NC STATE Design

MID

Master of Industrial Design | Class of 2017
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The profession and discipline of Industrial Design have evolved and transformed rapidly in recent decades, reflecting changes in technological, social, business, and cultural advancements in societies around the world. The world is a much more complex platform and canvas for designers these days, imposing tremendous challenges, as well as offering increased opportunities.

The Industrial Design graduate program at NC State University, one of the most respected in the US, prepares students for future leadership in design practice, research, or education, and to tackle the emerging challenges and opportunities of the 21st century.

The class of 2017 Masters of Industrial Design students at NC State chose a wide range of topics that are important to society in different ways, and conducted in-depth research before conceptualizing meaningful design solutions. This booklet highlights their endeavors and lays the foundation for further investigations and articulations. We hope their projects will inspire other designers to advance the experience and quality of people's lives everywhere.

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During the final year of the MID program, graduate students work on an individual project. This begins with problem exploration and research during the previous summer, proposal development and pilot work in a final project preparatory course in the fall and primary source research and design development in their final studio in the spring.

Through this intensive final project, Master of Industrial Design students explore their personal interests of social, technological and/or cultural importance while contributing to the body of knowledge or methods of practice for the field. Students in the Class of 2017 have engaged in research and utilized design methods to collect primary and secondary source information pertaining to their topic. Using analytic tools and visualizations, our students have synthesized information identifying trends, revealed patterns of information, and gained insights which refined their understanding of their problem. Combining critical elements associated with advanced, highly skilled, analytically-based design, our students have used the iterative design process to create specific solutions which have been evaluated by the community of interest. Leveraging NCSU’s and the College of Design's rich resources and strong community support, the graduate students have embarked on intellectual pursuits, relationship development, and have managed their unique design process. We celebrate their accomplishments during this final critique in which students present their research and development process and their final designs.

Congratulations to the members of the MID Class of 2017!
Chang Cao
Committee Chair: Sharon Joines, PhD
Committee Member: Kelly Umstead

Chang is from Beijing, China, and received his Bachelor's degree in Microelectronics from Shanghai Jiaotong University. He came to NC State to pursue Industrial Design in order to gain a deeper understanding of people's needs, and to solve diverse problems in their lives. In his free time, Chang enjoys swimming and tennis. After graduation, Chang hopes to pursue his passion for problem solving.

Twenty
A new type of display reducing eye fatigue caused by high demanding visual work

Screen use causes more serious eye health issues than ever before. Of American adults, 69% use a smartphone daily in 2016, compared to only 45% in 2012, and 42.5% of Americans use a tablets, as compared to 26% in 2012. The goal of the capstone project is to innovate a new type of product to prevent and reduce eye fatigue caused by high demanding visual work on the display without decreasing productivities.

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John Clark is from Spartanburg, South Carolina. He received his bachelor's degree in philosophy from Sewanee: The University of the South, and has experience working for startups in both New York City and Raleigh. He came to NC State to pursue Industrial Design because he wants to embody his philosophical worldview in concrete, real-world objects that improve the quality of life. In his free time, John Clark enjoys mountain biking, playing guitar and mandolin, and writing fiction. John hopes to start his own company and/or work as a designer in a Scandinavian country after graduation.

Slow Design, Smartphones and Sleep

A Product Intervention to Reduce Screen-Time before Bedtime

The purpose of this project is to address sleep deprivation among young adults caused by heavy smartphone use at night. In 2011, the National Sleep Foundation reported 95% of Americans use some type of electronic device within the hour before attempting to sleep.

This research project investigates the activities, behaviors, and attitudes that college-age individuals have toward smartphone use prior to going to sleep. In addition, this study draws upon insights from Slow Design, a growing sub-field of Human-Computer Interaction. Slow Design is an approach aimed at creating devices that encourage reflection and thoughtful interaction rather than enhanced productivity and efficiency. Research methods included focus groups, ideation review sessions, in-home prototype trials, and interviews with college-age individuals.

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Ya San Fong
Committee Chair: Kelly Umstead
Committee Member: Bryan Laffitte

Ya San is from Taichung, Taiwan, and has a Bachelor's degree as well as professional experience in Industrial Design. She came to NC State for her MID because she sought a diverse perspective on design and is seeking professional opportunities around the world. In her free time, Ya San enjoys hiking and traveling. She plans on pursuing UX/UI and Industrial Design in every potential industry.

