ICAT Day is a celebration of the work of Virginia Tech’s Institute for Creativity, Arts, and Technology. These interactive exhibits, workshops, panel discussions, tours, demonstrations, and performances at the Moss Arts Center show how ICAT is forging a pathway between transdisciplinary research and artistic output, scientific and commercial discovery, and educational innovation. The ICAT community will share engaging experiences from virtual worlds to luminescent forests to laptop orchestras. Have your mind blown at this invigorating SEAD (science, engineering, art, and design) event. Explore the Moss Arts Center to have your mind blown by the exhibits showcasing ICAT projects. Exhibits come from student clubs, ICAT classes, ICAT grants, and ICAT-affiliated faculty research.

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www.icat.vt.edu
LOBBIES

ICAT
Pick up an ICAT Day program, learn about Friday morning playdates in the Sandbox, and have all your questions answered.

Phyllis Newbill, ICAT
Liesl Baum, ICAT
Melissa Wyers, ICAT
Lisa Jansen, ICAT

Design for America - Spring 2015 Projects
Check out Design for America at ICAT Day! We are a nationwide organization led by students of all majors that strives to make a social impact through human-centered design in surrounding communities. Stop by to see our projects and to tell us what you’d like to see more of in Blacksburg!

Joe Bruzek, Computer Science, See[k]
Andy Cho, Architecture, Ramp Up!
Kristina Danielyan, Industrial Design, Pillpal
Habeeb Muhammad, Architecture, Light Field
Tim Liebe, Mechanical Engineering, Safebox
Justin Lau, Industrial Design, CreatiVT

A Virtual Reality Simulation Prototype to Encourage Anti-Bullying Action from Bystanders
This exhibit features a student-made prototype of a simulation using the Oculus Rift virtual reality device designed to encourage anti-bullying attitudes and behavior among bystanders. Its efficacy is being explored in ongoing research comparing the simulation to other anti-bullying approaches.

James D. Ivory, Communication
Kelly McEvoy, Communication
Kevin Hyer, College of Business
Emma Nadia Dosky-McQuade, Communication
Christina Heyward, English
Madison Lanier, Communication
Sara Lepley, Communication
Kathryn Monick, Communication

3D Image-Based Reconstruction Mobile Platform Deployment and Implementation for Bridge Deck Crack Mapping and Inspection
A 3D image-based reconstruction and mesh model of a bridge’s deck will be exhibited, along with automatic infrastructure condition analysis.

Abraham Lama Salomon, Civil and Environmental Engineering
Cris Moen, Civil and Environmental Engineering

Numerical Modeling of Human Crowd Dynamics
We have developed a numerical model (computer simulation) that describes the flow of people through a building. We ran live tests of human crowds inside the Cube, which was capable of recording the 3-dimensional position of each person over the entire test. The model was compared to the experiments.

Josam Waterman, Biomedical Engineering and Mechanics (BEAM) / Engineering Science and Mechanics (ESM)
Patrick Greer, BEAM / ESM
Hunter Morgan, Computer Science
Will Doty, BEAM / ESM
Nicole Abaid, BEAM / ESM
Jonathan Boreyko, BEAM / ESM

Belview Makers and the Connected Derby
“Belview Makers” built cardboard vehicle prototypes which were outfitted with Arduinos. They participated in a Connected Vehicle Derby at ICAT. Students took turns driving the cars in the Cube while partners controlled the connected sensor systems.

Becca Rainey, Belview Elementary, Montgomery County Public Schools
Terri Vangelos, Belview Elementary, Montgomery County Public Schools
Ryan / Macie / Emiliee / Richard / Taylor / Joey / Brady / Joe / Adam / Rigil / Ben / Eva / Harbal / Tim / Rishi
LOBBIES, continued

**NuSpark**

*NuSpark is a unique space for creating, collaborating and working to build big ideas into new ventures. Three current teams, Riff Digital, Hot Pods, and Formy, will present their work.*

- Sherry Walker, NuSpark
- Drew Meeks, Riff Digital, NuSpark
- Andriy Katko, Riff Digital, NuSpark
- Dennis Lysenko, Riff Digital, NuSpark
- Lukas Luzovski, Riff Digital, NuSpark
- Tony Lang, Riff Digital, NuSpark
- Jessica Blumberg, Riff Digital, NuSpark
- Ari Horowitz, Hot Pods, NuSpark
- Troy Velasquez, Hot Pods, NuSpark
- Richard "Sky" Vaniderstine, Formy, NuSpark
- Tyler Campbell, Formy, NuSpark
- Bruce Alylff, Formy, NuSpark
- Walker Sensabaugh, Formy, NuSpark
- Jared Deane, Formy, NuSpark
- Giancarlo DiBiase, Formy, NuSpark

