenezdesign.com>



**Designing a digital solution to
combat cyberbullying in
students aged 8-12**

Hooman Gheshladhi

**Exploring Immersive technology to
enhance training for resident doctors**

In collaboration with McMaster University

Erika MacGregor

**Improving patient-doctor communication
in primary healthcare delivery**

*Research Project: Canadian Futuristic Clinical Data
Visualization Center.*

Mariana Perez

**Supporting female adolescents in
Mozambique on better personal/community
sanitation and hygiene practices.**

A project in collaboration with Waterlution.

Niyousha Saeidi

**Making Data Tangible – Exploring The
Design Space of Data Physicalization**

*Data-Physicalization for Youth Mental Health: A
Human-Centered Approach*

Bashir Saidi

**Designing Data-Physicalizations for
Healthcare Scenarios**

*Data-Physicalization for Youth Mental Health: A
Human-Centered Approach*

Sharon Rojas

Stephen Field

Co-creation and Co-design; Design Entrepreneurship;
Participatory Research; Cross Culture Collaboration;
Distributed Studio



Research focus and activity

Coming from a global background in design and development of energy efficient housing components and manufacturing, my research focus has led to demonstrate how collaborative holistic approaches can be utilized in developing sustainable products and systems for remote Canadian First Nations and Inuit communities. By working within interdisciplinary framework that creates participatory research teams within the university; Sprott School of Business, School of Industrial Design, and Environmental Engineering. Through this collaboration students embrace co-creation and co-design research methods. By conducting intensive multi-week field trips, students actively engage with communities, employing participatory approaches implementing prototyping and testing methods. Due to the geographic isolation students develop tools and methods that facilitate distant distributed studios, allowing for ongoing community engagement. Graduate students interested in collaboration that applies design processes to assist in developing self-sufficiency and self-reliance through community entrepreneurship that is respectful to the indigenous communities.

Stephen Field

Co-creation and Co-design; Design Entrepreneurship;
Participatory Research; Cross Culture Collaboration;
Distributed Studio



Current and past research projects

Maasai Community Engagement

This interdisciplinary collaborative project between the Sprott School of Business, School of Industrial Design, and Environmental Engineering, **engaging students in co-design and co-creation with Maasai communities** in the district of Longido, Tanzania. Active engagement research to create self-reliance, self-sufficiency in a sustainable context.

Interdisciplinary Framework for Northern First Nation and Inuit Communities

This research focuses on developing interactive processes allowing potential high impact solutions to be generated by all parties despite cultural differences and geographical separation. Several Northern communities such as Na-cho Nyak Dun in Mayo Yukon, Igloolik Nunavut and Masset BC, among others have extended their participation with students from Sprott School of Business and School of Industrial Design. This Interdisciplinary research utilizes and evaluates digital collaborative tools such as Virtual Reality, into the research process to allow for engagement between the geographically distributed teams.

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Tim Haats

Design-Driven Entrepreneurship; Design-Driven Innovation; Design Thinking; Emerging Design Technologies; Intellectual Property



Research focus and activity

Tim's research interests revolve around **design, entrepreneurship, and business, and the emerging design practices that support innovation**. This includes topics such as design-driven/design-led entrepreneurship, design-driven/design-led innovation, design thinking, business design, emerging technologies, design tools and methods, and intellectual property.

Tim is working towards understanding the dynamics of venture start-ups and **how design can play a critical role in the development of successful small businesses**. He is also trying to understand what makes designers entrepreneurial and how to foster more designer-founders in support of innovation and economic development.

Furthermore, Tim is exploring **the use of emerging technologies such as Extended Reality (XR) and Artificial Intelligence (AI) within industrial design practice**, and how they can support new product development through forms of collaboration, communication, prototyping, and testing. This includes understanding how professional designers are currently using these technologies, but also investigating new opportunities that will enhance the design process.

Tim Haats

Design-Driven Entrepreneurship; Design-Driven Innovation; Design Thinking; Emerging Design Technologies; Intellectual Property



Current and past research projects

Designers' Entrepreneurial Intentions

What makes a designer entrepreneurial? To answer this question, we need to understand the designer's aspirations, motivations, and intentions; we need to understand the designer's state of mind towards entrepreneurship. This research project explores these factors from various perspectives to identify key considerations for fostering entrepreneurial activity amongst industrial designers.

The Value of Designer Founders

The hypothesis is that designers make good entrepreneurs. But is this true? The founding of successful companies like Airbnb, Pinterest, and YouTube have indicated that there may be significant value to having designers as part of the founding team, to drive innovation through design. This research project explores this dynamic and aims to uncover the value of the designer founder.