Circular Therapy
An Innovative Device for Stroke Patient Home Therapy and Rehabilitation

Physical therapy exercises are often assigned for stroke patients to complete aspects of their treatment at home. Sometimes results are ineffective due to non-compliance, decreased attention, or improper routines being performed. Physical therapists are in need of a way to track patient activity and monitor their progress. This final project aims to develop an innovative device which will add to the success of their treatment plans.

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Brian Himelright
Committee Chair: Bong Il Jin
Committee Member: Bryan Laffitte

Brian is from Cuyahoga Falls, Ohio, and received his Bachelor's degree in Engineering and Design Education from NC State. During his time as an undergraduate, he learned about Industrial Design and, because he loved Raleigh and NC State, elected to stay and pursue a Masters in Industrial Design. In his free time, Brian enjoys running, biking, and taking his dog on a walk with his wife. Brian plans on working as a design consultant because he loves being able to design for a broad range of industries.

Tame
An IoT system addressing challenges of multi-species households

Although in the U.S. nearly 1/3 of all pet owners have both a cat and dog, peaceful co-existence doesn’t always come easily to these homes. This project identified the most common challenges multi-species pet owners face through various methods of video observation and interviews. In order to combat the difference in communication and temperament between these two species, people tend to improvise solutions at home, which are often an imposition. This research identified a need for a smart system, utilizing IoT technology, to act as an extension of training to help manage interactions while away from home. This design solution can be tailored to each individual’s pets and their living environment.

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Penghui Jiang
Committee Chair: Sharon Joines, PhD
Committee Member: Carolina Gill

Penghui is from Jiangsu, China, and received his Bachelor’s degree in Industrial Design from East China University of Science and Technology. He came to graduate school at NC State to learn systematic design research methods and human centered design. In his free time Penghui enjoys photography and fine arts. He is interested in pursuing user experience design, service design, and design strategy.

Pico
Designing for photography self-learning

Photography is becoming increasingly popular and accessible thanks to the development of inexpensive digital technology and the internet. This project aims to develop an application that allows learners to follow online instructions and submit their work for review and feedback. Learners can also build up offline communities for activities to enhance learning motivation and have fun. The app design will include the methods and principles in interaction design, pedagogy, and habit development theory. With this app, learners can gain access to customized, modular photography courses and activities with their mobile device, making the internet-based learning experience more closely associated with real-life activities.

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Rohan Kataria
Committee Chair: Carolina Gill
Committee Member: Derek Ham, PhD

Rohan is from Mumbai, India, and received his Bachelor’s in Mechanical Engineering degree from Vellore Institute of Technology. After being exposed to design through his engineering degree, he came to NC State to pursue a career in design. In his free time, Rohan enjoys playing video games, traveling, and adventure sports. Rohan is interested in pursuing a career in virtual reality development, Immersive experience design, and design strategy.

Sat-EX
ADHD and VR: A prototyping case study

ADHD (Attention Deficit Hyperactivity Disorder) affects 6.4 million school-aged children around the world, 11% of whom are in the United States. It is a chronic mental condition that impacts the way a person acts and focuses, and this can have a massive influence on the learning process of an individual. In this modern approach to tackling learning disabilities, the use of Information and Communication Technologies (ICT) is considered to be beneficial for individuals with ADHD.

This study uncovers the possible positive impact Virtual Reality Experiences could have on students with ADHD within the classroom. This challenge was a case study for an even larger question that addresses the concept of Prototyping for VR, and how that differs from the traditional prototyping process in Industrial Design. Results from this study list out tools and methods that would be helpful in prototyping VR environments and aiding students with ADHD via these immersive experiences.

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Max Lewis
Committee Chair: Bong Il Jin
Committee Member: Kelly Umstead

Max is from Lenoir, NC, and received his Bachelor’s degree in Biological Sciences from NC State. He chose to return to State and pursue a Master’s Degree in Industrial Design because his grandfather, one of his most profound role models, studied architecture and furniture design at the School of Design. In his free time, Max likes making and listening to music and saying hello to strangers. Max is interested in pursuing systems design, fabrication, and new media production.

