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GHTC 2016

**GLOBAL HUMANITARIAN
TECHNOLOGY CONFERENCE**

**October 13 - 16, 2016
Seattle, Washington, USA**

Technology for the Benefit of Humanity



**Organized and Sponsored by IEEE Region 6, IEEE Seattle Section,
IEEE Oregon Section and IEEE Society on Social Implications of Technology**



FINAL PROGRAM

 **IEEE**
*Advancing Technology
for Humanity*



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You can [download](http://whova.com/portal/ieeeg_201610) the free official **Whova** app for our event: http://whova.com/portal/ieeeg_201610

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Welcome to GHTC 2016

On behalf of the conference steering committee and all the GHTC volunteers, I welcome you to the 6th Annual IEEE Global Humanitarian Technology Conference. This year we are continuing in Seattle, where this conference series began, and home to a vibrant technical community. Our conference aims to:

- Share knowledge, network, and cooperate in the humanitarian and emergency management fields.
- Impact the lives of billions of disadvantaged a people and vulnerable groups around the world.
- Focus attention on innovators for humanitarian technologies that promote successful practice.
- Attract humanitarian and emergency management practitioners to learn from their successes and guide future research.
- Contribute to a worldwide movement to advance technology for humanity, including related conferences around the world, supported by IEEE Humanitarian Activities Committee.
- Supporting engineering volunteers: IEEE SIGHT chapters, IEEE Smart Village teams, Engineering for Change (E4C) and Engineering without Borders (EWB).

Our conference features a full program of workshops, technical papers, case studies, demonstrations, posters, distinguished panels, exhibits, awards and a student paper contest. We have an excellent lineup of speakers representing academia, practitioners, inventors, NGOs, governments and corporations from around the world. Papers and case studies cover 9 key areas. Our value proposition is that we are attracting humanitarian technology practitioners, students of that technology and supporters of that technology.

A lot people deserve our gratitude:

- Authors for submitting compelling papers, cases studies and inventions
- Program committee members for reviewing submissions, and providing actionable feedback to ensure a high quality program
- The publications team for creating the conference proceedings, for distribution to attendees and publication in IEEE Xplore
- The conference steering committee for their hard work and commitment to ensuring a successful conference

Please use this opportunity to share experiences and learn from your peers. We hope you enjoy the conference. Please, network, make new friends, and build relationships with future partners.

Yours,

Joseph Decuir, IEEE Fellow
GHTC 2016 Conference Chair



GHTC 2016 Committees

GHTC 2016 Organizing Committee

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Advisor	Tom Coughlin
Advisor	Nathan Johnson
Advisor	Kathleen Kramer
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Advisor	Ed Perkins
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GHTC 2016 Reviewers

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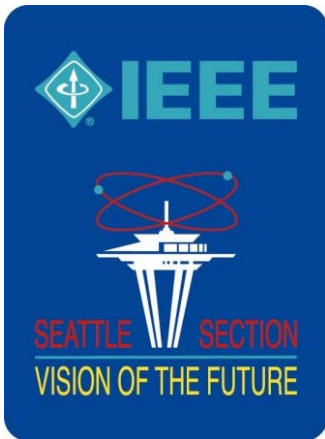
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Joe Decuir
www.linkedin.com/in/joedecuir

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 SEE BACK COVER

GHTC 2016 – Plenary Speaker Thursday Evening

Dr. Bartosz Wojszczyk
President & CEO, Decision Point Global, USA
Adjunct Professor, University of North Carolina, USA

Title: Disrupt or Be Disrupted

Abstract:

A clean, secure and cost effective supply of energy is essential for the future of economic growth and enablement of a sustainable society. To effectively address the future, we need to face the on-going paradigm shift in the areas of new customer services to be provided by non-traditional competition; electricity price affordability based on socio-economic diversity; distributed and flexible demand and supply requirements reducing dependency on traditional utility business models; environmental pressure, and many others. The complexity of these changes require a new way of thinking about business, technology and customer innovation across the entire value chain; that means, “step-change/disruptive” and integrated approaches unlocking X-factor performance at a fraction of the cost. During this seminar, Dr. Bartosz Wojszczyk will address practical aspects of: global industry disruptive and innovation trends forcing a “new normal” for energy stakeholders, non-traditional competition and start-up ecosystems that will potentially change (and/or are currently changing) the energy landscape, how disruptive trends are changing existing (regulated) utility business models, customer engagement strategies for utilities to stay relevant in the “new normal”, and global examples of disruptive/innovative businesses and technologies.

Bio:

Bartosz is an accomplished c-level executive, investor, entrepreneur, visionary and innovation spokesperson with over 22 years of global experience working for utilities, academia, start-ups and Fortune 500 companies (GE, Accenture, First Pacific, Quanta Services, Legrand, etc.) with revenue totaling \$2 Billion annually.



Bartosz is a founder of Decision Point Global, which invests in and delivers on big ideas through unique and step-change technology innovation and rapid commercialization at the highest possible return and the lowest possible risk and cost. Bartosz has co-authored over 30 papers and 3 books. He is an active member of the IEEE Power & Energy Society, IEEE-USA Energy Policy Committee, IEEE Artificial Intelligence Subcommittee. He serves as Technical Program Chair of IEEE Energy Development & Power Generation Committee and Chair of IEEE International Practices Subcommittee. He is past-secretary of the IEEE Distributed Generation & Energy Storage Subcommittee.

GHTC 2016 – Plenary Speaker Friday Morning

Walt Hubbard, Director
King County Office of Emergency Management

Title: Technology and Resilience in the 21st Century

Abstract:

As evidence mounts on the effects of climate change, the time for closing the communication gap between professional disciplines is more urgent than ever.

Bio:

Walt Hubbard grew up in the Seattle area and has a record of public service that spans both private and government sectors. Before becoming Director of the King County Office of Emergency Management, Hubbard was Emergency Preparedness Manager for the King County Department of Transportation, where he worked to improve the department's all-hazards response, with special focus on Green River flooding, winter storms, and long-term recovery.

As Special Assistant for public safety under Seattle Mayor Paul Schell, Hubbard was engaged in response to several emergency events – including the 2001 Nisqually Earthquake and the 1999 WTO protests – forming strong relationships with community organizers, police, fire, and first responders across the region.

Hubbard also served as Director of the Odessa Brown Children's Clinic, where he honed his commitment to equity and social justice as an essential part of health care delivery to a diverse population.



GHTC 2016 – Plenary Speaker Friday Lunch

Kartik Kulkarni, Chair,
IEEE SIGHT Steering Committee

Title: Building a Locally-focused Community of Engineers for Global Development

Abstract:

IEEE is a global organization of around half-million members who have two key strengths: they are technically trained and have local expertise. At SIGHT (Special Interest Group on Humanitarian Technology), we are leveraging these strengths to build a community of engineers to identify local problems and to help solve them with their peers and by partnering with the community leveraging technology solutions. We saw great interest among our IEEE members, who connected together locally, to form 90+ SIGHT groups in 35 countries and 5 Technical Societies. Several activities and projects are undertaken each year and as a result, ~20,000 are introduced to the benefits of technology, sometimes as basic as electricity, transportation, communication, and education. In this plenary, we share lessons learned from our community interventions and how this community is becoming relevant and a partner to global initiatives and programs that aim to accomplish specific goals/mission such as People-Centered-Internet, IEEE Smart Village, and others.

Bio:

Kartik Kulkarni is a Senior Member of Technical Staff at Oracle Corporation's Data and In-Memory Technology Group. He is a primary contributor to the Oracle In-memory Database which enables real-time data analytics on mission-critical information systems in fields including ecommerce, financial services, insurance, and healthcare. He develops memory-hardware aware algorithms (patents pending) to enable scale-out of transactions processing, and high availability of data. Kartik did his Masters from Carnegie Mellon University (CMU) in Electrical and Computer Engineering, and he is an alumnus of CMU's Parallel Data Lab.



