



IEEE GHTC 2023

13th IEEE Global Humanitarian Technology
Conference



VILLANOVA
UNIVERSITY

October 12th-14th, 2023
Villanova Inn, PA, USA

PROGRAM GUIDE

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WELCOMES

Welcome from the Conference Chair



It is my pleasure to welcome you to the 2023 IEEE Global Humanitarian Technology Conference (GHTC). GHTC is the flagship annual conference that brings together academics, for-profit and non-profit organizations, field practitioners, and students to demonstrate how they are addressing the UN Sustainable Development Goals using technology to meet the needs of under-served communities around the world.

The conference program includes two pre-conference workshops presented by Mathworks and Elsevier. Mathworks will show how Matlab tools may be used for humanitarian applications and the Elsevier workshop will illustrate the way their tools may be used for doing research related to the UN sustainable development goals.

We have several keynote speakers, plenary sessions, panels, and presentations by colleagues from all over the world. The opening day plenary session will include two speakers: Mr. Varun Loomba, co-founder of the Global Himalayan Expedition, Mr. Mou Riiny, Founder and CEO of Sungate Solar Solutions, a solar business based in South Sudan. We have panels on Connectivity, Young Professionals, and the IEEE Humanitarian organizations, including IEEE HTB, IEEE Smart Village, and IEEE EPICS. The keynote speaker at the Conference Gala Dinner is Dr. Krista Donaldson, the Director of Innovation to Impact at Stanford University's Byers Center for Biodesign, where her work focuses on ensuring design tools and processes are broadly applicable across global markets. We also look forward to recognizing this year's winner of the IEEE Norbert Wiener Award from the Social Implications of Technology Society (SSIT) and the winners of the Best Student Paper Awards (also sponsored by IEEE SSIT).

We are delighted and honored to host this 13th edition of the conference at Villanova University, the first time it is being held on the East coast! Located about 12 miles west of Philadelphia, Villanova University is conveniently located about a 20-minute train ride from the City of Philadelphia and about 30 minutes' drive from Philadelphia International Airport. The City of Philadelphia offers many cultural experiences including excellent restaurants, the famous Philadelphia Museum of Art, where you can take a picture of the Rocky statue. Philadelphia was the first capital of the United States and is where Independence Hall (where the US Constitution and the Declaration of Independence were written) and the Liberty Bell are located. South Philadelphia is also the home of several prominent sporting teams including the Phillies baseball team, the Eagles football team, the Flyers ice hockey team, the 76ers basketball team, and the Union MLS soccer team. The famous King of Prussia Mall, the second largest mall in the US, and Valley Forge National Park, are also located close to Villanova University.

I want to thank everyone who has made this year's IEEE GHTC conference possible, including:

- Members of the Technical Committee
- Track chairs
- Session chairs
- Logistics and local arrangements coordinators
- Publicity chair
- Publications chair
- Authors of papers and posters

I also want to thank the financial sponsors and patrons who have supported this year's conference.

We are grateful that you have taken the time to attend the conference in person or remotely. We hope that you will engage with your colleagues, learn from each other, forge new partnerships, and take advantage of the many social opportunities offered by Philadelphia and its surrounding areas.

Best wishes for a fruitful and enjoyable 2023 IEEE Global Humanitarian Technology Conference!

Dr. Pritpal ("Pali") Singh

Chair, 2023 IEEE Global Humanitarian Technology Conference

Welcome from the Technical Program Chairs

Welcome to the *13th Annual IEEE Global Humanitarian Technology Conference (GHTC)* in Philadelphia. Our first East Coast GHTC promises to be an exciting conference with some new twists from years past. GHTC addresses the need to bring together researchers and practitioners to share practical technology-enabled solutions that address the needs of underserved populations worldwide.

The response to the call for papers was very positive. We received a total of 152 submissions of full papers, short papers, and oral-only presentations that represent earlier stage projects. 84 of the original submissions have been accepted, resulting in an array of exciting presentations from 17 countries that broadly cover the UN Sustainable Goals that underly the conference. We personally read every paper and are confident that all attendees will leave the conference inspired to create more impact. This year, presentations are spread across only 10 technical sessions, allowing attendees to see more of the papers and have more time to interact with presenters.

This year we are using a new process to organize each of the technical sessions with the hope that it will promote even greater discussion and future collaborations. The technical paper presentations are complemented by an array of keynotes, plenary presentations, and panel discussions on a variety of topics.

An exciting new addition this year is the GHTC Souk. A marketplace for everyone to present impactful ideas whether they are just a notion, or something fully implemented. We know that everyone will find ideas, collaborators, and connections to cherish in a fun filled and informal atmosphere.

We are very thankful to all the track chairs and paper reviewers for their thoughtful evaluations of the submissions. The dedicated help and hard work of these individuals helped us to put together a strong technical program for the conference. We would in also like to thank the entire conference planning committee for their invaluable leadership and patience with two new program chairs during the planning of the conference. Everyone's hard work and dedication to creating the best possible event should have all attendees excited.

We welcome you to Philadelphia and hope that you will enjoy the conference program and the technical discussions with other researchers and practitioners. We also look forward to your continued participation in future GHTC conferences.



Toby Cumberbatch and John Gersbenson

IEEE GHTC 2023 Technical Program Committee Chairs

CONFERENCE COMMITTEES

GHTC 2023 Organizing Committee

Position Name

Chair *Pritpal Singh*

Vice-Chair *Khanjan Mehta*

Finance Chair / Treasurer *Baw Chg*

Technical Program Vice Chair *John Gersbenson*

Technical Program Vice Chair *Toby Cumberbatch*

Tutorials/Workshops *Pritpal Singh*

Sponsorship Chair *Bill Whitney*

Sponsors Committee *Mario Aleman*

Registration Chair *Scott Tamashiro*

Publicity *Javier Urquiza*

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IEEE-SA *Rudi Schubert*

IEEE MTT-S *Robert Caverly*

Philadelphia Section *Peter Silverberg*

IEEE Smart Village *Pritpal Singh*

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Advisor, R6 *Mike Andrews*

Advisor, R6 Past-Director *Tim Lee*

Advisor, R6 Director *Kathy Herring Hayashi*

Advisor, R6 Director-elect *Joseph Wei*

Advisor *Daniel Lottis*

Advisor *Ed Aoki*

Advisor *Ed Perkins*

Advisor *Lewis Terman*

Program Committee

Position Name

Chair *Pritpal Singh*
Vice-Chair *Khanjan Mehta*
Finance Chair / Treasurer *Baw Chg*
Technical Program Vice Chair *John Gersbenson*
Technical Program Vice Chair *Toby Cumberbatch*
Tutorials/Workshops *Pritpal Singh*

Track Chairs

Affordable & Clean Energy *Barry Rand, Princeton University*
Agriculture & Food Security *Adil Usman, NREL*
Clean Water & Sanitation *Katherine Alfredo, University of Southern Florida*
Connectivity & Communication in Support of
Development *Robert Caverly*
Disaster Mitigation, Preparedness, Response &
Recovery *Krista Liguori, Virginia Tech*
Good Health and Well Being *Steven Suffian, Watt Carbon*
Quality Education *Musi Lopez, Universidad Iberoamericana, Puebla*
Other Related United Nations Sustainable
Development Goals *Silvia Figueira, Santa Clara University, USA*
Technology Impacts on Societal Evolution *Lonny Grafman, Cal Poly Humbolt*
Henry Louie, University of Seattle
Technologies that promote gender equality and
the empowerment of women and girls (SDG5) *Marta Chaltu, Hayili Africa, Kenya*

Reviewers



<i>Name</i>	<i>Affiliation</i>	<i>Country</i>
<i>Katherine Alfredo</i>	University of South Florida	USA
<i>Aloysius Wilfred Raj Arokiaraj</i>	Lingnan University	Hong Kong
<i>Bhaskar Bhowmick</i>	Indian Institute of Technology Kharagpur	India
<i>Carlos Calderon Cordova</i>	Universidad Tecnica Particular de Loja	Ecuador
<i>Robert Caverly</i>	Villanova University	USA
<i>Toby J Cumberbatch</i>	The Cooper Union for the Advacement of Science and Art	USA
<i>Rahmad Dawood</i>	Universitas Syiah Kuala	Indonesia
<i>Udhaya Kumar Dayalan</i>	Trane Technologies	USA
<i>Dianna Deeney</i>		USA
<i>Sreeram Dhurjaty</i>	Dhurjaty Electronics Consulting LLC	USA
<i>Xavier N Fernando</i>	Toronto Metropolitan University	Canada
<i>Silvia Figueira</i>	Santa Clara University	USA
<i>Anna Förster</i>	ComNets, University of Bremen	Germany
<i>Kenneth Foster</i>	Univ of PA	USA
<i>Agyei Fosu</i>	Walter Sisulu University	South Africa
<i>John Gersbenson</i>	The Pennsylvania State University	USA
<i>Lonny Grafman</i>	Cal Poly Humboldt	USA
<i>Mayank Kejriwal</i>	University of Southern California	USA
<i>Albert Ko</i>	Lingnan University	USA
<i>Satish Kumar</i>	Apple Inc	USA
<i>Krista M Liguori</i>	Lehigh University	Mexico
<i>Maria Guadalupe Lopez Molina</i>	Universidad Iberoamericana Puebla	USA
<i>Henry Louie</i>	Seattle University	USA
<i>Pietro Manzoni</i>	Universitat Politècnica de València	Spain
<i>Chaltu A Marta</i>	Africon Energy	Kenya
<i>Cesar Antonio Martin</i>	Escuela Superior Politècnica del Litoral	Ecuador
<i>Joseph A Menicucci, Jr.</i>	Lehigh University	USA
<i>Robert Nutter</i>	IEEE PES SES DC Working Group	USA
<i>Hayden Ossinger</i>	Lehigh University	USA
<i>Edward G Perkins</i>	Self	USA
<i>Barry P. Rand</i>	Princeton University	USA
<i>Alan Sanjay Rocha</i>	National Institute of Technical Teachers Training and Research Bhopal Goa Extension Centre	India
<i>Pritpal Singh</i>	Villanova University	USA
<i>Praveen Sreeramagiri</i>	Intel	USA
<i>Javier Urquiza</i>	Villanova University	USA
<i>Kenji Ushimaru</i>	Villanova University	USA