Ilana Ben-Ari (BID'06), founder of Twenty One Toys

Source: <https://financialpost.com/entrepreneur/a-test-of-patience-toy-company-on-verge-of-big-breakthrough-after-three-long-years>

Tim Haats

Design-Driven Entrepreneurship; Design-Driven Innovation; Design Thinking; Emerging Design Technologies; Intellectual Property



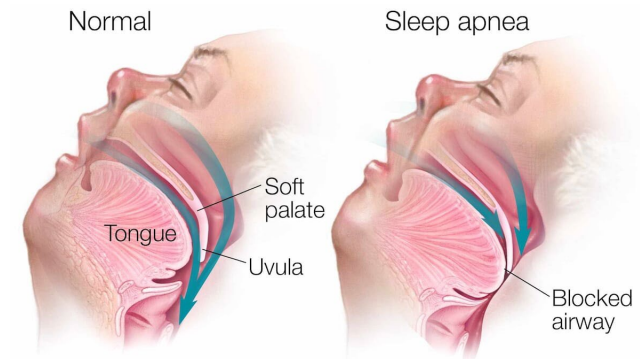
Current and past research projects

Innovation, Design and Development of Novel Snoring and Obstructive Sleep Apnea Prevention Devices

Sleep-related breathing disorders, such as obstructive sleep apnea, can be life threatening. Although solutions exist to treat these disorders, there are several issues with the products on the market today. This applied design research project in collaboration with SleepLabs Inc. explores the development of novel snoring and obstructive sleep apnea prevention devices that will address these issues, specifically for the senior population who wear full or partial dentures.

Advancements in Materials, Fabrication Methods, and Design for Denture Framework Assemblies

Dentures are essential dental prosthetic devices to replace missing teeth and restore oral function, speech, and aesthetics. Manufacturing these dentures can be a very time-consuming and costly process. This applied design research project in collaboration with SleepLabs Inc. and two faculty members from Mechanical Engineering explores ways to streamline the manufacturing process for dentures through the study of advanced materials, fabrication methods, and design.



Collapse of soft tissues causing sleep apnea
Source: <https://www.sleepcareonline.com/articles/what-is-the-main-cause-of-sleep-apnea/>



Full and partial dentures
Source: <https://www.gentledentistrysgv.com/removable-partials-and-dentures/>

Tim Haats

Design-Driven Entrepreneurship; Design-Driven Innovation; Design Thinking; Emerging Design Technologies; Intellectual Property



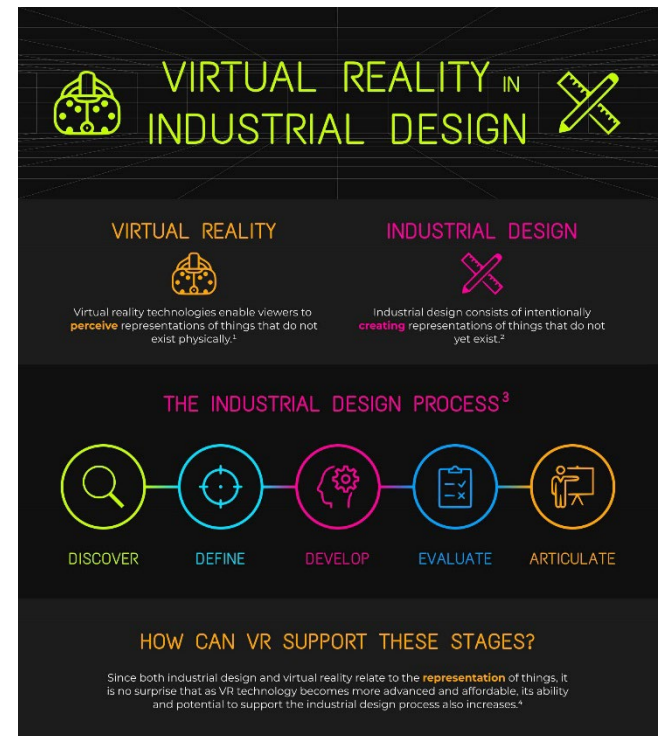
Current and past research projects

XR and AI Technologies for Industrial Design Practice

Advancements in technology and digital tools are providing industrial designers with new opportunities to enhance their design capabilities. This research project explores these opportunities to understand how emerging Extended Reality (XR) and Artificial Intelligence (AI) technologies are shaping the modern industrial design practice, and how they can be integrated into the new product development process most effectively.