Kartik chairs the IEEE Special Interest Groups on Humanitarian Technology (SIGHT) Steering Committee. SIGHT is a growing community of 90+ groups of engineers in 34 countries and 5 Technical Societies, working on solving community problems using technology solutions. In 2015, this community engaged 1700+ engineers benefiting 20,000+ people through projects and activities in the areas such as education, energy, health, and assistive technologies. Kartik was recognized as a 2015 USA's New Face of Engineering by DiscoverE Foundation.

GHTC 2016 – Plenary Speaker Friday Lunch

Paul M Cunningham
Projects Chair, IEEE Humanitarian Activities Committee

Title: IEEE HAC and Global Development

Abstract:

IEEE is very well positioned to have real impact around the world, based on the geographic diversity, breadth, depth and complementarity of technical, scientific and engineering expertise, cross-sectoral representation and strong volunteer ethos of its membership. This presentation will discuss the work of the IEEE Humanitarian Activities Committee and opportunities for IEEE volunteers in Global Development.

Bio:

Paul is President & CEO of IIMC International Information Management Corporation, a technology and strategic consulting, policy and research organization headquartered in Ireland. Paul has a multidisciplinary background with expertise in Collaborative Open Innovation, Entrepreneurship, ICT4D, eHealth, eAgriculture, eGovernment, eInclusion and eSkills. Paul has 20 years' experience of Innovation, Science and Technology related implementation, policy formulation and research and innovation in the context of Global Development. Paul has been supporting African Governments in developing research and innovation ecosystems and integrating appropriate use of ICT since 2002 through IST-Africa, Africa4All Parliamentary Initiative and mHealth4Afrika. Paul works as an expert with the European Commission, World Bank and nationally funded research programs (NRF South Africa, Research Council of Norway, VINNOVA, Sweden). A graduate of Trinity College Dublin and Smurfit Graduate Business School, UCD, Paul is completing a PhLic and PhD at Department of Computer and Systems Sciences (DSV), Stockholm University.



A Senior Member of IEEE (Society on Social Implications of Technology (SSIT), Computer Society and Communications Society), Paul serves on the IEEE SSIT Board of Governors (President 2017 - 2018), the IEEE Humanitarian Activities Committee (Projects Chair), and founded the IEEE SSIT SIGHT (Special Interest Group on Humanitarian Technologies). Paul is a Visiting Senior Fellow at Wrexham Glyndwr University (Social Implications of Technology and ESGDC - Education for Sustainable Development and Global Citizenship), an IEEE SSIT Distinguished Lecturer, and an Associate Editor, IEEE Technology and Society Magazine.

GHTC 2016 – Plenary Speaker Friday Evening

Alexis Bonnell
U.S. Global Development Lab, USAID

Title: Beyond the "Shine": The Future Hero of Humanitarian Response

Abstract:

Innovation, new technology, is changing how we respond to humanitarian crisis and disaster. But is it changing it enough? What are the barriers to applying innovation, what are the incentives and what are the future humanitarian heroes thinking and doing differently today. How is the industry working together to share collective business intelligence and resources to optimize for the response of today and tomorrow.

Bio:

Alexis Bonnell is the Division Chief of Applied Innovation and Acceleration in the U.S. Global Development Lab of USAID. Alexis has developed and delivered over a billion dollar of humanitarian and development programming in over 25 conflict, post-conflict, and emergency countries, in almost every sector from education to stabilization, for more than 30 International Bi-lateral donors, 10 UN agencies, the military, and private sector. She has held positions with every side of development including: implementers, donors, policy makers, and beneficiaries and is proud of her "360 degrees" of development experience. Her more than 20 years of experience in management and communications has provided her incredible opportunities to work on/with: Wall Street, "Dot.coms", Middle East Peace Plan, Afghan and Iraq Elections, Global emergency response coordination and major logistics operations. Her current focus is how to leverage science, technology, innovation, and partnership for great development outcomes. Alexis is the founding visionary behind the Global Innovation Exchange.



GHTC 2016 – Plenary Speaker Saturday Lunch

Maurizio Vecchione, Senior Vice President
Global Good and Research

Title: The Power of Developing World Technology: Reverse Innovation

Abstract:

For many years the world has approached the developing world as the place where innovation does not happen. The developing world has been a place that receives innovation often as a result of aid or charitable efforts. But no one has a monopoly on innovation. Many times innovation springs from the need and confronting a problem. Increasingly innovation is sprouting to resolve developing world problems that also solve global problems. This has the potential to dramatically address the needs of the base of the pyramid, the potential to move billions out of extreme poverty and to unlock the potential of growth to the global south. This reverse innovation is creating an immense opportunity to innovate at a global scale, with both technology and economic impacts. But what are the approaches, the challenges and the opportunities to global innovation and what are the strategies to tap into this new reverse innovation?

Bio:

Maurizio Vecchione is the Sr. vice president for Global Good and Research at Intellectual Ventures in charge of the Global Good Fund, the world's largest investor in inventions for the benefit of the poorest three billion people on the planet, focusing on disruptive innovation in global health and global development for the benefit of humanity. Global Good operates its own multidisciplinary research laboratory with relationships with over 4,000 research institutions globally, and the Institute for Disease Modeling to facilitate discovery and translational science in support of its investments. With more than 30 years of experience in the technology and life sciences sector, Mr. Vecchione has helped build nine start-ups and launched more than 50 commercial products spanning life-sciences, health technologies, therapeutics and as well as telecommunications, information and material sciences. As an inventor himself, Mr. Vecchione is named on multiple U.S. patents and patent applications related to imaging, image processing, nano-bio-polymer and telecommunication technologies.



GHTC 2016 – Plenary Speaker Saturday Evening

Dave Cook, President
Engineers Without Borders - USA

Title: Building a Better World through Volunteering

Abstract:

Volunteers have a passion to change the world. But, do they have the appropriate skills to ensure that projects are done thoughtfully, appropriately, and sustainably? Through his work with EWB-USA, Dave Cook has personally seen the needs of developing communities and those affected by natural disasters. He will share these experiences and the balance between volunteerism for the volunteer, technology with no capacity to sustain, and a project that is sustainable.

Bio:

Mr. Dave Cook, LG, CPG serves as Principal Environmental Practice Leader at Aspect Consulting LLC since September, 2016. Prior to this role, Mr. Cook was Principal and Team Leader for GeoEngineers, Inc. since 1991. Mr. Cook's technical practice involves site assessment and remediation for urban or waterfront properties that are ripe for redevelopment. Integrating his knowledge of geology and dedication to sustainability. He focuses on low-impact development, stormwater infiltration and brownfields (industrial or commercial sites that are underused because of environmental pollution) projects.



Panel Session: Building Effective Distribution Channels for Humanitarian Technologies (Friday lunch)

EMMA COLENBRANDER

Emma Colenbrander is a co-founder of social enterprise Pollinate Energy, and is based in Bangalore, India as Chief Sales Officer. She previously spent two years working for the Australian aid program at Australia's Department of Foreign Affairs and Trade (DFAT), focusing primarily on development finance, aid program management and development innovation. Emma has also worked with Herbert Smith Freehills and acquired several years of consultancy experience working with the not-for-profit organisation, 180 Degrees Consulting, most recently as their International Consulting Director for the Australasia region. Emma has a degree in International Relations/Law (Hons I) from Sydney University. She is a Youth Action Net Laureate Global Fellow, a graduate of the Miller Centre GSBI Accelerator Program and was a Finalist in the Australian Women of the Future Awards.



having lived and worked in Tanzania since 2009. Her 30-person Tanzanian team has delivered life-improving solar lanterns, clean cookstoves, and agricultural tools to over 75,000 families. GCS is setting a new “global community standard” in Tanzania, providing products and a level of service that rivals Western markets, as well as creating tremendous opportunities for cost savings and income generation for its customers. As a champion of collaboration, Wu has facilitated small-scale manufacturing of 15,000 sheet metal agricultural tools in developing markets, advised dozens of fellow entrepreneurs entering the Tanzanian market, and consulted for various international energy companies to bring new services to rural villages. Wu was named one of Bloomberg BusinessWeek’s America’s Most Promising Entrepreneurs in 2010 and Forbes’ 30 under 30 in 2011. She is also a 2010 Echoing Green Fellow, 2011 TEDGlobal Fellow, 2012 Ashoka Emerging Innovator, 2013 D-Lab Scale-Ups Fellow, and 2016 C3E Award Winner for International Leadership. Jodie holds a BS in Mechanical Engineering from the Massachusetts Institute of Technology.