Adil Usman
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Global Health Labs	USA

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 <p>Come celebrate the IEEE Foundation's 50th Anniversary and learn more about the IEEE humanitarian programs that are supported by our donors. As IEEE's philanthropic partner, IEEE and the IEEE Foundation, along with our volunteers, look to continue our collaboration to deliver opportunities, innovation and impact for the next 50 years.</p>	

Sponsors

SPONSORS		
		
		
		
 <p>Our vision is to serve the U.S. IEEE member by being the technical professional’s best resource for achieving lifelong career vitality and by providing an effective voice on policies that promote U.S. prosperity.</p>		 <p>IEEE Standards Association (IEEE SA) provides a neutral and open environment that empowers innovators – across borders and disciplines – to develop standards and solutions that shape and improve technology for the benefit of industry, society and humanity.</p>

VENUE

The 13th IEEE Global Humanitarian Technology Conference (IEEE GHTC 2023) will take place from October 11th to October 14th, 2023, in person in Villanova, Pennsylvania, USA at the **Inn at Villanova University**, Rooms (#114,115,119 and Ballroom).

The Inn at Villanova is high-end conference hotel is 2 miles from Villanova University and 3 miles from Chanticleer Garden. It's a minutes' walk from a tram station. The main entrance is located at 601 County Line Rd, Wayne, PA 19087.



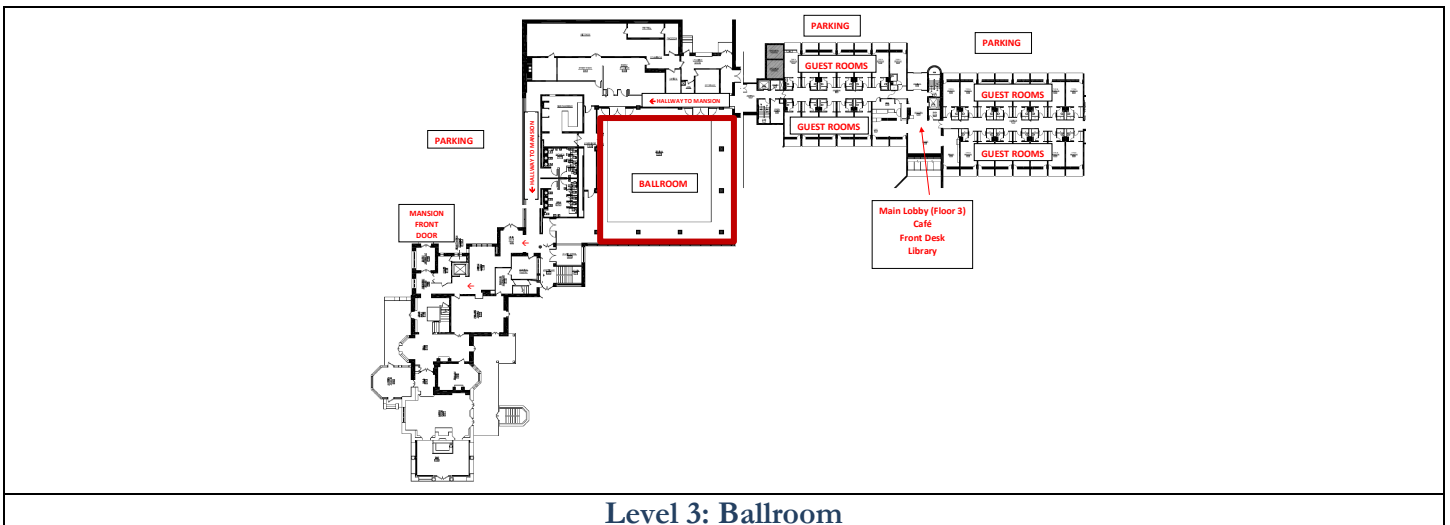
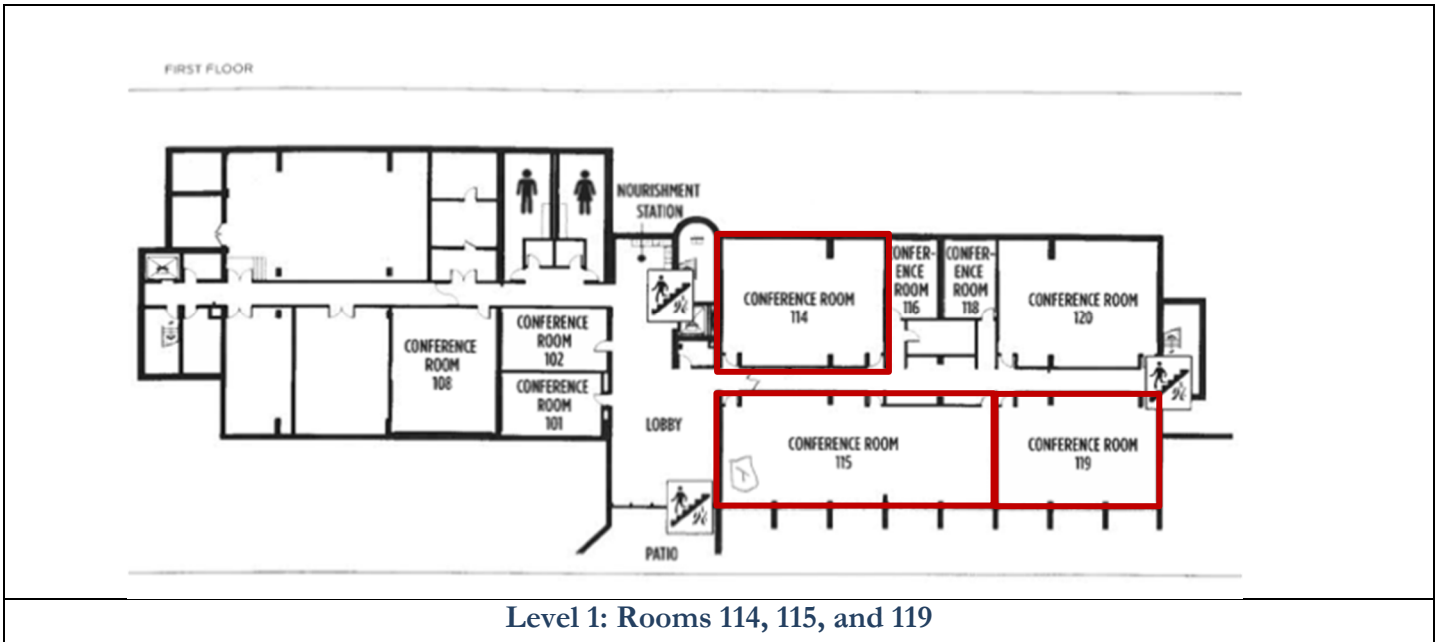
See the Inn at Villanova University Website (<https://theinnatvillanova.com> | <https://theinnatvillanova.com/about-us/our-location>)

The Inn at Villanova is in a safe and suburban area of Villanova. It is less than 2 miles from Villanova's campus, and 18 miles from Philadelphia City. The Inn at Villanova is within 22.3 miles through I-46N, 18.7 miles through PA-3 W/West Chester Pike & I-46N, and 24.5 miles though I-46 W.

Rooms

GHTC is using the following rooms:

- Level 1: 114, 115, and 119
- Level 3: Ballroom



SCHEDULE

GHTC 2023 Program Schedule

Wednesday, 11-Oct-23 (Pre-conference)			
2:30 PM	Workshop: A Roadmap for Geospatial Analysis - Room 119		
4:00 PM	Workshop: Exploring Challenges in Education and Research When Advancing Technology for Humanitarian Efforts - Room 119		
5:00-9:00 PM	Welcome: Evening souk (marketplace/bazaar) with light food and cash bar		
Thursday, 12-Oct-23 (Conference Day 1)			
8:00-8:30 AM	Breakfast with Networking - ballroom		
8:30-10:00 AM	Opening remarks and plenary talks - ballroom Speakers: Jordan Ermilio, Varun Loomba, and Mou Riiny		
10:00-10:30 AM	Break: Time to interact with speakers and catch up with old friends		
10:30AM-12:30PM	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> Session 1A (Room 115) Applying Technologies to Global Development Issues </td> <td style="width: 50%; padding: 5px;"> Session 1B (Room 119) Critical Improvements in Energy Efficiency </td> </tr> </table>	Session 1A (Room 115) Applying Technologies to Global Development Issues	Session 1B (Room 119) Critical Improvements in Energy Efficiency
Session 1A (Room 115) Applying Technologies to Global Development Issues	Session 1B (Room 119) Critical Improvements in Energy Efficiency		
12:30-2:00 PM	Lunch - ballroom Updates from IEEE EPICS, IEEE HTB and IEEE Smart Village		
2:00-4:00 PM	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> Session 2A (Room 115) Apps for All </td> <td style="width: 50%; padding: 5px;"> Session 2B (Room 119) Modeling Opportunities in Global Development </td> </tr> </table>	Session 2A (Room 115) Apps for All	Session 2B (Room 119) Modeling Opportunities in Global Development
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4:00-4:30 PM	Break: Time to interact with speakers and catch up with old friends		
4:30-6:00 PM	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> Session 3A (Room 115) Gender Equity through Technology </td> <td style="width: 50%; padding: 5px;"> Session 3B (Room 119) Small farmer AgTech </td> </tr> </table>	Session 3A (Room 115) Gender Equity through Technology	Session 3B (Room 119) Small farmer AgTech
Session 3A (Room 115) Gender Equity through Technology	Session 3B (Room 119) Small farmer AgTech		
6:30 PM-offsite	Theme dinners plus student reception planned by Villanova students.		
Friday, 13-Oct-23 (Conference Day 2)			
8:00-8:30 AM	Breakfast with Networking - ballroom		
8:30-10:00 AM	Connectivity Plenary Panelists: Mei-Lin Fung, and Chris Igiraneza		
10:00-10:30 AM	Break: Time to interact with speakers and say hello to old friends.		
10:30AM-12:30PM	Young Professionals Plenary Panelists: Kory Hansen, Wayne Lifshitz, Ben Savonen		
1:00-2:30 PM	Lunch & Official Poster Session		
3:00-5:00 PM	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> Session 4A (Room 115) Strategic Ideas for Global Development </td> <td style="width: 50%; padding: 5px;"> Session 4B (Room 119) AI for Impact </td> </tr> </table>	Session 4A (Room 115) Strategic Ideas for Global Development	Session 4B (Room 119) AI for Impact
Session 4A (Room 115) Strategic Ideas for Global Development	Session 4B (Room 119) AI for Impact		
6:00-8:30 PM	Conference Dinner Speaker: Krista Donaldson, SSIT awards presentation		
Saturday, 14-Oct-23 (Conference Day 3)			
8:00-9:00 AM	Breakfast with Networking - ballroom		
9:00-11:00 AM	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> Session 5A (Room 115) EdTech Everywhere </td> <td style="width: 50%; padding: 5px;"> Session 5B (Room 119) Critical Role of Sensing and Monitoring </td> </tr> </table>	Session 5A (Room 115) EdTech Everywhere	Session 5B (Room 119) Critical Role of Sensing and Monitoring
Session 5A (Room 115) EdTech Everywhere	Session 5B (Room 119) Critical Role of Sensing and Monitoring		

WORKSHOPS

GHTC 2023 Features Two Pre-Conference Workshops on October 11

- [A Roadmap for Geospatial Analysis](#), presented by MathWorks
- [Exploring Challenges in Education and Research When Advancing Technology for Humanitarian Efforts](#), presented by Elsevier.

A Roadmap for Geospatial Analysis

Pre-conference Workshop Wed. Oct 11, 2:30-4:00 PM | Room 119

Overview:

This workshop covers key features in MATLAB for analyzing geospatial data, including import, manipulation, and export of file types used in GIS and Google Earth applications.

Agenda:

Accessing and visualizing different types of data is crucial for understanding the impact natural hazards can have on a region. However, sometimes just gathering and processing the data can result in time consuming hurdles.

MATLAB has many capabilities for working with and visualizing data, including multiple new functions and features that make handling and viewing geospatial data much easier – and require much less coding.

During this workshop, we will use MATLAB to study the risk of natural hazards such earthquakes, tsunamis, and landslides in Southeast Asia. This case study will demonstrate how to:

- Access and import geospatial data, such as netCDF, .shp, .xml, and Landsat imagery
- Experiment with different map projections and display techniques
- Display web map data with layers superposed
- Manage large datasets
- Automate your data analysis and visualization routines

Presenter Bio: Dr. Laura Sammon is a Customer Success Engineer at MathWorks. She supports teaching and research across science and engineering disciplines, specializing in coding applications for Earth and ocean science. Laura earned her Ph.D. in Geology from the University of Maryland where she studied the composition of Earth's crust and interior through geochemical and geophysical data. Now, she helps students, faculty, and researchers get the most out of their MATLAB.

Exploring Challenges in Education and Research When Advancing Technology for Humanitarian Efforts

Pre-conference Workshop Wed. Oct 11, 4:00-5:00 PM | Room 119

Description: Don't miss out on the opportunity to join our engaging "Discovery Workshop", tailored exclusively for GHTC conference attendees. Hosted by Elsevier, a global leader in information analytics, this workshop is dedicated to unraveling and addressing challenges that arise in education and research when propelling technology for humanitarian purposes.

Here are reasons for you to join this workshop:

- **Interactive Sessions:** Participate in fruitful dialogues and group discussions aimed at examining issues related to education and research concerning the application of technology for humanity's benefit. Share your experiences, learn from your peers, and add to our collective understanding of the field.
- **Insightful Trends:** Gain insights into what's currently trending in humanitarian technology, giving you a competitive edge in your own research and applications. Understand how evolving technologies can be harnessed to solve real-world challenges.
- **Knowledge Sharing:** Interact with Elsevier's product team, who are deeply committed to collaborating with academic communities. They aim to share their industry knowledge, shedding light on the best practices and trends in the field.
- **Collaborative Opportunities:** We are also looking to build a team of early adopters or evangelists from our attendees, to serve as a customer panel for future initiatives. If you have a passion for making a difference, this could be your chance to take a leading role.

Aligned seamlessly with the mission and themes of the GHTC 2023 conference, this workshop aims to:

- Provide a platform to share challenges, ideas, and lessons learned from applying technologies for humanitarian purposes in education and research.
- Invite attendees to form a collaborative group dedicated to developing better solutions for education and research.

Reserve your spot now for the "Discovery Workshop". We look forward to your valuable participation and contributions towards creating a sustainable and inclusive future!

PLENARY SPEAKERS

Opening Session

8:00-10:00 am Thursday, 12-Oct-23th

Speakers: Jordan Ermilio, Villanova University; Varun Loomba, GHE Impact Ventures; and Mou Riiny, SunGate Solar Ltd, South Sudan



Jordan Ermilio is Director, Center for Humanitarian Engineering and International Development, College of Engineering, Villanova University. He has been directly involved with the engineering design and implementation of projects in countries throughout Southeast Asia, Africa, and Central America. He served as a US Peace Corps Volunteer in the Philippines where he was responsible for the implementation of water supply projects in Northern Luzon. He worked with Oxfam International during post-conflict reconstruction efforts in East Timor and has provided consulting services for the design of solar powered pumping systems in Sri Lanka. At the present time, he is working to integrate international development projects into the engineering curriculum at Villanova as the director of the Center for Humanitarian Engineering and International Development. This work includes the creation of engineering service-learning opportunities where undergraduate and graduate students provide technical support to global partners, advising and teaching students in the undergraduate minor in Humanitarian Engineering, advising graduate research projects, and directing efforts within the new center. He completed his Ph.D. at Loughborough University on the topic of Sustainable Management of Water Infrastructure and is the principal investigator of the Sustainable WASH research initiative at Villanova. His research focus includes understanding the dynamic nature of sustainability, exploring relationship between water management and the reliability of water infrastructure in developing communities where projects include partners in Madagascar, Ghana, Nicaragua, and Panama.



Varun Loomba is the Global Partnerships Director at Global Himalayan Expeditions (GHE), a 10-year-old social impact enterprise that provides clean energy access to remote Himalayan communities through the deployment of solar microgrids and creates livelihood opportunities through the establishment of carbon neutral homestays. As a founding member of GHE, Varun has played a pivotal role in establishing global partnerships with academia and corporations in the US and Europe.

Over the past decade, GHE has electrified more than 210 remote off-grid villages in India and established over 60 carbon neutral homestays, positively impacting over 270,000 lives in the process. GHE has also recently been focusing on carbon projects, deploying clean cooking solutions in Northeast India, and upgrading healthcare centers with energy- efficient medical equipment and solar power.

GHE has received recognition for their work in impact and sustainable tourism from prestigious organizations such as the UNFCCC at COP 26 and the World Economic Forum (WEF). They have also been awarded by UNWTO as a successful case study in sustainable tourism. GHE's efforts have been prominently featured by BBC and National Geographic as a 'Breakthrough Technology' in today's world.



Mou Riiny left South Sudan as a young man during the civil war and was fortunate to study electrical engineering at the university of San Diego. In his studies, he remembers seeing a map of the world at night. Seeing the darkness over South Sudan inspired him to want to develop solutions for energy access in South Sudan. Following a senior project focused on designing solar energy systems in remote areas, he moved back to South Sudan in 2012 and in 2013 with funding support from the institute of electrical and electronics engineers (IEEE) and clean energy investors, Mou launched SunGate Solar. From these humble beginnings, Mou has now grown SunGate to have over 65 staff, 200+ projects and 2 mw+ of solar online in 13 states providing clean, reliable, affordable solar solutions to thousands of people across South Sudan. SunGate Solar's core business is designing and installing off-grid solar power systems, but last year opened the very first solar powered Utility scale project in South Sudan and is now working to scale the model to other towns.