Improving the Quality & Experience of HyFlex Teaching & Learning

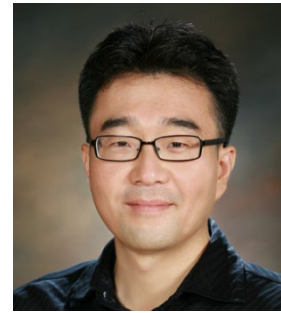
The COVID-19 pandemic has pushed Universities and Colleges to explore new ways of delivering education. One such strategy has been to implement the hybrid-flexible (HyFlex) teaching model. This research project explores the user experience and pain points of HyFlex teaching and learning to identify opportunities for new design solutions that will enhance the effectiveness of the HyFlex model in higher education.



VR in Industrial Design

WonJoon Chung

Creativity in Design; Co-design; Individual and Collective creativity;
Prototyping Methods; Design Thinking & Pedagogy



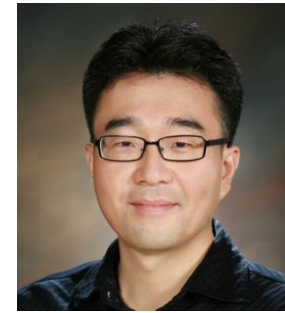
Research focus and activity

Dr. Chung's research focuses on individual and collective creativity of designers, strategic research on design thinking, and pedagogical research to improve students' design competency in response to the demand of the 21st century. Specifically, he is interested in working on a practical application of the characteristics of design thinking such as abductive reasoning process, reflective practices, outside the box thinking, and iterative process using tangible artifacts (i.e. sketches and prototype) to tackle wicked design problem.

His research endeavour led him to be invited to participate in several government-funded projects in Korea that allowed him to establish a partnership with a number of prestigious industry partners as well as design department in universities in Korea.

WonJoon Chung

Creativity in Design; Co-design; Individual and Collective creativity;
Prototyping Methods; Design Thinking & Pedagogy



Current and past research projects

Development of convergence design workshop Program (2014)

Existing research on creativity discusses theoretical principles such as abductive thinking, bisociation, and out-of-the-box thinking as the underlying mechanism for generating creative ideas. Yet, there is little research on how inexperienced designers (e.g., design students) can experience these principles and put them into a design practice in various contexts. This project developed a group workshop technique in which participants can experience the principles of creativity in collaboration with others. In terms of design education, the workshop technique and tools can be used as supplementary material to allow student designers to experience the principles of creativity in a playful manner, while also practicing to strike a balance between imagination and reality in their design ideas.



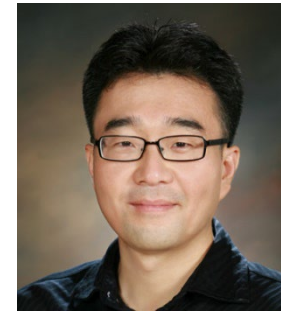
Collaborative ideation workshop with non-designers



Collaborative ideation workshop with non-designers

WonJoon Chung

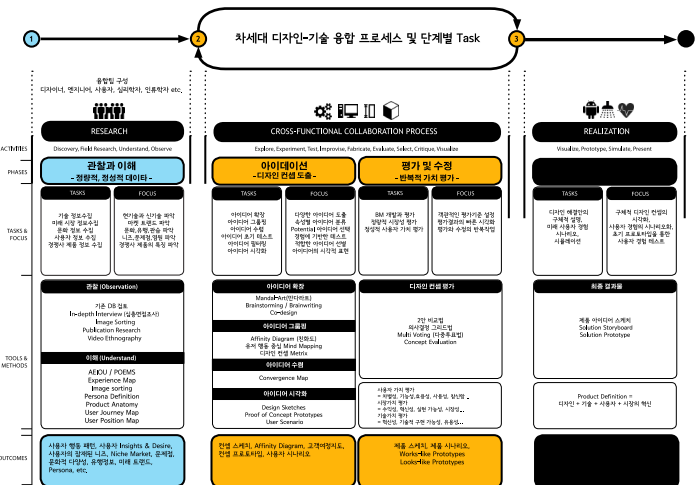
Creativity in Design; Co-design; Individual and Collective creativity; Prototyping Methods; Design thinking & Pedagogy



Current and past research projects

Converging design for small and middle size enterprises in Korea (2014)

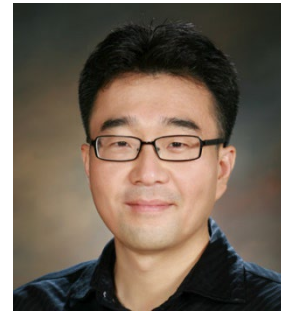
A number of methods and techniques have been developed and used to facilitate the process of **interdisciplinary collaboration** in design practices. As they were developed based on unique design cultures and different organizational structure, however, it may cause a problem if one which has a different culture and structure try to adapt it without serious consideration of their own cultural differences and custom. For this reason, this project conducted cultural, contextual and ethnographic investigation and develop more proper **methods** of the convergence **design** that **suitable for design industry in Korea**. The theoretical basis of the convergence design are investigated in order to develop effective methods of convergence design for Korean.