STEELE LORENZ

Steele Lorenz is the Co-Founder and CEO of MyRain, a social venture focused on distributing efficient irrigation systems to smallholding farmers in India. Founded in 2012, MyRain has distributed 2,600 acres worth of irrigation equipment helping 13,000 farmers and their families save 5 billion liters of water while producing an additional 10,000 tons of food annually. Prior to launching MyRain, Lorenz worked as a digital strategy consultant at Ovative/Group, one of the fastest growing independent digital agencies in the United States. In this role, he consulted with top 20 retailers seeking to develop omnichannel digital marketing strategies. Lorenz has a B.S.B in Entrepreneurial Management from the Carlson School of Business at the University of Minnesota.



MODERATOR: JACKIE STENSON

Jackie Stenson is passionate about technology dissemination. An engineer by training, Jackie worked for technology-for-development initiatives in 11 African countries and India, until she realized that the real challenge is getting these products to their intended end users. She shifted her focus to technology dissemination strategies in low-income settings, specifically in East Africa and India. Her work and research helped lay the groundwork for Essmart, which she co-founded with Diana Jue. Essmart is a distribution company for life-improving technologies based in southern India that connects local retail shops to a catalogue of essential goods by providing marketing, distribution, and after-sales service. Jackie has a BS in mechanical engineering from Harvard and an MPhil in Engineering for Sustainable Development from the University of Cambridge. She has been featured on the Forbes 30 Under 30 list and Essmart’s work has been featured on NPR. She is a 2012 Echoing Green Fellow, a 2014 Cartier Women's Initiative Awards Laureate, a 2016 D-Lab Scale-Ups Fellow, and a 2016 Grinnell College Innovator for Social Justice Prize Winner.



Mobile Technology Panel

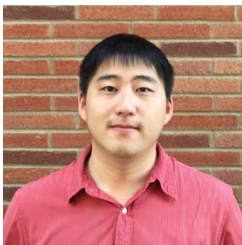
Saturday Afternoon

This panel will discuss the usage of mobile technology in innovations deployed in emerging markets and impoverished areas. The panelists will share their experience and the difficulties encountered in different places and situations.



Rich Fletcher is currently a research scientist at MIT D-Lab and an assistant professor at the University of Massachusetts Medical School. Dr. Fletcher directs the Mobile Technology Group within the

MIT D-Lab which develops a variety of mobile sensors, software, and algorithms to study problems in global health and behavior medicine. Dr. Fletcher earned degrees in Physics, Electrical Engineering and Information Technology from MIT, and has been conducting global health projects for over 15 years, with funding from NIH, USAID, Bill and Melinda Gates Foundation, and Vodafone Americas Foundation.

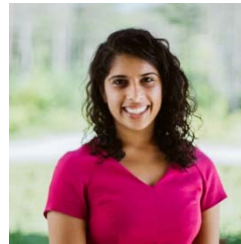


Steve Feng received his B.S. and M.S. in Electrical Engineering from the University of California, Los Angeles (UCLA). Steve's research interests revolve around image analysis, signal processing, parallel computing, machine learning, computer vision, and mobile health. His work has resulted in 12 refereed journal papers and 3 patents. Since 2010, Steve has contributed to the UCLA Bio- and Nano-Photonics Laboratory under Professor Aydogan Ozcan (EE/BE departments). Steve currently holds an Associate Development Engineer position leading computational imaging and mobile development projects for mobile health, environmental sensing, and diagnostic imaging platforms. Steve has also performed as a software engineer consultant to Cellmic LLC since 2013, providing Android mobile development and server-side support for their mobile diagnostics platforms.



Tim Burke is a social entrepreneur working to empower organizations around the world to better track their activities using low-cost remote monitoring tools. He cofounded Arch

with this goal in 2015. Previously he did his PhD in organic photovoltaics at Stanford University and spent three years as a Peace Corps volunteer in rural Panama designing the country's first community-built and operated pico-hydropower system.



Sona Shah is co-founder and CEO of Neopenda, a global health startup passionate about using technology to reduce newborn mortality in low-resource settings. Upon completion of her BS in

Chemical Engineering from Georgia Tech, Sona spent two years working as an engineer in the Bioprocess Research and Development department at Eli Lilly and Company. After spending time as a teacher in Kenya, and returning as a volunteer with Engineers Without Borders, Sona's passion for helping impoverished communities is further demonstrated by her research involvement at Columbia with mChip, a point-of-care diagnostic device for HIV and Syphilis. She has also worked at the TB Alliance, both in community engagement and drug discovery for medications that treat tuberculosis. Sona recently completed her MS in Biomedical Engineering at Columbia University in May 2016, and aspires to merge her passions for global health and technology by creating innovative technologies to help some of the world's most vulnerable populations.



Cody Finke, originally from Seattle, WA, graduated from Carleton College in Northfield, MN with a BA in Chemistry with distinction. While at Carleton, Cody was honored as a Goldwater Scholar. After college, Cody

worked variously as a lobsterman and bus boy, trying to ski as much as possible in the Sawtooth, Teton, and Cascade ranges. Cody eventually decided to leave the potentially lucrative career path of the Ski Mountaineer to join the Engineering and Applied Sciences Division at Caltech as a PhD student. While at Caltech, Cody's research interests have been to develop technologies to help solve the global environmental crisis. So far projected have included forming a fundamental understanding of electrocatalysis for wastewater treatment and energy storage and developing software to ensure the long term functionality of wastewater treatment technologies in the developing world.



Dr. Navid Amini is a research faculty member at UCLA Stein Eye Institute, a researcher at UCLA Wireless Health Institute, and a founding member of the project EyeSee. His research interests lie broadly in medical informatics with emphasis on

wearable sensing and computing technologies for wireless health applications. He is currently utilizing the mobile technology to investigate the effects of various visual impairments on quality of life in affected individuals. He received his B.Sc. degree in computer engineering from Sharif University in 2007. He earned his M.Sc. and Ph.D. degrees both in computer science from UCLA in 2010 and 2012. His doctoral research led to the development of the UCLA Smart Insoles, a wireless computing platform that has been used in multiple clinical trials for gait analysis, activity monitoring, and plantar pressure measurement. His Ph.D. was followed by a postdoctoral fellowship in which he was a principal investigator of an NIH-funded proposal to investigate the risk of falls in glaucoma patients. He has served on the Technical Program Committee for

several conferences in the fields of wireless networks, mobile computing, and data analytics. He is a named inventor on three US patents, two of which have been licensed and moving towards commercialization. He is the recipient of the Edward K. Rice Outstanding Doctoral Student Award, UCLA Chancellor's Award for Postdoctoral Research, Alcon Young Investigator Award, and the Vodafone Wireless Innovation Award. He has received unrestricted gifts from influential companies such as Google and Symantec for pursuing end-to-end collaborative research.