Conference Dinner

6:00 – 8:30pm Friday, 13-Oct-23th



Dr. Krista Donaldson is an engineer, designer, author, and entrepreneur who has been recognized as a World Economic Forum Technology Pioneer, TED speaker, and a GLG Social Impact Fellow. She was also named one of Fast Company's "50 Designers Shaping the Future."

Krista is the Director of Innovation to Impact at Stanford University's Byers Center for Biodesign, where her work focuses on ensuring design tools and processes are broadly applicable across global markets. She is also part of the team establishing the East Africa Biodesign Program at the University of Global Health Equity in Rwanda. In addition to her work at Stanford she works with organizations to promote financing of local medtech innovation in emerging markets.

Prior to joining the Byers Center, Krista was the founder and CEO of Equalize Health (spun out from D-Rev, short for Design Revolution) where she addressed global health inequities through the design and scaling of disruptive medical devices that treated over 2M patients – mostly children and young people – in 80 countries. Equalize Health filled a critical gap in healthcare by bridging innovation with global distribution to ensure that solutions sustainably reached the people who needed them. Peter

Singer of the Effective Altruism movement called Equalize Health “one of the world’s best charities” because of its cost effectiveness and exemplary end-to-end processes.

Krista also served as an Economic Officer at the U.S. Department of State where she managed part of Iraq’s reconstruction portfolio, co-founded the startup Safehub (acquired by Bitium, USA), designed water pumps at KickStart International (Kenya) and worked on a range of projects at the design firm IDEO (USA).

Krista holds a BS in Mechanical Engineering, *magna cum laude*, from Vanderbilt University, master’s degrees in Product Design and Mechanical Engineering from Stanford University, and a Ph.D. in Mechanical Engineering, also from Stanford. She has published widely in design, global health, mechanical engineering, and engineering education, and is on the boards of the Bay Area Global Health Alliance and Design for Good. Originally from Nova Scotia, Canada, she now lives with her family in San Francisco, USA.

LinkedIn: www.linkedin.com/in/kristadonaldson/

PANELS

IEEE Humanitarian Panel

12:30–2:00pm Thursday, 12-Oct-23

Panelists: Stephanie Gillespie, EPICS in IEEE; Kit August, IEEE Humanitarian Technology Board; Ed Rezek, IEEE Smart Village

Stephanie Gillespie, EPICS in IEEE Committee Chair, and Associate Dean, Tagliatela College of Engineering, University of New Haven in West Haven, CT, USA

EPICS in IEEE is a committee within the IEEE Educational Activities Board that believes that service-learning can positively impact our students and our communities. We believe in empowering engineers and technical professionals to impact communities, both local and global. In this workshop, the audience will receive a brief introduction to service-learning pedagogy, our committee’s funding priorities, and the proposal process to receive funds from our committee. We will include a summary of best practices for project proposals as well, to increase the likelihood of selection for funding from our committee. See <https://www.epics.ieee.org/>.



Dr. Stephanie Gillespie is the 2023 EPICS in IEEE Committee Chair, and Associate Dean at the Tagliatela College of Engineering at the University of New Haven in West Haven, CT. In this role, she leads initiatives related to accreditation, admissions, course management and scheduling, facilities, student concerns, and coordinates the Introduction to Engineering course. Since entering academia, she has been passionate about preparing the next generation of engineers with real-life skills, specifically by teaching courses in engineering service learning, first-year engineering courses, and the Grand Challenges of Engineering. Her current research interests span multiple areas of engineering education including maker-spaces, multidisciplinary teams, gender diversity and minority retention, and entrepreneurial mindset. Her PhD from Georgia Tech focused on machine learning and signal processing for affective computing, specifically detecting stress and depression in adults with communication disorders. She is actively involved in the Society of Women Engineers, EPICS in IEEE, and ASEE.

Kit August, IEEE Humanitarian Technology Board, Stevens Institute of Technology, Hoboken, NJ USA



Katherine Grace (Kit) August, PhD is currently an IEEE Volunteer. She serves on the IEEE Humanitarian Technologies Board as the Taenzer Grant Ad-Hoc Committee Chair, and also as the IEEE New Jersey Coast PACE SIGHT Group Chair. Kit is Chair of the new IEEE SA PAR P3386 Standard for Defining and Inferring User Accessibility Needs for Applications including Augmented Reality and Artificial Intelligence Systems. She also serves as Vice Chair and on the Diversity Equity Accessibility and Inclusion DEAI Committee of the IEEE ComSoc History Committee.

Kit is a biomedical and communications engineer who received her PhD in Biomedical Engineering at NJIT, her MS in Computer Science MIS at Marist University, NY, and BFA Communications Design at Parsons The New School for Design. Kit was a Whitaker Scholar at ETH Zurich. A Research Guest at Stevens Institute of Technology, formerly Kit was an MTS at Bell Labs in Advanced Communications Technologies, active in human factors, accessibility, accommodation, rehabilitation, learning, language, hearing, speech technologies, virtual reality, search, signal processing, wireless, and communication technologies. Kit has three recent book chapters, and an upcoming IEEE IC Whitepaper. Google Citations: 3483. 18 US Patents, 50 international Patents.

Ed Rezek, IEEE Smart Village, Northrop Grumman Space Technology (retired), Redondo Beach, CA, USA



Edward A. Rezek received a BS degree in Electrical Engineering and an AB degree in Physics from Washington University in St. Louis, MO in 1976; he received his MS and PhD degrees in Electrical Engineering from the University of Illinois, Urbana-Champaign, IL in 1977 and 1980. He retired from Northrop Grumman Space Technology (formerly TRW Space & Electronics Group), an entity specializing in electronics development for US Government and commercial applications, in 2015 after 35 years of service. His work experience has ranged from basic R&D to manufacturing and has covered the spectrum from advanced technology development for US Government space applications to manufacturing low-cost components for commercial applications. He has received 19 patents and has >50 publications in refereed journals. He is the 1993 recipient of the TRW Chairman's Award for Innovation and the 2006 recipient of the Northrop Grumman Distinguished Innovator Award. He is an IEEE Life Fellow.

Connectivity Panel

8:00-10:00am Friday, 13-Oct-23th

Panelists: Mei Lin Fung, People-Centered Internet and Chris Igiraneza, KIT-HUB, Burundi

Mei Lin Fung, People-Centered Internet



Mei Lin Fung is Chair and co-Founder (with Vint Cerf) of the People Centered Internet. Through People Centered Internet she works to ensure that people are at the center of the Internet as digital interdependence reshapes societies and economies. A key focus of her work as People Centered Internet Chair is to promote resilient communities financed with digital assets, using data so that communities can connect and members can thrive. She draws on her early training as a Financial Analyst at Intel, in Operations Research at Shell, and her extensive experience in developing Customer Relationship Management (CRM) approaches, to bring systematic evidence based analysis to the complex supply and demand for information. She also worked as socio-technical lead for Federal Health Futures at DoD where she realized that the financial sustainability of Community Health Centers in the US can be greatly enhanced by applying the lessons learned within tech corporations on managing operations to improve effective delivery of desired outcomes. Through People Centered Internet she has built alliances based on people-centered ecosystems with the IEEE, World Economic Forum, World Bank, UN and others at the country and regional level.

Chris Clement Igiraneza, KIT-HUB, Burundi



Mr Chris Clement Igiraneza is a social entrepreneur, humanitarian and experienced system Engineer skilled in management, Leadership and Strategic Planning.

He is currently the founder and Chairman of Knowledge and Impact Trade Hub (KIT Hub), a non-profit organization based in Burundi for Innovation, reinventing local workforce through sustainable education, job creation, inclusive digital transformation and entrepreneurship. He is the Ambassador and country director for Women in Tech Global Movement, a world's leading organization that fosters Inclusion, Diversity, and Equity in STEAM.

He has initiated and monitored projects for reinventing local workforce, promoting renewable energy and creating jobs in Burundi. As social entrepreneur he co-founded Energy Trade Impact Ltd, a start-up based in Burundi for renewable energy education, service and project management; and initiated Femme Solar Burundi to promote women empowerment in renewable energy sector. As an humanitarian he impacts and changes lives with his diverse initiatives such as Humanitarian Direct Impact (HuDI), Children's Direct Aid (ChiDA), Women in Process Program (WIP) to supports street kids, women and children living in difficulties in Burundi.

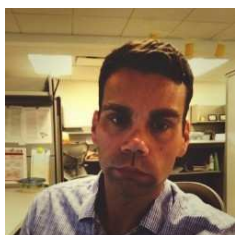
Chris Clement Igiraneza has a Bachelor of Engineering –BE, Electrical Engineering from KTH Royal Institute of Technology Sweden and master degree in energy engineering from University of Gävle, Sweden.

Young Humanitarian Professionals Panel

10:30am-12:30pm Friday, 13-Oct-23th

Panelists: Kory Hansen, Wayne Lifshitz, Ben Savonen

Kory Hansen, Counterpart International



Kory Hansen is Contracts, Compliance and Awards Manager with Counterpart International in Washington, DC. Kory is an international development professional with over 9 years' experience in working on global development projects on five continents. The majority of his experience has been working on United States Government (USAID, State Department, Department of Agriculture) funded projects however, he also has experience building and maintaining relationships with a variety of international development donors such as The Government of the United Kingdom, Global Fund, private foundations, and United Nation Agencies.