**Deciphering Music DNA: Translating Music Pedagogy’s Deep Insights with Novel Computing Paradigms**

*Inspired by bioinformatics, which leverages computing to decipher living DNA, we decipher music DNA, its performance complexity. An objective measure of a score’s complexity benefits educators and performers alike. We compute music DNA out of the complexity of notes, intervals, tempo, and dynamics.*

- Ethan Holder, Computer Science
- Eli Tilevich, Computer Science
- Amy Gillick, Music
- R. Ben Knapp, ICAT

**Virtual Town Square**

*Being able to debate, consider evidence, reflect, and make informed decisions is a foundation of civic life in democratic societies. VTS is a prototype local news aggregation website developed to facilitate civic engagement in a way that should lead to a replicable model for other US communities.*

- Andrea Kavanaugh, Computer Science
- Manuel Perez-Quinones, Computer Science

**Design, Build, and Learn: Additive Manufacturing/3D Printing Research at the Virginia Tech DREAMS Lab**

*The Virginia Tech DREAMS Lab is dedicated to changing the way that we design, build, and learn with Additive Manufacturing (a.k.a. 3D Printing). We are excited to present our latest work in color printing, 3D-printable CT scans, printed remote-controlled vehicles, and open-access 3D printing!*

- Nicholas Meisel, Mechanical Engineering
- Callie Zawaski, Mechanical Engineering
- Christopher Williams, Mechanical Engineering, Engineering Education

**Cl-Spy: Designing a Mobile Augmented Reality System for Scaffolding Historical Inquiry Learning**

*Cl-Spy is a mobile augmented reality system that explicitly teaches inquiry strategies for analyzing historical sources and engages students to practice in an augmented real-world context.*

- Gurjot Singh, Computer Science
- Doug A. Bowman, Computer Science
- David Hicks, Education
- David Cline, History
- J. Todd Ogle, Technology-enhanced Learning and Online Strategies
- Aaron Johnson, Education
- Rosemary Zlokas, History
- Thomas Tucker, School of Visual Arts
- Eric D. Ragan, Oak Ridge National Laboratory

**Digital Storytelling using Photoshop**

*Using Adobe software provided to Montgomery County Public Schools through the White House’s ConnectED initiative, students wrote aspirational biographies and created a slide show movie to share their stories digitally.*

- Terri Vangelos, Price’s Fork Elementary and Belview Elementary, Montgomery County Public Schools
- Various students from Belview Elementary School and Price’s Fork Elementary School
How do you describe texture?
Have you ever tried describing a particular fabric to someone? Or did you ever shop online for clothing and tried to figure out what kind of fabric was being used? Come check out our fabrics, see how your descriptors compare to others, and add your description to my growing database.

Anamary Leal, Computer Science, Center for Human-Computer Interaction (CHCI)
Steve Harrison, Computer Science, CHCI

ICAT-CHP Mobile Makerspace
The Mobile Makerspace is a prototype after school program for kids in low-income housing communities that provides time, space and permission for them to explore the sciences, the arts, and design, and develop their creativity and critical thinking skills through personally meaningful projects.

Karl Bitikofer, ICAT, AmeriCorps VISTA
Deja / Beth / KK / Olivia / Hadden / Jacquelyn, Mobile Makerspace
Kelsey Rayburn, Resident Services, Community Housing Partners (CHP)
Phyllis Newbill, ICAT
Walker Sensabaugh, Electrical & Computer Engineering (ECE)
Timothy Abresch, ECE
Yohan Cho, ECE
Keith Kreiner, ECE
Ahmed Elnahhas, General Engineering

Living Painting
Watch a painting come alive, as it reacts to your every move. See the consequences of your influence as the painting changes real-time before your very eyes.

Brannon Mason, Computer Science
Petey Mainardi, Computer Science

Mosaic Me
Visit our booth and take a selfie. Then, your selfie will be added to a large screen with pictures of the faces of all the other people who have visited our project. The pictures will appear on the screen in random patterns. Guess where your picture will appear next.

Cate Bissell, Computer Science
Corey Jones, Computer Science

Legere
Classic novels, remastered for consumption by a modern audience.

Timothy Meyer, Computer Science
Alex Lamar, Computer Science
Loran Steinberger, Computer Science

Student projects with NASA Johnson Space Center
These are semester-long design projects looking at how wearable technology and smart fabrics can be used in space flight. The projects were supervised by NASA personnel at Johnson Space Center. This project was also supported by the Virginia Space Grant Consortium.

