



IIHCC

Solving problems that exist at, and along, the interdependencies between humans, community, and infrastructure to ultimately improve quality of life.

Vol. 3 No. 6 March 2021

What's Inside

IIHCC Faculty Spotlight: Aaron Betsky and Kevin Heaslip

Transportation Researchers Study Automated Driving Systems and Public Safety

[IIHCC Forum Series #1: Future of Work](#)

Call for Proposals for SEED Grants Focused on Global Change

ICAT Call for Projects for Third ACCelerate Festival

Calendar

05/03/21 | ICAT Creativity and Innovation Day

05/07/21 | ICAT Call for Projects for Third Accelerate Festival

06/18/21 | Call for Proposals for SEED Grants Focused on Global Change

If you have any questions, comments, or concerns, please contact us:

IIHCC Director: Aki Ishida

aishida@vt.edu

Project Analyst: Jeremy Tidman

jntidman@vt.edu

For more information about IIHCC, [visit our website](#)

IIHCC FACULTY SPOTLIGHT



Aaron Betsky

Director

School of Architecture and Design

M.Arch, Architecture | *Yale School of Architecture, Connecticut*
BA, History, the Arts and Letters | *Yale College, Connecticut*

Email abetsky@vt.edu

Can you summarize your work briefly?

I am preparing a couple of projects here at Virginia Tech that I hope will be relevant: one is that I have had a long-time interest in sprawl and in particular in taking urban sprawl seriously, which means studying it with some care so that we can understand how it works. A related project is a study of the Roanoke and New River Valleys that starts from the geology, the history, and the architecture of the area to develop ways of designing in and for this setting, specifically in Blacksburg. I am also working on a project to analyze the relationship between architecture, agriculture, design, to see how we are defined by the landscape of both production and consumption of which we are a part.

How do you see your work contributing to the goals and vision of IIHCC?

One of the things that attracted me to Virginia Tech was the presence of the Destination Areas, which are meant to be the realization of “Beyond Boundaries.” What is of special interest to me is that we understand technology as being human-centered. Technology should be tools that allow us as human beings to establish a closer and more active relationship with both other human beings and the environment around us. So, anything that we can do through art and design to rescue technology from the notion that it is just a means to an end and instead recognize that it has poetic potential and can help us create a more sustainable, beautiful, and more socially open environment.

What other areas outside of your discipline would you consider for future research and proposal work?

The projects I am engaged with are very closely aligned with other work that is going on at Virginia Tech. Beyond that, one of the reasons I came to Virginia Tech is because it is a land-grant university, which means that it both serves its communities and has a direct involvement with agriculture and therefore with food. To that end, I have put some feelers out to other departments to work in an interdisciplinary manner on these projects. Of course, a lot of what I am also talking about is art, and the closeness of the School of Visual Arts and the School of Public and International Affairs in the College of Architecture and Urban Studies is very important to me as well. Finally, I am very interested in the Material Cultures department here, as my way of thinking is very much formed by my exposure to Material Culture Studies.

Reuse and
Reimagination

Better Sprawl

Wellness Design

Food and Form

Open Architecture

IHCC FACULTY SPOTLIGHT



Kevin Heaslip

Professor

Civil and Environmental Engineering

Commonwealth Cyber Initiative Fellow

Consolidated Analysis Centers International Inc. Faculty Fellow

PhD, Civil and Environmental Engineering | *University of Massachusetts Amherst, Massachusetts*

MS, Civil and Environmental Engineering | *Virginia Tech, Virginia*

BS, Civil and Environmental Engineering | *Virginia Tech, Virginia*

Email kheaslip@vt.edu

Can you summarize your work briefly?

I am looking at critical infrastructure and transportation systems of the future, and what we are seeing is that cyber security is a huge issue with these systems. So, the interconnection between future infrastructure, future transportation, and cyber security is what I focus on.

How do you see your work contributing to the goals and vision of IHCC?

IHCC is a great opportunity to build connections with people. All my research is interdisciplinary, and the challenges that we have in this area cannot be solved by one person. To that end, building the connections, finding people in electric engineering, finding people in policy, etc. that can interact with the civil infrastructure is important.

Taking the strengths from different areas and using that to build innovation is where we have seen massive benefits from this program, and certainly from the teams we have built over the years. This IHCC vision provides the opportunity for us to come together to make progress, and without it we cannot move forward.

What other areas outside of your discipline would you consider for future research and proposal work?

I think that the area of SMART societies opens so many vectors, whether it is the humanities or engineering, or the notion of societies even expands to agriculture as there are farmers who use totally automated systems to harvest their crops. So really, this whole notion of moving from manually operated systems to automated systems, and as we integrate that into society there are huge challenges from a societal standpoint and an engineering standpoint as well. I think that this is the next frontier, as none of us have all of the answers or ability to do all of the necessary research to answer all of these questions, so putting together good teams and taking people's expertise from different areas and putting them together is the only possible solution. I do not think that we have learned everything that we need to know yet, but considering where we were when we started this process, we are doing much better now. From my perspective, I see the role of the senior faculty as to build the next generation of researchers, whether it is the students or the younger faculty. If we do not take care of the people that come after us, then we are not going to be leaving the world nor the society in which they live in a good place.

Transportation
Engineering

Transportation
Technology

Cybersecurity

Critical
Infrastructure

Infrastructure
Resilience

TRANSPORTATION RESEARCHERS STUDY AUTOMATED DRIVING SYSTEMS AND PUBLIC SAFETY

Industries, institutions, companies, and even individuals across the globe are turning to technology, artificial intelligence, and automated systems to lessen the burden of work on humankind. Emergency services and first responders are not excluded from the impact that technology is having on the work people do every day, and Dr. Tammy Trimble and Dr. Travis Terry, both Senior Research Associates at the Virginia Tech Transportation Institute (VTI), recognize the value of their inclusion.