MODERATOR



Fredrik Winsnes, Senior Director, Global Programs with NetHope is currently responsible for the Network Solutions Center. Through education and collaboration, the NetHope Solutions Center aims at assisting

the 49 NetHope members and likeminded organizations to maximize their benefit from adopting enterprise technology and impactful ICT program solutions. He is also responsible for the NetHope Leadership Institute, and supports the NetHope Academy as well as the Health Communications Capacitive Collaborative (HC3) partnership with Johns Hopkins University. Prior to joining NetHope in 2010, Winsnes spent over 16 years with Microsoft in various management roles ranging from pre-sales activities through solutions and product development. Privately, from 2005 to 2009, parallel to his role at Microsoft, Winsnes was engaged in PC lab deployments in secondary schools in Uganda – “Computers for Uganda”. Initially as a leader for a student summer program through the Forest Ridge School of the Sacred Heart in Bellevue, WA, and subsequently by incorporating InterConnection Uganda Ltd., as a commercial, self-sustaining PC import and refurbishing social enterprise. Winsnes, a native of Norway, has a bachelor's degree from the Norwegian School of Management in Oslo and MBAs in finance and marketing from the University of Wisconsin, Madison.

IEEE SIGHT workshop:

Creating Local Impact for Achieving Global Internet Inclusion

2016 is the year of the Internet for the World Bank and the year the US launched the [Global Connect Initiative](#) to connect 1.5 Billion to the Internet. The IEEE-SIGHT and People Centered Internet will be conducting a workshop to introduce the global opportunities for all the IEEE members and OUs to work on Internet Inclusion for All, together with the World Bank, Social Impact Financing networks and the Internet Society, the World Economic Forum's Internet for All initiative. The IEEE gathered 200 people in DC this month to develop a 4 year roadmap for bringing together local communities and technologists and engineers - to Connect to Thrive.

Attendees will learn what is going on globally and how you can locally plug into the network to make a difference in your community or a community across the world that you want to contribute to. Learn what it takes to become part of the **IEEE-hosted Internet Inclusion** meetings which take place twice a year alongside the IMF/World Bank gatherings from now through 2020.

About IEEE SIGHT:

The **Special Interest Group on Humanitarian Technology** (SIGHT) program is a network of IEEE volunteers around the globe who partner with underserved communities and local organizations to leverage technology for sustainable development.

In this participatory workshop, we will review the newly defined structure for the activities of our SIGHT groups to help increase the impact of our work. Starting 2016, each SIGHT group will have 4 requirements to remain active: Education, Project, Capacity building, and Self-assessment.

The participants will then brainstorm how to effectively contribute to the global internet inclusion mission -- which People-Centered-Internet is spearheading -- by co-creating a local roadmap of projects and activities that align with the SIGHT program's 4 requirements.

IEEE SIGHT toolkit: ieee-sight-toolkit.org

IEEE Humanitarian Activities Committee (HAC)

Meetings during GHTC 2016

Tuesday October 13 (10:30 AM – 1:30 PM)

IEEE Humanitarian Activities Committee (HAC) Focus Group

Moderators: Vineeth Vijayaraghavan & Paul M Cunningham

Description: This semi-structured Focus Group will capture insight from senior representatives of key stakeholder groups with a strong track record of involvement in the planning, execution, funding and/or assessment of global development interventions. *Participation is limited to 12 invitees*, representing relevant public, private, education and research, societal and funding sector organisations.

Tuesday October 13 (2:30 – 5:30 PM)

IEEE HAC Participatory Workshop

Moderators: Paul M Cunningham & Vineeth Vijayaraghavan

Description: This semi-structured participatory workshop will capture insight from a broad range of key stakeholder groups involved in global development interventions to streamline and strengthen the application, review and assessment processes for global development projects supported by HAC. *Pre-registration is essential* as this workshop is limited to 40 participants involved in global development, representing relevant public, private, education and research, societal and funding sector organisations.

Wednesday October 14 (12:30 – 12:45 PM)

IEEE HAC and Global Development

Paul M Cunningham (Projects Chair, IEEE Humanitarian Activities Committee)

Abstract: IEEE is very well positioned to have real impact around the world, based on the geographic diversity, breadth, depth and complementarity of technical, scientific and engineering expertise, cross-sectoral representation and strong volunteer ethos of its membership. This presentation will discuss the work of the IEEE Humanitarian Activities Committee and opportunities for IEEE volunteers in Global Development.

Wednesday October 14 (2:30 – 5:30 PM)

IEEE HAC – Supporting Global Development

Moderators: Paul M Cunningham & Vineeth Vijayaraghavan

Description: This highly participatory workshop will focus on providing an opportunity for all key stakeholders involved in or interested in getting involved in global development to share insight, discuss the co-design of projects and brainstorm. Topics that will be discussed include:

- Potential Role of Collaborative Open Innovation
- Designing an ethical Development Project
- Monitoring & Evaluation and Impact Assessment

No pre-registration is required.

For More Information about IEEE HAC, please visit

https://www.ieee.org/about/corporate/humanitarian_activities_committee.html



IEEE Global Humanitarian Technology Conference 2016

PROGRAM AT A GLANCE

Time	Thursday, October 13, 2016
1:30pm - 6:00pm	Registration opens 1:30 - 6:00 pm (Grand Foyer)
10:00am - 1:30pm	IEEE Humanitarian Activities Committee (HAC) Focus Group 10:00 am - 1:30 pm (Cascade 1 & 2)
2:30pm - 5:30 pm	IEEE HAC Participatory Workshop 2:30 - 5:30 pm (Cascade 1 & 2)
6:30pm - 8:00pm	MGA Young Professionals Welcome Reception 6:30 - 8:00 pm (Grand 2) Keynote speaker I: Dr. Bartosz Wojszczyk - President & CEO, Decision Point Global Influence of life quality in developing countries by disruptive & transformational technologies
Time	Friday, October 14, 2016
7:00am - 8:00am	Registration Open (Grand Foyer)
8:00am - 9:30am	Opening Plenary (Grand 2/3) Conference Welcome -- Joe Decuir (GHTC 2016 Chair) Opening Remarks -- Mike Andrews (IEEE) Opening Keynote: Walt Hubbard, Director of King County Office of Emergency Management
9:30am - 10:00am	Break
10:00am - 11:30am	Parallel technical presentations (Northwest 1-3 and Evergreen 1-4) <u>Energy track (session A1, chaired by Mei-Chien Lu)</u>
10:00 - 10:05	Energy track opening remarks
10:05 - 10:45	1570265777 Engineering and Socio-Economic Aspects of Sustainable Energy <i>Mehrdad Ehsani and Hussein Mohammad Khalaf Al-Masri (Texas A&M University, USA)</i>
10:45 - 11:05	1570275194 Concentrating Solar Power Systems with Advanced Thermal Energy Storage for Emerging Markets <i>Mariana Lanzarini Lopes, Nathan G Johnson and Ellen Stechel (Arizona State University, USA); James Miller (Sandia National Laboratories, USA)</i>
11:00 - 11:25	1570283129 E-Cycle: An Offgrid Solution for Rural Electrification <i>Amritanand S (Amrita Vidyalyayam, India); Divya Pullarkatt, Gosh G. and Tinu Vinod (Amrita Vishwa Vidyapeetham, India)</i>
	<u>Health track (session A2, co-chaired by Charmayne Hughes and Alan Mickelson)</u>
10:00 - 10:20	1570282469 A Wearable Diagnostic device to combat Children's Pneumonia <i>Mala Krishnamoorthi, Manoj Kumar Kalaiselvan, Vignesh Ravichandran and Manoj Kumar Baskaran (Easwari Engineering College, Chennai, India)</i>
10:20 - 10:40	1570275171 Optical sensing system for detecting water adulteration in milk <i>Aditya Dave and Dishant Banwari (Birla Institute of Technology and Science-Pilani, K. K. Birla Goa Campus, India); Satyamm Srivastava (CSIR CEERI, India); Shashikant Suresh Sadistap (CEERI Pilni & Head, Scientist_EII, India)</i>
10:40 - 11:00	1570270441 MUMS - Mobile Urinalysis for Maternal Screening <i>Unyoung Kim, Silvia Figueira, Blair Koeneman, Amy Miller, Joseph Neumeyer and Jake Prince (Santa Clara University, USA)</i>
11:00 - 11:20	1570274771 Micronutrient Deficiencies in the Developing World: An Evaluation of Delivery Methods <i>Dhruv Rao, Connor Higgins, Hartini Margot, Taylor Lyle and Shannon McFalls (The Pennsylvania State University, USA); Eric Obeysekare (Pennsylvania State University, USA); Khanjan Mehta (Penn State, USA)</i>
	<u>Connectivity & Communication track (session A3, chaired by Jim Miller)</u>
10:00 - 10:20	1570281654 Maintaining both availability and integrity of communications: challenges and guidelines for data security and privacy during disasters and crises <i>Flor Alvarez (Technische Universität Darmstadt & Secure Mobile Networking Lab, Germany); Paul Gardner-Stephen (Flinder University, Australia); Matthias Hollick (Technische Universität Darmstadt & Secure Mobile Networking Lab, Center for Advanced Security Research Darmstadt, Germany)</i>
10:20 - 10:40	1570283855 Mobile Infrastructure for Coastal Region Offshore Communications and Networks <i>Sethuraman N Rao (Amrita Vishwa Vidyapeetham University, India); Maneesha Vinodini Ramesh (Amrita Vishwa Vidyapeetham, Amrita University, India); Venkat Rangan (Amrita University, India)</i>
10:40 - 11:00	1570282886 Development of Mobile Learning Application to Promote World Heritage Site Preservation Awareness: Case of Luang Prabang, Lao PDR <i>Yew Siang Poong, Shinobu Yamaguchi and Jun-ichi Takada (Tokyo Institute of Technology, Japan)</i>
11:00 - 11:20	1570274923 Developing a Lean Data Management System for an Emerging Social Enterprise <i>Eric Obeysekare (Pennsylvania State University, USA); Anthony Marucci and Khanjan Mehta (Penn State, USA)</i>