Tom Martin, Electrical and Computer Engineering (ECE) / ICAT
Paola Zellner, School of Architecture + Design
Ayesha Arzbegi, ECE
Divya Bala, ECE
Shantanab Debchoudhury, ECE
Daniel Fawbush, School of Architecture + Design
Aakruthi Gopisetty, ECE
Jill Jackson, School of Architecture + Design
Namrata Kedia, ECE
Michelle Murgia, School of Architecture + Design
Tarun Patil, ECE
Amanda Phung, School of Architecture + Design
Prerana Rane, ECE
Kyle Stewart, School of Architecture + Design
LOBBIES, continued

**Novel Laser Musical Instrument**
High school students from across the state brought projects to ICAT’s Virginia Governor’s School Maker Conference. Exemplary projects were invited to ICAT Day.

William Brayshaw, New Horizons Governor’s School (NHGS), Hampton, Virginia
Tom Hawkins, NHGS
Louis Rizzi, NHGS
Austin Meier, NHGS

**Thermoelectric Charging Belt**
High school students from across the state brought projects to ICAT’s Virginia Governor’s School Maker Conference. Exemplary projects were invited to ICAT Day.

Kaela Frazier, New Horizons Governor’s School (NHGS), Hampton, Virginia
Caroline Markley, NHGS
Julia Smith, NHGS

**BusBuddy: An iOS Application to Track the Location of School Buses**
High school students from across the state brought projects to ICAT’s Virginia Governor’s School Maker Conference. Exemplary projects were invited to ICAT Day.

Miriam Buscher, New Horizons Governor’s School (NHGS), Hampton
Shannon King, NHGS
Audrey Gumbert, NHGS
Kevin Brown, NHGS
Tanya Hoatson, NHGS

**Four Four Beat Project 3D Virtual HipHopEd Archive**
The Four Four Beat Project 3D Virtual HipHopEd Archive curates Hip Hop artifacts and fuses them with technology and pedagogy to develop the artistic appreciation of youth and youth influencers, while using the artifacts as tools to enhance their STEM and social justice capacities.

Joycelyn Wilson, Learning Sciences and Technologies
Thomas Tucker, Creative Technologies

**Robotic Material Transformations**
The artifacts presented here emerge from the newly established CDR-Design Robotics Studio which leverages digital and robotic fabrication technologies to expanded on established pedagogical constructs centered about making while positioning technology as a vehicle for exploration and collaboration.

Nathan King, School of Architecture + Design
Chip Clark, School of Architecture + Design
Robert Dunay, School of Architecture + Design
Laura Escobar, School of Architecture + Design
Ryan Hawkins, School of Architecture + Design
Brian Kato, School of Architecture + Design
David Kolodziej, School of Architecture + Design
Aaron Payne, School of Architecture + Design
Stephen Perry, School of Architecture + Design
Hannah Utter, School of Architecture + Design
Dan Ventresca, School of Architecture + Design

**The Future of Funeral Home Showrooms: A Green Alternative to the Traditional Funeral**
The future of the funeral home showroom should present options to families who want green, safe, and inspiring “burials” for their loved ones. Our project gives a prototype for the future of the showroom, including options like alkaline hydrolysis, promession, and the infinity burial system.

Chelsea Ford, Science, Technology, and Society (STS)
Ashley Whitman, English
Kristen Koopman, STS
Clifford Wilke, STS

**Colisten**
Colisten connects friends and enables them to listen to music together.

Michael Stewart, Computer Science
Deborah Tatar, Computer Science
OUTSIDE

Underwater Rover Design Challenge
Integrative STEM Educators, from the VT School of Education, will host a live underwater rover build event. Each ICAT Day participant group will construct and test their rover in timed sequences, judging effectiveness by ability to collect challenge rings.

Jeremy Ernst, School of Education
Sharon Bowers, School of Education
Songze Li, School of Education
Barry Potter, School of Education

Light Field
A field of lights activated by you. See the Light Field in action on the front lawn of the Moss Arts Center between 6 pm and midnight.

Habeeb Muhammad, Architecture, Design for America at Virginia Tech
Callie Gobes, Interior Design, Design for America at Virginia Tech
Anna Kulbaski, Electrical Engineering, Design for America at Virginia Tech
Anna Mumma, Mechanical Engineering, Design for America at Virginia Tech
Lan Le, Electrical Engineering, Design for America at Virginia Tech

Sign Shack
The Sign Shack was designed with the assistance of computer scripting to form curved surfaces with flat panels. The script helped students maximize the amount of material from each sign and made the curvilinear design design possible. All panels were designed digitally and fabricated manually.