Wiii
Waste Collection System

Humans generate 2.12 billion tons of waste per year and spend around 375 billion dollars collecting it. Despite the critical societal importance and massive economic implications of this activity, the components that most commonly facilitate it are ineffective and challenging to use. Design of curbside carts prioritizes cost minimization, and collection vehicles are inefficient and environmentally destructive. This capstone project outlines a new model for waste collection using redesigned tools that make the process more convenient for users, less costly for municipalities, and better for the environment.

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That’s why we started Waste Connection. On demand, environmentally friendly collection for your community.

$205.4 billion
spent worldwide each year on waste collection

Standard heavy duty collection vehicles are

Inefficient

Destructive

Expensive
Preston Moeller
Committee Chair: Bong Il Jin
Committee Member: Bryan Laffitte

Preston is from Cleveland, NC, and received his Bachelor’s in Industrial Design degree from Appalachian State University. He came to NC State in order to expand his skillset and explore new methods and processes in Industrial Design. In his free time, Preston enjoys watching Netflix and sleeping. After graduating, Preston wants to focus on user-centered design and exploring how products change depending on the user.

Apeiron
The Future of Mobile Living

As location-based constraints have become less stringent within our everyday lives, so have the social norms of our living expectations. Taking a thoughtful look into the impact of growing technologies and trends within this sociological shift, we can see new opportunities for living better lives.

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Nancy Rekelman
Committee Chair: Carolina Gill
Committee Member: Sharon Joines, PhD

Nancy grew up in Atlanta, and did her undergraduate studies at Washington University in St. Louis, majoring in painting and anthropology. She came to NC State to pursue a graduate degree in Industrial Design in order to combine her love of ethnographic research with her lifelong passion for creative making. In her free time, Nancy enjoys hiking with her dog, painting, and cooking; she plans to work as a researcher and designer and is interested in social impact design.

Companion
An adoption matching tool for animal shelters

According to the American Society for the Prevention of Cruelty to Animals (ASPCA), ~3.9 million dogs enter animal shelters in the US each year; ~1.2 million are euthanized. Owner surrender of dogs to shelters is a primary contributing factor to shelter overpopulation. Owners often surrender their dogs because the dog was a poor match for their lifestyle. This study uncovers the factors that lead to poor adoption matches.

A human-centered, ethnographic approach was used to study the shelter experience. In-depth interviews and observations with shelter staff and volunteers were conducted at two animal shelters (a municipal shelter funded by the county and a shelter funded by private donations). Results from the study indicate the need for a solution designed to systematically log potential adoptees' behavior and convey this knowledge to adopters so that they make informed adoption choices.

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Catalina Salamanca
Committee Chair: Sharon Joines, PhD
Committee Member: Kelly Umstead

Catalina is from Bogotá, Colombia. She undertook her undergraduate studies at Pontificia Universidad Javeriana, where she graduated as an Industrial Designer in 2002. Prior to coming to NC State, she directed her own design consultancy in Villavicencio, Colombia. She came to Raleigh in 2015 in order to pursue her MID, update her design skills, and gain fresh perspectives on the field’s direction. Catalina enjoys spending time with her family, traveling, and dancing, and is interested in pursuing design research and medical device design.

“H” happy healthy hips
A user-friendly orthopaedic device to treat infantile hip dysplasia.

Every year over 1.2 million babies around the world are diagnosed with Developmental Dysplasia of the Hip (DDH). DDH refers to abnormalities of the immature hip joint, and can be treated with the use of orthotic devices (splints and harnesses that have seen little innovation in the past sixty years).

This ethnographic study investigated how current devices affect caregiver/infant dyads (pairs) during daily activities and their interaction with people and environments. Participants involved were pediatric orthopaedics and caregiver/infant dyads (currently on DDH treatment) living in the US and internationally. Research methods included semi-structured interviews, online surveys, and observation sessions. As a result, a new user-friendly orthotic device was designed to improve the infant’s appearance (reducing the barrier) and hygiene (allowing bathing), as well as offering additional convenience of use (ease of fitting and adjusting the device).

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