Disaster Management track (session A4, chaired by Eric Ma)

- 10:00 - 10:20 1570283317 Development and Deployment of the IEEE MOVE Emergency Relief Vehicle
James M. Conrad (University of North Carolina at Charlotte, USA); Mary Ellen Randall (Ascot Technologies, USA); Gregg Vaughn (University of Alabama Birmingham, USA); Percy F. Shadwell, Jr. (Shadwell Technical Services, USA); Grayson W. Randall (Ascot Technologies, USA)
- 10:20 - 10:40 1570283323 Technical Capabilities of the IEEE MOVE Emergency Relief Vehicle
Grayson W. Randall (Ascot Technologies, USA); James M. Conrad (University of North Carolina at Charlotte, USA); Gregg Vaughn (University of Alabama Birmingham, USA); Mary Ellen Randall (Ascot Technologies, USA); Percy F. Shadwell, Jr. (Shadwell Technical Services, USA)
- 10:40 - 11:00 1570272635 Thermal Autonomous Housing for the Developing World: A Case Study in Bhuj
Emma Nelson (Massachusetts Institute of Technology & MIT Tata Center for Innovation and Design, USA); Leon Glicksman (Massachusetts Institute of Technology, USA)
- 11:00 - 11:20 1570283307 Web-based, multi-platform, centralized, offline-compatible supply chain management system for emergency responses
Dawei Wang and Yuehwen Yih (Purdue University, USA); John Service, Lionel Lajous and Sarah Robbins-penniman (Catholic Relief Service, USA)

Humanitarian Challenges & Opportunities track (session A5, chaired by Ed Perkins)

- 10:00 - 10:20 1570266483 Humanitarian Engineering Opportunities and Challenges in Rural Dominican Republic: A Case Study of El Cercado
Savanna Blair, Danford Jooste, Katie Kuwahara, Devyn Bryant, Christopher Ashkar, Sam Burt and Deanna Wolf (University of San Diego, USA); Joanne Peterson (San Pedro Parish, Dominican Republic); Truc T. Ngo (University of San Diego, USA)
- 10:20 - 10:40 1570282844 Solar based Lemon Grass Essential Oil Distillation for Sustainability and Livelihood in Tribal Community
Udaya Bhaskar Reddy Ragula (Amrita Vishwa Vidyapeetham University & Center of Excellence in Advanced Materials and Green Technologies, India); Sriram Devanathan (Amrita Vishwa Vidyapeetham, Amrita University & Center of Excellence in Advanced Materials and Green Technologies, India); Renjith Mohan (Amrita Vishwa Vidyapeetham, India)
- 10:40 - 11:30 1570281464 Panel: Unmanned Aerial Vehicles—Promise and Practice
Sindri Kinnier (Palladium, USA); Adam Curry (BD Technologies, USA); Renee Van de Weerd (UNFPA, USA); Jonathan Dixon (Palladium, USA)

11:30am - 12:30pm **Panel Session: Building effective distribution channels for humanitarian technologies (Grand 2/3)**

Panelists: Emma Colenbrander (co-founder, Pollinate Energy), Steele Lorenz (co-founder and CEO, MyRain), Jodie Wu (founder and CEO, Global Cycle Solutions), Jackie Stenson (panel moderator, co-founder of Essmart)

12:30pm - 1:30pm **Sponsor Speeches: Paul Cunningham (HAC and Global Development), and Kartik Kulkarni (SIGHT) (Grand 2/3) Lunch (Grand 2/3)**

1:00pm - 6:30pm **Exhibits Open (Grand 1)**

1:30pm - 3:00pm **HAC Public Workshop: Supporting Global Development (Paul Cunningham) (Grand 2/3) Parallel technical presentations (Northwest 1-3 and Evergreen 1-4)**

Energy track (session B1, chaired by Mehrdad (Mark) Ehsani)

- 1:30 - 1:50 1570281051 A Universal Charge Controller for Integrating Distributed Energy Resources
Shammya S Saha, Samantha Janko and Nathan G Johnson (Arizona State University, USA); Robin Podmore (IncSys, USA); Alain Riaud (IEEE Smart Village, France); Raymond Larsen (SLAC National Accelerator Laboratory, USA)
- 1:50 - 2:10 1570265042 Electronic Load Controller Design and Simulation for Remote Rural Communities A Powerhouse ELC Compatible with Household Distributed-ELC Slow Cookers in Nepal
Johannes Chan and William Lubitz (University of Guelph, Canada)
- 2:10 - 2:30 1570281886 A Systematic Methodology to Transform Campuses in the Developing World into Sustainable Communities
Ekanath Rangan and Krishna Das (Amrita University, India)
- 2:30 - 2:50 1570282950 A Limited-Power-Limited-Energy System Design Approach for Remote Areas
Syed Abbas (Sunvolts (Pvt) Limited, Pakistan)

Health track (session B2, co-chaired by Charmayne Hughes and Alan Mickelson)