Chris Pritchett, Architecture
Alyssa Brink, Architecture
Brian Allen, Architecture
Bryanna Dering, Architecture
Erin Kuschner, Architecture
Greg Whiting, Architecture
Kate Brown, Architecture
Lara Fada, Architecture
Leira Carreon, Architecture
Logan Zook, Architecture
Lour Totah, Architecture
Miles Navid-Oster, Architecture
Shanice Trimbo, Architecture
Tyler Peterson, Architecture
Shannon Cain, Architecture
Victoria D’Antone, Architecture
Sean O’Mara, Architecture
Nicole Southard, Architecture
Meghan Kolcum, Architecture
EXPERIENCE STUDIO
First floor, beside the Cube

An Interactive Video Fun House
A lively installation of interactive video pieces by students in the School of Visual Arts.

Carol Burch-Brown, School of Visual Arts (SOVA)
Joan Grossman, Visiting Artist
Hans Gindlesberger, SOVA
Devon Barkley, SOVA
Eve Cooper, SOVA
Lucas Freeman, SOVA
Stuart Hill, SOVA
Mylan Le, SOVA
Liz Liguori, SOVA
Xindi Liu, SOVA
Huy Ngo, SOVA
Tamar Petersen, SOVA
Ryan Rosenbaum, SOVA
Kelly Schrader, SOVA
Michelle Vernon, SOVA
Grace Yi, SOVA
Brennan Young, SOVA
Celeste Zabowski, SOVA
Seth McDuffie, SOVA
Kelsey Lucas, SOVA
Jenny Kelm, SOVA
Bekah Russell, SOVA
Shannon Carlton, SOVA
Kat O'Donnell, SOVA

PERFORM STUDIO
First floor, end of Grand Lobby

The Beat’s Interior
The Beat’s Interior is an audiovisual projection-mapping project. It explores the relationship between architecture, hip-hop music and narrative by immersing the user into an interactive constructed form.

Tamar Petersen, School of Visual Arts (SOVA), Creative Technologies
Thomas Tucker, SOVA
Simone Paterson, SOVA
Charles Nichols, Music
Carol Burch-Brown, SOVA
JP Verheul, Freelance Music Producer

Haptic Reactive
Haptic Reactive is a next level experience of music absorption. Using tactile transducers, listeners can not only listen to music but also feel music. We are elevating the standards of what it means to hear.

David Mills, Creative Technologies
Jacob Courington, Biochemistry
LEARNING STUDIOS
Second floor, Rooms 251, 253A, 253B

Light is Loud
A visual display of sound through a reactive LED light suit.
Evan Lobeto, Computer Science
Artur Aguiar, Computer Science
Bryan Malyn, Computer Science

A Strange Game
Most video games have only one way to win, but many ways to lose. Every player is trying to win, but losing is where we differentiate ourselves. A Strange Game documents the myriad virtual deaths that make up the embattled path to victory and puts them on display for all to see and learn from.
Jesse Janowiak, Human Centered Design
Brandon Gilliam, Computer Science
Joe Wileman, Computer Science

Mirror Worlds: A Living Lab for Asynchronous and Synchronous Investigation of Virtual and Real Environments
Mirror Worlds is an NSF-funded project to create a computing infrastructure that inspires collaboration and research between physical and virtual environments. It will allow people to communicate with one another regardless of whether they are visiting a space in person or online.
Christina Lidwin, Creative Technologies
Benjamin Knapp, ICAT
Nicholas Polys, Center for Human/Computer Interaction
James Ivory, Communication
Ivica Bukvic, Music
Doug Bowman, Center for Human-Computer Interaction
Thomas Tucker, School of Visual Arts
Dane Webster, School of Visual Arts
Tanner Upthegrove, ICAT
Jackie Meese, Technology-enhanced Learning and Online Strategies
Christina Lidwin, School of Visual Arts
Abby Garrett, Mechanical Engineering
Jenil Patel, Computer Engineering
Kaushik Rangarajan, Computer Engineering
Nuo Ma, Electrical Engineering
Zawad Chowdhury, Computer Engineering
Matthew Bock, Computer Science
Nathan Waggoner, Computer Science
Rohan Gaur, Computer Science
Philip Daniel, Computer Science
Lucas Freeman, School of Visual Arts
Kyra Brower, Architecture
Lauren Fabin, School of Visual Arts
Taylor Mattison, Computer Science
Amanda Woolson, Computer Engineering