Design convergence platform

WonJoon Chung

Creativity in Design; Co-design; Individual and Collective creativity;
Prototyping Methods; Design Thinking & Pedagogy



Current and past research projects

Designing Learning Space to Promote Creativity and Collaboration in Schools (2020)

The rapid development of digital technology and the emergence of the 4th industrial revolution has led us to re-evaluate the current education system and curriculum. Particularly, it is necessary to **redesign the traditional learning space** like a classroom to be more effective space that allows students to actively engage with their learning and accommodating their multiple demands. This notion brings our attention to design a new classroom environment that would be appropriate for the young students to actively engage with teachers and their peers, foster their experiential learning, and facilitates greater access to contents and resources. This matter is not limited to a particular region, but a global concern and also is not only an issue of the post-secondary education but that of k-12 education as well.

(Postponed due to COVID 19)

Steven Pong

Healthcare Design/Research; Model Making; Physical User Interface; Prototyping; Sensory Perception of Data



Research focus and activity

I have expertise in many areas of design and can demonstrate to students, from real-world experience, how to conduct research, design, test, and manufacture devices and systems across many domains from activities of daily living to life changing medical and healthcare devices.

Students will benefit from my years of mentoring both graduate and undergraduates through the development of their theses. I worked for over a decade on academic and commercial medical/healthcare projects where design considerations are critical to successful outcomes. Additionally, it has been my pleasure to assist students with design and construction of the devices required to complete their studies, while teaching them how to work safely and efficiently to make what they didn't think possible.

My research interests lie in how design inputs, through co-investigation, can advance research outcomes in areas not normally associated with design such as psychology, biomechanics, and medical diagnostics. I have established excellent relationships with leading investigators in these areas and have recently been appointed to an Affiliate Scientist position at the Kite Research Institute/University Health Network. This provides access to their world-class scientists, laboratories, and workshops. There are great opportunities for designers to direct, shape and improve approaches to conducting research beyond the traditional roles of design.

Steven Pong

Healthcare Design/Research; Model Making; Physical User Interface; Prototyping; Sensory Perception of Data



Current and past research projects

Making National Parks In Canada Accessible

The Accessible Parks Canada project is an interdisciplinary research project being conducted by the Engineering Health Lab (part of The KITE Research Institute) and affiliated researchers. Our goal is to revise guidelines for making Canada's national parks more accessible. Our long-term vision is to ensure individuals with disabilities and their caregivers can participate in all activities offered at Canada's national parks. The specific objective of this multi-year project is to develop recommendations for making the national parks barrier free by 2040.



www.accessibleparkscanada.ca

E-Stethoscope / Telemedicine

People recovering from COVID-19 (PrC-19) are at very high risk for dysphagia, which represents a serious risk for complications. This study investigates the prevalence and impact of swallowing impairment in PrC-19. It will also determine how age, frailty and underlying risks impact the frequency and severity of dysphagia after COVID-19 infection. This 3D printed single-patient electronic stethoscope and the accompanying software was developed with the SleepdB Lab at KITE | Toronto Rehab to collect data for this study.



<https://steeleswallowinglab.ca>

Steven Pong

Healthcare Design/Research; Model Making; Physical User Interface; Prototyping; Sensory Perception of Data



Current and past research projects

Hand Hygiene Performance Improvement

Poor hand hygiene by health care workers is a major cause of nosocomial infections. This research evaluated the ability of an electronic monitoring system with real-time prompting capability to change hand hygiene behaviors. Once the technology had been developed, multiple clinical trials were conducted. Some results include: the use of electronic monitoring with real-time prompts of 20 seconds' duration nearly doubles handwashing activity and causes handwashing to occur sooner after entering a patient room. These improvements are sustainable over a year.



<https://hygienicecho.com>

Sleep Apnea Diagnostics

Our research team designed and validated a personal home sleep test that transforms the precision of a sleep laboratory into an accessible solution. The device is worn over the nose and mouth and captures multiple data streams by using two channels, a microphone and an accelerometer. Breath sounds and head movements are recorded for up to eight hours of sleep, and a sleep study report is generated and then interpreted by your physician.



<https://kite-uhn.com/lab/sleepdB>