- 1:30 - 1:50 1570274761 Inexpensive Urinalysis Test Strips to Screen for Diabetes in Developing Countries
Nathan Arnett, Alice Vergani and Amanda Winkler (Pennsylvania State University, USA); Sarah Ritter (Penn State University, USA); Joshua Stapleton (Pennsylvania State University, USA); Khanjan Mehta (Penn State, USA)
- 1:50 - 2:10 1570274808 Stamping: a low-cost manufacturing method to deposit assays
Gabrielle Gundermann (Penn State University & Humanitarian Engineering and Social Entrepreneurship, USA); Shweta Sen and Sarah Ritter (Penn State University, USA); Khanjan Mehta (Penn State, USA)
- 2:10 - 2:30 1570283297 IoT-enabled Air Quality monitoring device: A low-cost Smart Health solution
Akshata Tapashetti, Divya Vegiraju and Tokunbo Ogunfunmi (Santa Clara University, USA)
- 2:30 - 3:00 1570283247 Case study: Transforming Healthcare for the Underprivileged using HeMoClo
Sudhanshu Pant (Mobilitas Technologies, India)

Connectivity & Communication track (session B3, chaired by Jim Miller)

1:30 - 1:50	1570270374	Design and Implementation of a Low-cost and Reliable Wireless Mesh Network for First-Response Communications <i>Nestor Michael C. Tiglao (University of the Philippines, Philippines)</i>
1:50 - 2:10	1570283311	The Balsapuerto Network: A Case Study in Jungle Internet <i>Alan Mickelson (University of Colorado at Boulder, USA); Martin Murillo (Notre Dame, USA)</i>
2:10 - 3:00	Special presentation	Panel: Network deployment. <i>Facilitator: James Miller</i>
<u>Disaster Management track (session B4, chaired by Eric Ma)</u>		
1:30 - 1:50	1570282927	The exploration of alternative phone charging strategies for disaster or emergency situations <i>Watcharachai Kongsiriwattana (Flinders University, Australia); Paul Gardner-Stephen (Flinder University, Australia)</i>
1:50 - 2:10	1570282519	Smart-Phone Battery-life short-fall in disaster response: Quantifying the gap <i>Paul Gardner-Stephen (Flinder University, Australia); Watcharachai Kongsiriwattana (Flinders University, Australia)</i>
2:10 - 2:30	1570283053	Agile Development of Disaster Information Systems for the Kumamoto Earthquake, How geeks should respond in deadly disaster situations <i>Teruhiro Mizumoto (Nara Institute of Science and Technology, Japan); Takashi Okumura (National Institute of Public Health, Japan)</i>
2:30 - 2:50	1570283583	Delay and Energy Optimization in Multilevel Balanced WSNs for Landslide Monitoring <i>Balaji Hariharan and Venkat Rangan (Amrita University, India); Simi Surendran (Amrita University, Kuwait); Rekha P (Amrita Vishwa Vidyapeetham, India); Anyadevi Devidas (Amrita Vishwa Vidyapeetham & Amrita University, India); Maneesha Ramesh (Amrita University, India)</i>
<u>Deployment track (session B5, co-chaired by Jackie Stenson and Roger Johnson)</u>		
1:30 - 1:50	1570283141	Measuring usage and adoption of improved cookstoves in Ugandan households using quantitative and qualitative methods <i>Prithiviraj Sundararaman, Amit Gandhi, Megha Hegde, Kendra Leith, Daniel Sweeney and Daniel Frey (Massachusetts Institute of Technology, USA)</i>
1:50 - 2:10	1570283852	When Academia Meets Rural India: Lessons Learnt from a MicroGrid Implementation <i>Fabien Chidanand Robert (Amrita Vishwa Vidyapeetham, India); Ullas Ramanathan and Mukundan Br (Amrita Vishwa Vidyapeetham University & Amrita Center for Wireless Networks and Application, India); Durga P (Amrita Center for Wireless Networks and Applications, India); Renjith Mohan (Amrita Vishwa Vidyapeetham, India)</i>
2:10 - 2:30	1570283232	Electrically Facilitated Solar Cargo Hauler - A Key to Easy and Safe Transportation of Goods without Dependency on the National Grid <i>Audrika Purbasha, Fabiha Khan, Mir S Redoy and A. K. M Abdul Azad (BRAC University, Bangladesh)</i>
2:30 - 2:50	1570280953	Sustainability Analysis of Off-grid Community Solar PV Projects in Malawi <i>Peter Dauenhauer and Damien Frame (University of Strathclyde, United Kingdom)</i>
3:00pm - 3:30pm	Break	
3:30pm - 5:30pm	HAC Public Workshop: Supporting Global Development (Paul Cunningham) (Grand 2/3)	
4:30pm - 5:30pm	IEEE Smart Village Presentation: Energy, Enterprise and Empowerment (Henry Louie) (Northwest 1)	
Parallel technical presentations (Northwest 1-3 and Evergreen 1-4)		
<u>Energy track (session C1, chaired by Michael Brisbois)</u>		
3:30 - 3:50	1570281953	Developing for Developing Nations: Exploring a Low-cost PV System Design Methodology <i>Nishant Narayan, Jelena Popovic, Jan-Carel Diehl and Sacha Silvester (Delft University of Technology, The Netherlands); Pavol Bauer (TU Delft, USA); Miro Zeman (Delft University of Technology, The Netherlands)</i>
3:50 - 4:10	1570269149	Why Not Connect? Untapped Power Markets and FACTS for Interconnecting Islanded Microgrids <i>Alexander Anderson (Odin Energy Works LLC, USA); Robin Podmore (IncSys, USA)</i>
4:10 - 4:30	1570255751	Participatory smartgrid control and transactive energy management in community shared solar cogeneration systems for isolated rural villages <i>Gerro Prinsloo (Stellenbosch University, South Africa); Andrea Mammoli (New Mexico University, USA); Robert Dobson (Stellenbosch University)</i>
<u>Health track (session C2, co-chaired by Charmayne Hughes and Alan Mickelson)</u>		
3:30 - 3:50	1570265888	Fighting Weight Problems and Insulin Resistance with the Metabolic Health Monitor App for Patients in the Setting of Limited Access to Health Care in Rural America <i>Zsolt Peter Ori and Ilona Ori (Ori Diagnostic Instruments LLC, USA)</i>
3:50 - 4:10	1570283349	Large Scale Remote Health Monitoring in Sparsely Connected Rural Regions <i>Rahul Krishnan (Amrita Vishwa Vidyapeetham, India); Ekanath Rangan (Amrita University, India)</i>
4:10 - 4:30	1570283345	Improving Health Information Systems in Guatemala Using Weighted Correlation Network Analysis <i>Lee Voth-Gaeddert (Missouri University of Science and Technology, USA); Devin Cornell (University of California, Santa Barbra, USA)</i>

4:30 - 5:30 1570273612 Case Study: Development of a reliable, robust, and scalable oxygen concentrator platform technology to accelerate oxygen delivery in low-resource settings
Eugene Saxon (PATH, USA); Grace Wu (Boston University, USA); Alec Wollen, Jaclyn Delarosa, Glenn Austin and Darin Zehrung (PATH, USA)

Student Best Paper Presentations (session C3, chaired by Charmayne Hughes)

3:30 - 3:55 1570281051 A Universal Charge Controller for Integrating Distributed Energy Resources
Shammya S Saha (Arizona State University)

3:55 - 4:20 1570272635 Thermal Autonomous Housing for the Developing World: A Case Study in Bhuj
Emma Nelson (Massachusetts Institute of Technology)

4:20 - 4:45 1570275976 Evaluating upper-extremity (dys)function using inertial measurement unit technology and its applications to resource-constrained settings
Alisa Aguirre (San Francisco State University)

4:45 - 5:10 1570274183 Quantification of a Latex Agglutination Assay for Bacterial Pathogen Detection in a Low-Cost Capillary-Driven Fluidic Platform
Kyle Pietrzyk (Santa Clara University)

5:10 - 5:35 1570282522 Image Based Spare Parts Reconstruction for Repairing Vital Infrastructure after Disasters
Julius Schöning and Gunther Heidemann (Osnabrück University, Germany)

Education track (session C4, chaired by Adil Usman)