Wayne Lifshitz, Chemonics Inc



Wayne is an entrepreneurial senior leader, systems-thinker, business strategist, and strategic connector with more than 20 years of cross-cutting experience in Big 5 consulting, start-up, nonprofit, federal, and social enterprise sectors. He is currently a Senior Director at Chemonics Inc, for the Asia portfolio of the USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) Project and previously served as the GHSC-PSM Nepal country director. Wayne also serves as an innovation and investment advisor to the executive office and lead entrepreneur trainer for the UNLEASH Global Innovation Lab, as well as Mass Challenge, ASME, Piranha Tank, SENSE and the Founders Institute. With a breadth of regional and technical experience, he's led complex multi-year USAID and other international donor projects in global health, food security, supply chain, private sector engagement, gender and youth inclusion, environmental awareness, and social impact innovation and business growth in Africa, Asia and Latin America. Prior to Chemonics, he supported AI data innovation at a large pharmaceutical company, was a strategy consultant, led the transformation of a public health marketing company, a yacht captain, an international competitor, and patented and sold several consumer products. He's a founder and early investor in agtech, consumertech, and cleantech companies and sits on two non-profit boards. He's also had a few failed start-ups. In addition to a PMP, he is a certified partnership broker and has led numerous public-private partnership efforts. Wayne is an economics graduate of U.C. Berkeley, has earned an MPH from Boston University and studied executive leadership and management at Arizona State University, Cornell and Columbia Universities.

Ben Savonen, Global Development Incubator



Ben Savonen has over 12 years of experience working in global development, technology, and entrepreneurship. Starting his career as a Peace Corps volunteer in Tanzania, Ben has since had the opportunity to collaborate with dozens of NGOs and social enterprises in both the US and East Africa. He has worked as a strategy and technology adviser to the World Bank, UNDP, FEMA, Field Ready, Villgro Africa and Penn State's HESE program, and he is currently a Senior Associate on the strategy team at the Global Development Incubator. He is most notably the cofounder of the Kenya-based startup Kijenzi, which develops local manufacturing solutions to critical supply gaps experienced in lower- and middle-income communities.

An engineer by training and an entrepreneur by experience, Ben is passionate about finding innovative solutions to real human needs. He holds degrees in mechanical and environmental engineering from Ohio State (BS), Michigan Tech (MS), and Penn State (Ph.D.).

PROGRAM SESSIONS

GHTC 2023 Program Sessions

Time	Ballroom	Room A: 115	Room B: 119
Thursday, October 12			
8:00-8:30 AM	THBK: Breakfast		
8:30-10:00 AM	OPN: Opening Remarks and Keynotes		
10:00-10:30 AM	BK1: Networking Break		
10:30AM-12:30 PM		1A: Applying Technologies to Global Development Issues	1B: Critical Improvements in Energy Efficiency
12:30-1:00 PM	THLU: Lunch		
1:00-2:00 PM	HPNL: IEEE Humanitarian Panel		
2:00-4:00 PM		2A: Apps for All	2B: Modeling Opportunities in Global Development
4:00-4:30 PM	BK2: Networking Break		
4:30-6:00 PM		3A: Gender Equity through Technology	3B: Small farmer AgTech
6:30-9:00 PM			
Friday, October 13			
8:00-8:30 AM	FBK: Breakfast		
8:30-10:00 AM	CPNL: Connectivity Plenary		
10:00-10:30 AM	BK3: Networking Break		
10:30AM-12:30 PM	YPPNL: Young Professionals Panel		
1:00-2:30 PM	FLUP: Lunch & Official Poster Session		
3:00-5:00 PM		4A: Strategic Ideas for Global Development	4B: AI for Impact
6:00-8:30 PM	BANQ: Conference Dinner		
Saturday, October 14			
8:00-9:00 AM	SBK: Breakfast		
9:00-11:00 AM		5A: EdTech Everywhere	5B: Critical Role of Sensing and Monitoring

Thursday, October 12th

Thursday, October 12 8:00 - 8:30AM (America/New York)

THBK: Breakfast

Room: Ballroom



Thursday, October 12 8:30 - 10:00 AM (America/New York)

OPN: Opening Remarks and Keynotes

Room: Ballroom

Chair: Pritpal Singh (Villanova University, USA)

Speakers: Jordan Ermilio, Varun Loomba, and Mou Riiny

Opening remarks - Pritpal Singh, GHTC 2023 Chair

Welcome to Villanova - Jordan Ermilio, Director, Center for Humanitarian Engineering and International Development, Villanova University

Keynote talks:

Varun Loomba, Advisor - Global Programs, Global Himalayan Expedition (GHE)

Mou Riiny, SunGate Solar Ltd, South Sudan



Thursday, October 12th 10:00 - 10:30 AM (America/New York)

BK1: Networking Break

Room: Ballroom



Thursday, October 12 10:30 AM - 12:30 PM (America/New York)

1A: Applying Technologies to Global Development Issues

Room A: 115

Chairs: Katherine Alfredo (University of South Florida, USA) and John Gershenson (The Pennsylvania State University, USA)

10:30 [*Humanitarian Technology Projects: An Efficient Methodology For Development And Value Realization*](#)

Clara C Nensthiel Zorro and Oscar Javier Rodríguez Riveros (Universidad El Bosque, Colombia)

10:38 [*Design of Photovoltaic Systems for Seamstresses in Guatemala Using Measured Solar Insolation Data*](#)

Azra K Rangwala (The Cooper Union for the Advancement of Science and Art & Albert Nerken School of Engineering, USA); Lisa Shay (The Cooper Union for the Advancement of Science and Art, USA)

10:46 [Is Technology the Answer to Universal Energy Access?](#)

Amalia Suryani, Maarten B. Appelman and Niek Moonen (University of Twente, The Netherlands); Jelena Popovic (University of Twente & Klimop Energy, The Netherlands)

10:54 [Power-Electronic Loss Modeling and Analysis of DC Microgrids for Rural Electrification](#)

Noel Schulz and Rabia Khan (Washington State University, USA)

11:02 [Circular Electronics: An Agent-based model for the waste generated from smartphones](#)

Chanice Ann Kyla L Lerma (Ateneo Innovation Center & Ateneo de Manila University, Philippines); Lea Macaraig (Ateneo de Manila University, Philippines); Gregory Tangonan (Ateneo Innovation Center, Philippines)

11:10 [Examining The Viability of a Grass Roots Air-Pollution Campaign in Kisumu, Kenya](#)

Cameron Renfrew, Julia Thompson, Adam Brightbill, Keely Reese and John Gershenson (The Pennsylvania State University, USA)

11:18 [A Novel Low-Cost, Recyclable, Easy-to-Build Robot Blimp For Transporting Supplies in Hard-to-Reach Locations](#)

Karen K Li (Lehigh University & AirLab, USA); Shuhang Hou, Matyas Negash, Jiawei Xu, Edward L Jeffs, Diego S DAntonio and David Saldana (Lehigh University, USA)



Thursday, October 12 10:30 AM - 12:30 PM (America/New York)

1B: Critical Improvements in Energy Efficiency

Room B: 119

Chair: Henry Louie (Seattle University, USA)

10:30 [Experimental Study on Decreasing the Electricity Cost of Incubating Chickens in Guatemala](#)

Seokwoo Chung and Lisa Shay (The Cooper Union for the Advancement of Science and Art, USA)

10:38 [Strategies for Enhancing Efficiency of Residential Heating System Based on Real-Time Weather Data](#)

Minkyu Koo (Bellarmine College Preparatory, USA); Hohyun Lee (Santa Clara University, USA)

10:46 [Comparative Analysis of Solar Photovoltaic Module Technologies in Diverse Environmental Conditions](#)

Hayder Ali and Hassan Abbas Khan (Lahore University of Management Sciences, Pakistan)

10:54 [Viable, Reliable, and Buyable: Propane for Electricity Generation in Haiti](#)

Brian Thomas, Ben Phillips and Kayla Garrett (Baylor University, USA)

11:02 [Water and Solar Energy for Humanitarian Aid in Rural Communities in the Argentine Chaco](#)

Guillermo Catuogno (Universidad Nacional de San Luis, USA); Alan Mickelson (University of Colorado at Boulder, USA); Juan Chalbaud (Monte Adentro, Argentina); Gaston Frias and Carlos Catuogno (National University of San Luis, Argentina); Mario Aleman (Villanova University, Argentina)

11:10 [Monitoring and Evaluation of Two Solar Energy Kiosks in Zambia](#)

John Davis (KiloWatts for Humanity, USA); Peter Dauenhauer (Snohomish County PUD, USA & KiloWatts for Humanity, USA); Henry Louie (Seattle University, USA); Kirk MacLearnsberry (KiloWatts for Humanity, USA); J McLean Slougher (Seattle University & KiloWatts for Humanity, USA)

11:18 [Business Model Evaluation for Peer-to-peer Energy Sharing Systems: Insights from Off-grid DC Microgrid Deployment in Pakistan](#)

Reesha Arshad, Abdur Raheem, Uzair Ahmed and Hassan Abbas Khan (Lahore University of Management Sciences, Pakistan)

11:26 [Demonstrating the Value of Generating and Sharing Data on Off-Grid Energy Systems: A Case Study from Malawi](#)

Damien Frame (University of Strathclyde, United Kingdom (Great Britain)); Million Mafuta (Malawi University of Business and Applied Sciences, United Kingdom (Great Britain)); Stuart Galloway and Aran Eales (The University of Strathclyde, United Kingdom (Great Britain))

11:34 [Implementation and Evaluation of Solar Powered Wireless Intranet Devices in Rural schools in Ratanakiri Province, Cambodia](#)

Ana R Cedillo, Brandon K Simons, Jordan Ermilio and Iain Hunt (Villanova University, USA)