Over the last two years, Trimble and Terry have worked diligently with first responders, research colleagues, and corporate sponsors through the Crash Avoidance Metric Partners LLC (CAMP) to investigate this important connection. The goal of their research was to determine the types of interactions that first responders, specifically law

enforcement, fire/rescue, and EMS have with civilian vehicles currently. From there, they sought to then consider those interactions from a safety perspective in the lens of automated driving system (ADS) equipped vehicles, and specifically how first responders' lives would be impacted.

Immediately the transdisciplinary value of this project can be detected, as it goes beyond a technical analysis of either the steps and roles of emergency services personnel or of ADS equipped vehicles. Trimble and Terry have combined their expertise in qualitative analysis and human factors engineering respectively to create a research environment that is cohesive and inclusive. Multiple perspectives from the onset of the project add a diverse portfolio of benefits to the research team, but also offer an increased range of benefits to a wide array of benefactors.

“A jumping off point for the entire industry”



The team's targeted outcome was a list of needs and wants from the first responders and ADS developers for future development. Thus, not only will first responders benefit in the long term by future improvements to ADS equipped vehicles, but CAMP and the developers of those systems and vehicles will be able to utilize the findings to improve their technical solutions. The findings of this project have been featured as the primary source for the Society of Automotive Engineers (SAE) Best Practices for Automated Vehicles. SAE has even leveraged many of the terms that were coined in this research as a new industry standard of terminology.

Terry notes that these SAE standards “will be used as a jumping off point for the entire industry,” which speaks to the lasting implications of the work done by this team. In the theme of the enduring impact of this work, Trimble emphasizes the importance of “validating with the first responders to make sure that we really understand their interactions appropriately, because otherwise every study that we do that is built on this one would be built on false assumptions.”

The work done by this remarkable team serves as a trailblazer for the ways that disciplines can come together to benefit the future of our ever increasingly technological world.

Additionally, however, this project does a great deal more than that. Through their combination of qualitative analysis and engineering systems, Trimble and Terry have broken ground on a method of performing research that serves to influence the way that public facing projects are designed entirely. It is this kind of initiative that will set the future of our world on a course to sustainable and enduring social change.



Dr. Tammy Trimble, Senior Research Associate at VTII



Dr. Travis Terry, Senior Research Associate at VTII

IIHCC FORUM SERIES #1: FUTURE OF WORK

IIHCC is pleased to launch the IIHCC Forum, a series of panel discussions in which scholars from both inside and outside of Virginia Tech engage in conversations about human-centered, equitable approaches to digital technologies, particularly AI, infrastructure, social justice, sustainability, design, and the environment.

The first online panel in the series took place on Monday, March 1 from noon to 1pm with Dr. Suqin Ge of Economics and Dr. Ralph Hall of Urban Affairs and Planning. Dr. Sylvester Johnson, Founding director of the Virginia Tech Center for Humanities and a member of the IIHCC stakeholder

committee, moderated the panel. The recording is now available online [here](#).

The panel topic was “Future of Work”. How is the digital economy affecting present and future labor opportunities? Is AI replacing more jobs than it creates? Are there gender disparities in the impact of automation? What is the relationship between economic growth and real wages? Should universal basic income play a role? Dr. Suqin Ge and Dr. Ralph Hall examined these and other important topics as they explained how human-centered approaches to intelligent infrastructure can help guide us toward more positive outcomes in the future of work.



Moderator

Dr. Sylvester Johnson

Founding director of the Virginia
Tech Center for Humanities



Panelist

Dr. Ralph Hall

Associate Professor, Urban Affairs
and Planning



Panelist

Dr. Suqin Ge

Associate Professor, Economics

CALL FOR PROPOSALS FOR SEED GRANTS FOCUSED ON GLOBAL CHANGE

The [Global Change Center \(GCC\)](#) and the Institute for Society, Culture and Environment (ISCE) are accepting letters of intent for two interdisciplinary seed grant opportunities, both focused on global change. The first opportunity seeks interdisciplinary research projects focused on emerging global change issues that have regional significance and take advantage of unique combinations of expertise at Virginia Tech. The second opportunity seeks to fund projects led by GCC affiliated faculty that address social aspects of major global change issues, such as disease, climate change or pollution. The project should leverage and integrate a unique combination of social science expertise with biophysical and/or engineering expertise at VT, and have high potential to leverage external resources. Click [here](#) for the full RFA for both opportunities.

Deadline: May 21, 2021 (Letter of Intent); June 18, 2021 (Proposals)



Photograph: Michael Folta

ICAT CALL FOR PROJECTS FOR THIRD ACCELERATE FESTIVAL

On the heels of two successful festivals in 2017 and 2019 in Washington, D.C., the Institute for Creativity, Arts and Technology (ICAT) in partnership with the Lemelson Center for the Study of Invention and Innovation are seeking exemplary transdisciplinary projects to represent Virginia Tech at the next ACCelerate: ACC Smithsonian Creativity and Innovation Festival in the spring of 2022 at the Smithsonian National Museum of American History.

Projects can be submitted through an [online survey](#).

Submissions will be evaluated based on completion/readiness and potential to actively engage the festival audience.

The deadline for project consideration for the festival is May 7, 2021. Two Virginia Tech projects will be selected for festival participation. Notifications of final acceptance for the festival will be in July 2021.

The first ACCelerate festival was held on Oct. 13-15, 2017 and drew a crowd of 36,000 participants. The second ACCelerate festival was held on April 5-7, 2019 and drew a crowd of 63,000. Find more information about previous festivals [online](#).

For more information, contact Holly Williams at hmccall@vt.edu or 540-231-0802.