3:30 - 3:50 1570282836 Elevating Visually Challenged Children towards Science and Technology Education through Scaling-up Humanitarian Technologies by networking with higher learning centres, NGOs, and Parent-Teacher partnerships
Ranjit Nair (InApp Information Technologies, India); Ramkamal Manoj (Managing Trustee and Chief Mentor Chakshumathi, India); Mani K p (Student IIT Madras, India); Piyush Chanana (GGSIPU, India); Damodaran Kunnummal (INGCORE & Promotion of Renewable Energy, India)

3:50 - 4:10 1570281940 Tech4SocialChange: crowd-sourcing to bring migrants experiences to the academics
André Reis, Jorge Sá Silva, David Nunes, Hugo Aguiar, Hugo Damião Dias and Ricardo Barbosa (University of Coimbra, Portugal); Soraya Sinche and Carlos Herrera (Escuela Politécnica Nacional, Ecuador); André Rodrigues (Centre of Informatics and Systems of the University of Coimbra & Polytechnic Institute of Coimbra, ISCAC, Portugal); Ashley Figueira, Duarte Raposo, Vasco Pereira and Fernando Boavida (University of Coimbra, Portugal)

4:10 - 4:30 1570283030 Exploring Problem Definition in Student Global Humanitarian Project Cases in the Literature
Matthew Vedrin and Rebecca Hardin (University of Michigan, USA)

4:30 - 4:50 1570282849 Achieving Critical Mass: Execution of a 5-year strategy to raise awareness levels for engineering as a career option
Ranjit Nair (Sokanathapadam, India); Jithin Krishnan (Instrumentation Lab & SCTIMST, India); Namith Najeeb (Thrikkanapuram & Kuttippuram, India); Ajin Baby (COO, India); Shahim Baker (Director, India)

4:50 - 5:30 1570274728 Case study: Challenge Driven Social Entrepreneurship and High Impact Student Engagement
Leslie E. Ruyle (Texas A&M University & Center on Conflict and Development, USA); Magdalini Lagoudas and Rodney Boehm (Texas A&M University, USA)

Deployment track (session C5, co-chaired by Jackie Stenson and Roger Johnson)

3:30 - 3:50 1570282768 ROGER: Robust and Rapidly Deployable GSM Base Station and Backhaul for Emergency Response
Joel Joseph Jr. S. Marciano (University of the Philippines & Wireless Communications Engineering Laboratory, Philippines); Patth Rick Ramirez (University of the Philippines Diliman & Wireless Communications Engineering Laboratory, Philippines); Philip A Martinez (University of the Philippines & Electrical and Electronics Engineering Institute, Philippines); Mary Claire Barela (University of the Philippines - Diliman, Philippines)

3:50 - 4:10 1570283222 A Testbed For WiLDNet and White Space
Wallace Kenyon and Alan Mickelson (University of Colorado at Boulder, USA); Alexander Anderson (Odin Energy Works LLC, USA)

4:10 - 4:30 1570283861 Live-in-Labs: Rapid Translational Research and Implementation-Based Program for Rural Development in India
Maneasha Vinodini Ramesh (Amrita Vishwa Vidyapeetham, Amrita University, India); Renjith Mohan and Soumya Menon (Amrita Vishwa Vidyapeetham, India)

4:30 - 5:30 1570283085 Workshop on Technology Governance in Humanitarian Settings
Dominik B. O. Boesl (Technische Universität München & KUKA AG, Germany); Martina Bode (KUKA AG, Germany)

5:30pm - 6:30pm **Break**

6:30pm - 8:00pm **Dinner & Awards Ceremony (Grand 2/3)**

Region 6 Awards -- Thomas Coughlin (Region 6)
Region 6 HE Award - Thomas Coughlin (Region 6)
Best Student Papers Awards -- Charmayne Hughes (GHTC 2016)

Keynote speaker: Alexis Bonnell, Division Chief-Applied Innovation and Acceleration, U.S. Global Development Lab, USAID

Time Saturday, October 15, 2016

7:00am - 8:00am **Registration Open (Grand Foyer)**

8:00am - 9:30am	SIGHT Workshop: Deep Dive into Creating and Sustaining Local Impact (Kartik Kulkarni, session D3, Northwest 3)	
	Parallel technical presentations (Northwest 1-2 and Evergreen 1-4)	
	<u>Energy track (session D1, chaired by Sarah Ritter)</u>	
8:00 - 8:20	1570275007	Short-term operation of a hybrid minigrid under load and renewable production uncertainty <i>Davide Fioriti, Romano Giglioli and Davide Poli (University of Pisa, Italy)</i>
8:20 - 8:40	1570282683	Impacts of using microwave oven transformers on micropower distribution grids <i>Richard Sandoval and Patricio Mendoza-Araya (University of Chile, Chile)</i>
8:40 - 9:00	1570274685	Intelligent Dynamic Grid Forecasting Algorithm for a Grid-Connected Solar PV Based Microgrid <i>Harini Sekar and Rajagopalan Rajashekar (Solarillion Foundation, India); Farhan Faisal (University of Illinois at Chicago & Solarillion Foundation, India); Rohan Ganpati (Anna University, Chennai, India); Vineeth Vijayaraghavan (Solarillion Foundation, India)</i>
9:00 - 9:20	1570283271	Tool for detecting waveform distortions in inverter-based Microgrids: a validation study <i>Geir Kulia (Norwegian University of Science and Technology, Norway); Marta Molinas and Lars Lundheim (NTNU, Norway)</i>
	<u>Health track (session D2, co-chaired by Charmayne Hughes and Alan Mickelson)</u>	
8:00 - 8:20	1570272238	Community-based neurorehabilitation in underserved populations <i>Charmayne ML Hughes and Alisa Aguirre (San Francisco State University & Health Equity Institute, USA); Asif Hussain, Aamani Budhota and Domenico Campolo (Nanyang Technological University, Singapore)</i>
8:20 - 8:40	1570275976	Evaluating upper-extremity (dys)function using inertial measurement unit technology and its applications to resource-constrained settings <i>Alisa Aguirre (San Francisco State University & Health Equity Institute, USA)</i>
8:40 - 9:00	1570283281	Inference System for Osteoporosis Detection <i>Reshmalakshmi Chandrasekharan (University of Kerala, India); M Sasikumar (Marian Engg. College, India)</i>
9:00 - 9:20	1570274903	Diagnosis of Autism Using an Eye Tracking System <i>Natalia Indira Vargas-Cuentas (Universidad Peruana Cayetano Heredia); Daniela Hidalgo (UPCH, Peru); Avid Roman-Gonzalez (Universidad Peruana Cayetano Heredia - UPCH & IEEE Senior Member, Peru); Michael Powers (CCSN, USA); Robert Gilman (JH University, USA); Mirko Zimic (UPCH, Peru)</i>
	<u>Disaster Management track (session D4, chaired by Eric Ma)</u>	
8:00 - 8:20	1570296357	Universal Laws of Disaster <i>Claudio Cioffi-Revilla (George Mason University & Center for Social Complexity, USA)</i>
8:20 - 8:40	1570281283	WeDoCare: A Humanitarian People-centric Cyber-Physical System for the benefit of Refugees <i>Ashley Figueira, David Nunes, Ricardo Barbosa, André Reis and Hugo Aguiar (University of Coimbra, Portugal); Soraya Sinche (Escuela Politécnica Nacional, Ecuador); André Rodrigues (Centre of Informatics and Systems of the University of Coimbra & Polytechnic Institute of Coimbra, ISCAC, Portugal); Vasco Pereira, Hugo Damião Dias and Duarte Raposo (University of Coimbra, Portugal); Carlos Herrera (Escuela Politécnica Nacional, Ecuador); Jorge Sá Silva and Fernando Boavida (University of Coimbra, Portugal)</i>
8:40 - 9:00	1570274855	A survey on IEEE 802.11-based MANETs and DTNs for survivor communication in disaster scenarios <i>Maria Salamanca and Jorge E. Camargo (Universidad Antonio Nariño, Colombia)</i>
9:00 - 9:20	1570279076	Disaster Management in India: An Analysis using COBIT 5 Principles <i>Chippi Mohanan and Vivek Menon (AMRITA Vishwa Vidyapeetham, India)</i>
	<u>Connectivity & Communication track (session D5, chaired by Jim Miller)</u>	
8:00 - 8:20	1570282172	An Experimental Evaluation of Delay-Tolerant Networking with Serval <i>Lars Baumgärtner (University of Marburg, Germany); Paul Gardner-Stephen (Flinders University, Australia); Pablo Graubner (University of Marburg, Germany); Jeremy Lakeman (Flinders University, Australia); Jonas Höchst, Patrick Lampe, Nils Schmidt, Stefan Schulz and Artur Sterz (University of Marburg, Germany); Bernd Freisleben (Philipps-Universität Marburg, Germany)</i>
8:20 - 8:40	1570274827	The Mesh Network for Refugees and Displaced Persons <i>Raghad Al Saadi (LMI, USA); Dave Evans (ASME, USA)</i>
8:40 - 9:30	1570283276	Demo: Triaging Deforestation Alerts <i>Chris Goodman (Bunjil Forest Watch, Australia)</i>
9:30am - 10:00am	Break	
10:00am - 6:30pm	Exhibits Open (Grand 1)	
10:00am - 11:30am	Parallel technical presentations (Northwest 1-3 and Evergreen 1-4)	
	<u>Energy track (session E1, chaired by Pritpal Singh)</u>	
10:00 - 10:20	1570272681	Insights on Thermal Efficiency Analysis for the Water Boiling Test <i>Cameron Quist, Matthew Jones and Randy Lewis (Brigham Young University, USA)</i>
10:20 - 10:40	1570276792	Development of Double Burner Smart Electric Stove Powered by Solar Photovoltaic Energy <i>Bareed Mohammad Nur, Samira Siddiqua, Sanjida Fairuz, Raonaq Jawwad, Sheri Chowdhury and A. K. M Abdul Azad (BRAC University, Bangladesh)</i>