Thursday, October 12 12:30 - 1:00 PM (America/New York)

THLU: Lunch
Room: Ballroom



Thursday, October 12 1:00 - 2:00 PM (America/New York)

HPNL: IEEE Humanitarian Panel
Room: Ballroom

Moderator: Pritpal Singh (Villanova University, USA)

Panelists from: IEEE EPICS, IEEE HTB, IEEE Smart Village

Stephanie Gillespie, EPICS in IEEE Committee Chair, and Associate Dean, Tagliatela College of Engineering, University of New Haven in West Haven, CT, USA

Kit August, IEEE Humanitarian Technology Board, Stevens Institute of Technology, Hoboken, NJ USA

Ed Rezek, IEEE Smart Village, Northrop Grumman Space Technology (retired), Redondo Beach, CA, USA



Thursday, October 12 2:00 - 4:00 PM (America/New York)

2A: Apps for All

Room A: 115

Chair: John Gershenson (The Pennsylvania State University, USA)

14:00 [Prompt Emergency Response: PLSP Mobile Application for Effective Cardiac Arrest and Trauma Management in Pakistan](#)

Shamsa Hafeez, Sameer Pervez, Ruhama Naeem, Fizza Rubab and Syeda Saleha Raza (Habib University, Pakistan)

14:08 [Investigating the Feasibility of Crowdsourcing Current Events Information in Kenya](#)

Sonika Kohli, Eric Leon and Hayes Rakvin (Penn State, USA); Dorcas Owino (LakeHub, Kenya); John Gershenson (The Pennsylvania State University, USA)

14:16 [The Feasibility of Introducing Mobile Technology in Kenyan Schools that Utilize the Competency Based Curriculum](#)

Kayla Brown (Penn State, Kenya); Morgan Schnars, Adam Turk Karan, Isabel Ucar and John Gershenson (The Pennsylvania State University, USA)

14:24 [Determining the developer's intentions for impactful BoP technology creation in the Indian context: an empirical approach utilizing factor analysis](#)

Sanyka Banerjee (Indian Institute of Technology Jodhpur, India); Bhaskar Bhowmick (Indian Institute of Technology Kharagpur, India)

14:32 [Accelerating the Development of a Gamified Educational App Through Early Stakeholder Engagement](#)

Trevor A Lachman, Dariia Tyshchenko, Artur Poole, Nada Stojanovic, Samir Hassan, Arlan J Dawdy, Allan F Santana and David Tauman (Lehigh University, USA); Adelya Aitinzarova (Almaty Management University, USA); Aigerim Muratbekova (Almaty Management University, Kazakhstan); Abbas Latypov and Amir Tuganov (Almaty Management University, USA); Aigerim Serikbekova (Almaty Management University, Kazakhstan); Khanjan Mehta (Lehigh University, USA)

14:40 [Modular Design of a Front-End and Back-End Speech-to-Speech Translation Application for Psychiatric Treatment of Refugees](#)

Enes Y Ugan (Karlsruhe Institut of Technology, Germany); Mohammed Mediani (United Arab Emirates University, United Arab Emirates); Omar Al jawabra (KIT, Germany); Aya

Khader (BAW, Germany); Yining Liu and Alex Waibel (Karlsruhe Institute of Technology, Germany)

14:48 [*RecordadorApp: An Application to help Alzheimer's patients and their families*](#)

Rafael Sotelo, Cristina Mayr and Juan-Jose Regent (Universidad de Montevideo, Uruguay)

14:56 [*How Teacher Feedback Helped Reimagine, Redesign, and Recode a Sustainability Education App*](#)

Akanksha Y Gavade, Allison J Bronson, Andrew W Leaventon, Chingiz Tuleubayev, Hayden Ossinger, Malika Buribayeva, Saik A Jalal and Khanjan Mehta (Lehigh University, USA)

15:04 [*Promoting Afforestation and Environmental Conservation in Urban Areas using Gamification*](#)

Riddhi Kasar (PES University, India); Tarun Kumar (Indian Institute of Science, Bangalore, India)

2B: Modeling Opportunities in Global Development

Room B: 119

Chairs: Yong Lin (Miami University, USA) and Timothy Scott (Monroe Community College, USA)

14:00 [*Towards a Geospatial Household Natural Hazard Resilience Model in Rwanda*](#)

Brian Tomaszewski (Rochester Institute of Technology, USA); Timothy Scott (Monroe Community College, USA); Jennifer L Schneider and Rebekah Walker (Rochester Institute of Technology, USA); Gaspard Rwanyiziri and Jean Francois Christian Kwizera (University of Rwanda, Rwanda); Anthony Vodacek (Rochester Institute of Technology, USA)

14:08 [*Identifying Risk Patterns in Brazilian Police Reports Preceding Femicides: A Long Short Term Memory \(LSTM\) Based Analysis*](#)

Vinicius Lima (Purdue University, USA); Jacque Almeida de Oliveira (Civil Police of the Federal District, Brazil)

14:16 [*Technology-mediated method for prediction of global government investment in education toward sustainable development and aid using machine learning and classification*](#)

Kingsley Okoye (Tecnologico de Monterrey, Mexico)

14:24 [*A Review on Emission Trading System \(ETS\): Policy Tool for Green Technology Transition and Humanitarian Equity*](#)

Nishant Bhattarai, Toufic Mezher and Ahmad Mayyas (Khalifa University, United Arab Emirates)

14:32 [*A micro level investigation on Urban Underground water contamination*](#)

Suresh Aswathi (College of Engineering Trivandrum, India); Sj Sushanth (Vellore Institute of Technology, India)

14:40 [*Thin Clients: Empowering Low-Income Family Students with Educational Tools from Revitalized Discarded Computers in Humanitarian Non-Profits*](#)

Yong Lin (Miami University, USA); Chengyao Wu and Astin Lin (Awakening Your Child Total Potential, USA); Sara Koeth and Nico Kaszynski (Miami University, USA); Tariq Zaman, Charles Noah Lin and Ming Chen (Awakening Your Child Total Potential, USA)

14:48 [*Smart Contract Implementation in Real Estate Sector*](#)

Farhadur Rahman, Marshia Mostafiz Mim and Abul Kashem Nibir (AIUB, Bangladesh); Mrinmoy Karmokar (College of Technology and Engineering, USA & Westcliff University, USA); Md. Safaet and Rezoana Afrin (AIUB, Bangladesh)

14:56 [Capturing and Digitization of Indigenous Knowledge in Support of Community Resilience to Climate Change](#)

Balu M Menon (Ammachi Labs, Amrita Vishwa Vidyapeetham, Amritapuri, India); Vineeth Noble (Amrita Vishwa Vidyapeetham, India); Aswathi P (Ammachi Labs, Amrita Vishwa Vidyapeetham, Amritapuri, India); Tarek Rashed (Civilizology LLC, India); Rao R. Bhavani (Amrita Vishwa Vidyapeetham, India)

15:04 *PlasTech Ventures: Sustainable Solutions against Plastic Pollution*

Ric Azhriel G Pacheco, Clifford B Manalo, Jerome M. Dionisio, Abdul Raquib S Lucman and Selwyn Lucky V Motita (University of the Philippines Diliman, Philippines)



Thursday, October 12 4:00 - 4:30 PM (America/New York)

BK2: Networking Break

Room: Ballroom



Thursday, October 12 4:30 - 6:00 PM (America/New York)

3A: Gender Equity through Technology

Room A: 115

Chair: Michael Geselowitz (IEEE & Stevens Institute of Technology, USA)

16:30 [Vetiver Grass Technology: A new perspective for river restoration and Women's Empowerment in river communities of Rural India](#)

Rondine C Twist, Esq. (Amrita University, USA); Johanna Sophie von Lieres (Amrita Vishwa Vidyapeetham, India); Rao Bhavani (Amrita University, India); Albin John Koshy (Amrita Vishwa Vidyapeetham, India)

16:38 [Using the History of Technological Impact on Society in Education to Attract Girls to STEM in Africa](#)

Michael Geselowitz (History Center, IEEE, Piscataway, NJ, USA); Kelly McKenna (IEEE History Center, USA)

16:46 [Enablers of Rural Women's Adoption of Water Quality Monitoring Technologies for Ensuring Clean and Safe Drinking Water](#)

Reshma Ramesh and Nasliya N (Amrita Vishwa Vidyapeetham, India); Arya C Mohan (Amrita Vishwa Vidyapeetham, India); J. Sophie von Lieres (Amrita Vishwa Vidyapeetham, India)

16:54 [ICT significance for Community Engagement during COVID in Rural India: An application suite](#)

Aswathi Padmavilochanan (Center for Women's Empowerment and Gender Equality, Amrita Vishwa Vidyapeetham, India & Amritapuri, India); Amritha Natarajan (Ammachi Labs, Amrita Vishwa Vidyapeetham, Amritapuri, India); Lekha Shekhar (Center for Womens

Empowerment and Gender Equality, India); Srividya Sheshadri (Amrita University, India); Parameswari A (Center for Womens Empowerment and Gender Equality, India); Rao R. Bhavani (Amrita Vishwa Vidyapeetham, India)

17:02 [Exploring the Role of Women in Technology Driven Water Quality Monitoring Using a Participatory Approach](#)

Reshma Ramesh (Amrita Vishwa Vidyapeetham, India); Arya C Mohan (Amrita Vishwa Vidyapeetham, India); Nasliya N and J. Sophie von Lieres (Amrita Vishwa Vidyapeetham, India)

17:10 [Good Practices and Challenges in Maternal Health](#)

Jan Mariz Balatico, Jericho Albert Lapinid and John Benedict Mercado (University of the Philippines - Diliman, Philippines)

3B: Small farmer AgTech

Room B: 119

Chairs: John Gershenson (The Pennsylvania State University, USA) and Lisa Shay (The Cooper Union for the Advancement of Science and Art, USA)

16:30 [Integrating Technology, Local Knowledge, and Participatory Approach: Real-time Detection System for Mitigating Human-Animal Conflicts in Rural India](#)

V M Pranavan and Sri Lasya Pragathi B (Amrita Vishwa Vidyapeetham, India); G Sri Pavan Kumar (Amrita School of Engineering, Chennai, India); Sanjeev Aakash, Sakthi Abirami Balakrishnan, Vinata Sai and Souresh Cornet (Amrita Vishwa Vidyapeetham, India)

16:38 [Barriers to Irrigation for Kenyan Smallholder Farmers Residing Near a Water Source](#)

Abigail La Porta, Jack Inserra, Isabelle Seidenberg, Shannon Ross and Monem Rizvi (Penn State, USA); John Gershenson (The Pennsylvania State University, USA)

16:46 [Characterizing Enabling Technologies for Farmers in Underserved Communities](#)

Oheneba Atta Aggrey (Free University of Bolzano, Italy); Erwin Rauch (Free University of Bozen-Bolzano, Germany)

16:54 [Water Conservation and Rainwater Collection for Environmental and Economic Sustainability in Guatemala](#)

Jacob Krebs and Lisa Shay (The Cooper Union for the Advancement of Science and Art, USA)

17:02 [Food Security Amid Natural Disasters and Geographic Impacts: A Study of the 2017 Hurricane Harvey's Effect on U.S. Retail Baby Food Markets](#)

Thuy Nguyen and Ariun Ishdorj (Texas A&M University, USA);

17:10 [Enhancing Occupational Risk Training for Agricultural Workers: Virtual or Analog Technologies?](#)

Gregorio E Puello-Socarrás, Claudia M Ospina López and Liliana Vargas Puentes (Corporación Universitaria Minuto de Dios - UNIMINUTO, Colombia)

Thursday, October 12 6:30 – 9:00 PM (America/New York)



DIN: Offsite Dinners

Friday, October 13th

Friday, October 13 8:00 - 8:30 AM (America/New York)

FBK: Breakfast
Room: Ballroom



Friday, October 13 8:30 - 10:00 AM (America/New York)

CPNL: Connectivity Plenary
Room: Ballroom

Moderator: Baw Chng (BAWMAN LLC, USA)

Panelists: Mei Lin Fung and Chris Igiraneza

Mei Lin Fung, People-Centered Internet
Chris Igiraneza, KIT-HUB



Friday, October 13 10:00 - 10:30 (America/New York)

BK3: Networking Break
Room: Ballroom



Friday, October 13 10:30 - 12:30 AM (America/New York)

YPPNL: Young Professionals Panel
Room: Ballroom

Moderator: John Gershenson (The Pennsylvania State University, USA)

Panelists: Kory Hansen, Wayne Lifshitz, Christina Lomazzo, Ben Savonen

Kory Hansen, Counterpart International
Wayne Lifshitz, Chemonics Inc
Ben Savonen, Global Development Incubator

Friday, October 13 1:00 -2:30 PM (America/New York)

FLUP: Lunch & Official Poster Session

Room: Ballroom

Viability of Mobile Forms for Population Health Surveys in Low Resource Areas

Alexander C Davis (Los Gatos High School, USA); Aidan Chen (Lynbrook High School, USA); Milton Chen (Vsee, USA); James Davis (University of California Santa Cruz, USA)

Fall Detection and Notification System for the Elderly using a fusion of Geophone and Thermal Imaging Camera sensors

Wanfeng Chen, Liuyi Zhao and Wan-Ci Liao (University of Washington, USA); Simran Saxena (University of Washington & Global Innovation Exchange, USA); Zubin Assadian, Avi Geiger and John Raiti (University of Washington, USA)

Using Generative AI to Communicate and Strategize Entrepreneurial Endeavors

Sebastian S Gaertner, Vrushti Patel and Emily Rafikia (Lehigh University, USA); Dayanara Cabrera (USA); Okeorisa A. Nkululeko and Khanjan Mehta (Lehigh University, USA)

LLMs: A Promising New Tool for Improving Healthcare in Low-Resource Nations

Agasthya Gangavarapu (Safety4xr, USA)

Manim -Python Animation Run-time Engine For Math Concept Illustrations

Aman Singh (Rama Nagappa Shetty Institute of Technology, India); Rajini Honnunar (Indian Institute of Science & R. N.S. Institute of Technology, India)



Friday, October 13 3:00 - 5:00 PM (America/New York)

4A: Strategic Ideas for Global Development

Room A: 115

Chairs: Toby J Cumberbatch (The Cooper Union for the Advancement of Science and Art & Socialite Lighting Systems Inc, USA) and Neil H Wasserman (George Washington University & Timewave Analytics, LLC, USA)

15:00 *Supporting Disaster Resilience Building through Cross-Community Knowledge Sharing*

Motoya Koga and Tetsuya Kaneko (Sojo University, Japan); Emanuel Leleito (Nagoya University, Japan); Kazuki Karashima (Maebashi Institute of Technology, Japan); Ari Aharari (Sojo University, Japan)

15:08 *Learning by Doing Strategy for Electronic Engineer Students at Unidad Central del Valle del Cauca*

Angel Lozada, Luisa Cabezas, Iván Aristizábal and Luis Plaza (Unidad Central del Valle del

- Cauca, Colombia); Marco Cabero (China Biodiversity Conservation and Green Developmentn Foundation, China); Walter Weyerstall (Universidad Nacional de Tucumán, Colombia); Jenniffer Castellanos (Unidad Central del Valle del Cauca, Colombia)
- 15:16 [*Impact of Outcome Based Curriculum of Diploma engineering programmes on performance of the students in industry and higher education \(CASE STUDY\)*](#)
Alan Sanjay Rocha, Prof (National Institute of Technical Teachers Training and Research Bhopal Goa Extension Centre, India)
- 15:24 [*The Value of a Systems Architecture for Disaster Risk Reduction*](#)
Neil H Wasserman (George Washington University & Timewave Analytics, LLC, USA)
- 15:32 [*"Now I Understand": an application to bridge the gap in communication with hearing impaired people*](#)
Karen Baz, Juan Pedro Grille, Cristina Mayr and Gustavo Gretter (Universidad de Montevideo, Uruguay)
- 15:40 [*Associations Between Redlining and Social Vulnerability to Long-duration Power Outages*](#)
Jesse Dugan, Melodie Chen-Glasser and Salman Mohagheghi (Colorado School of Mines, USA)
- 15:48 [*Incorporating Energy Equity in Power System Planning and Operation: Potential Metrics, Challenges, and Needs*](#)
Noah Allison and Josue Campos do Prado (Washington State University Vancouver, USA)
- 15:56 [*The DaanMatch System: Matching NGOs with Donors using the UN Sustainable Development Goals*](#)
Cara Arellano (University of California Berkeley, USA); Michael DeBellis (USA); Patrick Guo (DaanMatch PBC, USA); Kenneth Kron (DaanMatch, USA); Tejas Jyothi and Vishnu Suresh (UCB, USA)
- 16:04 [*The use of photography as a learning resource of high school students at Tecnológico de Monterrey*](#)
Laura Sevilla-Reyes, Prof (University of Tecnológico de Monterrey & Campus Ciudad de México, Mexico); Lidia Fabián-Acevedo and Cynthia Karyna López-Botello (Tecnológico de Monterrey, Mexico)
- 16:12 [*Salinity to Sustainability: Achieving Water Security in Small Agricultural Communities through Desalination Plants*](#)
Mary Nyn Heruela, Xyrille Angelie Belega, Johanna Dominique Cachila and Martina Lois Saman (University of the Philippines Diliman, Philippines)

4B: AI for Impact

Room B: 119

Chair: Khanjan Mehta (Lehigh University, USA)

- 15:00 [*Leveraging Machine Learning to Understand Green Stormwater Infrastructure Performance Risks*](#)
Sizhe Zhang, Achira Amur, Emma Olson and Peleg Kremer, Xun Jiao, Virginia Smith and Bridget Wadzuk (Villanova University, USA)

- 15:08 [*Computer Vision Based Jaundice Monitoring For Smart Low-cost Phototherapy Light System*](#)
 Bryan Kristofer A. Manabat and Isaiah Dale L. Delos Reyes (Ateneo Innovation Center, Philippines); Jela Patricia R. Matibag (Ateneo de Manila University, Philippines); Paul Ryan A. Santiago (Ateneo de Manila University & Ateneo Innovation Center, Philippines); Steve Maverick Chaves and Reymond P. Cao (Ateneo de Manila University, Philippines); Paul M. Cabacungan (Ateneo de Manila University & Ateneo Innovation Center, Philippines); Carlos Oppus and Nathaniel Joseph C Libatique (Ateneo de Manila University, Philippines); Gregory Tangonan (Ateneo Innovation Center, Philippines)
- 15:16 [*Waste Genie: Learning Environmental Sustainability from Waste Sorting and Interactive Feedback*](#)
 Qiming Sun and I-Han Hsiao (Santa Clara University, USA)
- 15:24 [*Robust Detection of Plant Features with Overhead Imaging in a Range of Crop and Weed Scenarios*](#)
 Sanket Junagade, Swagatam Bose Choudhury and Ruturaj Nivas Patil (Tata Consultancy Services, India); Ajay Mittal (Research, India); Sanat Sarangi, Nandan Rajpoot, Suresh Neelakandan, Dineshkumar Singh and Srinivasu Pappula (Tata Consultancy Services, India)
- 15:32 [*When Healthcare Meets Conversational AI: A Narrative Review of Amazon Alexa Devices in Healthcare*](#)
 Sofia A Espinoza-Hernandez, Eric Yang, Elif Ozturk, Rachel Platt and Khanjan Mehta (Lehigh University, USA)
- 15:40 [*Harnessing the Power of Neural Networks for Predicting Shading*](#)
 Rakeshkumar Mahto and Kanika Sood (California State University, Fullerton, USA)
- 15:48 [*Leveraging ChatGPT and Amazon Alexa to Empower Healthcare Workers in Sierra Leone*](#)
 Brooke T Lee (Lehigh University, USA); Omar Hossain (Lehigh University, Kazakhstan); Zavier R Urbaz, Aabiskar Thapa Kshetri and Khanjan Mehta (Lehigh University, USA)
- 15:56 [*Automation of the surveillance of the Casamance forest against illegal logging*](#)
 Abel Diatta (Université Assane Seck de Ziguinchor, Sénégal, Senegal); Shigeru Kashihara (Osaka Institute of Technology, Japan); Youssou Faye (Université Assane Seck de Ziguinchor, Senegal)
- 16:04 [*Dreck Administration for Immaculate Purlieu*](#)
 Vaishnavi Dixit, Makesh Srinivasan, Dhriti Rajani, Vidhi Shah, Nishant Rajendra Kumar, Ronith Jaju and Vydeki D (Vellore Institute of Technology, Chennai, India)



Friday, October 13 6:00 - 8:30 PM (America/New York)

BANQ: Conference Dinner
 Room: Ballroom

Chair: Toby J Cumberbatch (The Cooper Union for the Advancement of Science and Art & Social Lighting Systems Inc, USA)

Keynote: Krista Donaldson; SSIT awards presentation

Saturday, October 14th

Saturday, October 14 8:00 - 9:00 AM (America/New York)

SBK: Breakfast
Room: Ballroom



Saturday, October 14 9:00 - 11:00 AM (America/New York)

5A: EdTech Everywhere
Room A: 115

Chair: Cesar Antonio Martin (Escuela Superior Politécnica del Litoral, Ecuador)

- 9:00 [*Sustainable Development in the Anthropocene Requires Interprofessional Environmental Health as Science Diplomacy*](#)
Daniel B Oerther (Missouri University of Science and Technology, USA); Sarah Oerther (Saint Louis University, USA)
- 9:08 [*Design and Development of an Ontology Driven Search Engine for a Mobile Cloud Asynchronous Remote Learning Platform*](#)
Xander Mari M Cruz (Ateneo de Manila University & Ateneo Innovation Center, Philippines); Jaime Luis E Honrado (Ateneo de Manila University, Philippines & Ateneo Innovation Center, Philippines); Andrei Coronel and Nathaniel Joseph C Libatique (Ateneo de Manila University, Philippines); Gregory L Tangonan (Ateneo de Manila University, USA)
- 9:16 [*Engaging First-Year Engineering Students: A Technology-Based Approach Using Story-Based Learning and AI-Generated Content*](#)
Amirhossein Mokhtarpour and Claudio Freitas (Purdue University Fort Wayne, USA)
- 9:24 [*Co-creation of Renewable Energy Resources to Support the New Contextualized Education Curriculum in the Galapagos Islands*](#)
Javier Urquizo, Pritpal Singh and Viviana Villavicencio (Villanova University, USA); Ruben Hidalgo (Escuela Superior Politécnica del Litoral, Ecuador)
- 9:32 [*An Affordable Approach for Implementing Hybrid Classes with Portable Equipment in Ecuadorian Academic Institutions*](#)
Isabella Ivonne Martin (Escuela Superior Politecnica del Litoral ESPOL, Ecuador); Cesar Antonio Martin (Escuela Superior Politécnica del Litoral, Ecuador)
- 9:40 [*Transforming Teachers' Professional Development with Technology Innovation Integration in Essuekyir, Ghana*](#)
Jane A. Appiah-Okyere and Danielle Taana Smith (Syracuse University, USA); Ephrem K. Kwaa-Aidoo (University of Education Winneba, Ghana); Lee McKnight (Syracuse University, USA); Erika M. Osae (University of Professional Studies, Ghana)

- 9:48 [*Cultivating a reading culture: A design intervention to inculcate reading habits*](#)
 Shamita Rao and Rahul Gupta (Bangalore, India); Harshit Kumar Gupta (PES University Bangalore, India); Deval Karia (Indian Institute of Science, India)
- 9:56 [*Implementation of the STEAM method, through emerging technologies such as the metaverse, to motivate high school students to investigate and use technology to solve problems in their environment*](#)
 Tito Alberto Nuncira Gacharna (Universidad ECCI, Colombia); Normaris Rodriguez, Gina Echeverry, Lucila Paramo, Jose Ramirez and Lisette Agosto Cintron (International Higher Education Consultant, USA); Mónica Andrea López González (Universidad Católica-Fundación Domynet, Colombia); Samuel Alejandro Nuncira Lopez, Yeison Javier Fonseca Rojas and Maria Eugenia Lambertinez Rivera (Universidad ECCI, Colombia)
- 10:04 [*Implementation of an Educational Laboratory for Electrical Protections Based on Low-Cost Electronic Devices*](#)
 Fernando Vaca-Urbano (Escuela Superior Politecnica del Litoral, Ecuador); Jimmy Cordova (Escuela Superior Politécnica del Litoral, Ecuador); Diana Cervantes (Escuela Superior Politecnica del Litoral, Ecuador); Johnny Rengifo (Universidad Tecnica Federico Santa Maria, Chile); Manuel Alvarez-Alvarado (Escuela Superior Politécnica del Litoral, Ecuador)
- 10:12 [*A Workshop for Electricity Access Educators*](#)
 Henry Louie (Seattle University, USA); Pritpal Singh and Javier Urquizo (Villanova University, USA); My-Loan Tran (Seattle University, USA)

5B: Critical Role of Sensing and Monitoring

Room B: 119

Chairs: Toby J Cumberbatch (The Cooper Union for the Advancement of Science and Art & Socialite Lighting Systems Inc, USA) and James C Peyton Jones (Villanova University, USA)

- 9:00 [*Overcoming the Triple Challenges of Digital Contact Tracing in Japan*](#)
 Takashi Okumura (Kitami Institute of Technology, Japan); Junko Ami (University of Tokyo, Japan); Hiroshi Masui (Kitami Institute of Technology, Japan)
- 9:08 [*Low-Cost Remote Monitoring Solutions for Sustainable Water Management in Madagascar*](#)
 Jamie Silk, James C Peyton Jones, Michael Newman and Jordan Ermilio (Villanova University, USA)
- 9:16 [*The SPeRA web Portal for Cooperation Associations and Projects in Africa*](#)
 Marco Trombini, Matteo Morando and Edoardo Berti Riboli (Università degli Studi di Genova, Italy); Mauro Zanna (Associazione Medici in Africa, Italy); Andrea Rudelli (Consorzio SPeRA, Italy); Silvana G. Dellepiane (University of Genova, Italy)
- 9:24 [*LoRa-based Sensors and Monitoring of Growth Parameters with NearCloud Data Storage for Black Rice Hydroponics*](#)
 Paul M. Cabacungan (Ateneo de Manila University & Ateneo Innovation Center, Philippines); Reymond P. Cao (Ateneo de Manila University, Philippines); Paul Ryan A. Santiago (Ateneo de Manila University & Ateneo Innovation Center, Philippines); John Paul Mamaradlo and

Neil Angelo M. Mercado (Ateneo de Manila University, Philippines); Cristina Ferrer Gonzales (Innovation Center & Ateneo de Manila University, Philippines); Ian A. Navarrete, Nerissa Gonzales Cabacungan, Carlos Oppus, Teresita Perez and Nathaniel Joseph C Libatique (Ateneo de Manila University, Philippines); Gregory Tangonan (Ateneo Innovation Center, Philippines)

9:32 [Real-time Hybrid Dashboard and App for Mpox Outbreak Surveillance](#)

Daniel Quezada (California State University, USA); Sampson Akwafuo (California State University Fullerton, USA); Aniket Wattamwar (California State University, USA)

9:40 [BPoL: A Disruption-Tolerant LoRa Network for Disaster Communication](#)

Daniel Schmidt, Franz Kuntke, Maximilian Bauer and Lars Baumgärtner (Technische Universität Darmstadt, Germany)

9:48 [Maximizing Prediction Accuracy in Wildfire Severity: A Comprehensive Analysis of Machine Learning Models Using Environmental Features](#)

Michael Nocerino and Smita Ghosh (Santa Clara University, USA)

9:56 [Monitoring and Impact Assessment of Farm Practices in Horticulture Crops with Digital Twins](#)

Rushikesh Dattatraya Kulat, Raturaj Nivas Patil and Swagatam Bose Choudhury (Tata Consultancy Services, India); Ajay Mittal (Research, India); Sanat Sarangi, Mariappan Sakkan, Hemavathy B., Dineshkumar Singh and Srinivasu Pappula (Tata Consultancy Services, India)