- 10:40 - 11:00 1570274391 Energy demands of off-grid ice production
Matt Shields, Alexander Bouck and Patrick Duffy (Seattle University, USA)
- 11:00 - 11:20 1570283229 Assessing solar lantern usage in Uganda through qualitative and sensor-based methods
Amit Gandhi, Daniel Frey and Victor Lesniewski (Massachusetts Institute of Technology, USA)
- Health track (session E2, co-chaired by Charmayne Hughes and Alan Mickelson)**
- 10:00 - 10:20 1570270179 Global Social Acceptance of Prosthetic Devices
Adam Arabian (Seattle Pacific University & Refugee Open Ware, USA); Dante Varotsis (Hunter College, USA); Caitlin McDonnell (Enable International Haiti, USA); Elinor Meeks (eNABLE Community Foundation, USA)
- 10:20 - 10:40 1570283260 The Role of Health Informatics in Volunteer Supported Healthcare for Underserved Populations
Chilukuri K Mohan (Syracuse University, USA); Dayaprasad Kulkarni (Aarogyaseva, India)
- 10:40 - 11:00 1570283278 Implications of Baseline Study Findings from Rural and Deep Rural Clinics in Ethiopia, Kenya, Malawi and South Africa for the Co-Design of mHealth4Afrika
Paul M Cunningham and Miriam Cunningham (IIMC / IST-Africa / DSV, Stockholm University, Ireland)
- 11:00 - 11:20 1570274888 Mobile Health Adoption in Burundi: A UTAUT Perspective
Patrick Ndayizigamiye and Manoj Maharaj (University of KwaZulu-Natal, South Africa)
- Water and Sanitation track (session E3, chaired by John Prohodsky)**
- 10:00 - 10:20 1570275238 Design and Introduction of Pit-Latrines Assistive Devices in Lira, Uganda
Harrison Schmachtenberger, Mei-Li Hey and Caleb Avery (University of San Diego, USA)
- 10:20 - 10:40 1570254579 Evaluating Water Infrastructure and Agriculture Practices for Drought Adaptations in East Africa: A Combined Hydrological and System Dynamics Approach
Datu Buyung Agusdinata (Arizona State University, USA)
- 10:40 - 11:00 1570283866 Micro Water Distribution Networks: A participatory method of sustainable water distribution in rural communities
Maneesha Vinodini Ramesh (Amrita Vishwa Vidyapeetham, Amrita University, India); Renjith Mohan (Amrita Vishwa Vidyapeetham, India); Prakash C (Amrita University, India); R Ramkrishnan, Nitin Kumar M, Deepak Brahmanandan, Ananth Kumar and Lalith Prakash (Amrita Vishwa Vidyapeetham, India)
- 11:00 - 11:20 1570282636 Ultrasound assisted Stand Alone Toilet for Rural Areas
Prakash Sonwalkar and Dinesh Bindiganavale (Pradin Technologies Private Limited, India)
- Disaster Management track (session E4, chaired by Eric Ma)**
- 10:00 - 10:20 1570274829 Human power generator: Emergency-disaster management
Mahesh P J (University of Kerala & TKM College of Engineering Kollam, India); Minhas Naheem and Razak Mubafar K (University of Kerala, India)
- 10:20 - 10:40 1570272634 A Multi-agent Simulation Tool for Micro-scale Contagion Spread Studies
Daniel B Koch (Oak Ridge National Laboratory, USA)
- 10:40 - 11:00 1570274930 3D Printing for Disaster Preparedness, Making Life-saving supplies On-Site, On-Demand, On-Time
Srinivas Saripalle (IEEE, USA)
- 11:00 - 11:20 1570282522 Image Based Spare Parts Reconstruction for Repairing Vital Infrastructure after Disasters
Julius Schöning and Gunther Heidemann (Osnabrück University, Germany)
- Humanitarian Challenges & Opportunities track (session E5, chaired by Ed Perkins)**
- 10:00 - 10:20 1570274951 mBody Health: Digitizing Disabilities in Sierra Leone
Emma Hebert, Spencer McCullough, William Ferguson, Margaret Chan and Arsen Drobakha (The Pennsylvania State University, USA); Sarah Ritter (Penn State University, USA); Khanjan Mehta (Penn State, USA)
- 10:20 - 10:40 1570283353 An Aerial Landmine Detection System with Dynamic Path and Explosion Mode Identification Features
Shaikh Anowarul Fattah, Mohammad Zakaria Haider, Dhiman Chowdhury, Mrinmoy Sarkar, Rakibul Islam Chowdhury, Md Shariful Islam, Rezaul Karim, Adibuzzaman Rahi and Celia Shahnaz (BUET, Bangladesh)
- 10:40 - 11:00 1570282756 Evaluation of Non-Ionizing Radiation Emitted by FM Broadcasting and Free-To-Air TV Systems in the municipality of El Crucero, Managua
Julio Cruz and Gabriel Delgado (Universidad Nacional de Ingeniería, Nicaragua); Marvin R. Arias (National University of Engineering, Nicaragua)
- 11:00 - 11:20 1570282001 History of technology and humanitarian technologies. A case study regarding the design and deployment of humanitarian technologies among rural communities in Colombia
Juan Arturo Camargo Uribe (Corporación Universitaria Minuto de Dios UNIMINUTO, Colombia); Luz Dary Espitia (Corporación Universitaria Minuto de Dios Uniminuto, Colombia)
- 11:30am - 12:30pm **Panel Session: Mobile Technology (Grand 2/3)**
Moderator: Fredrik Winsnes; Panelists: Cody Finke (CalTech), Richard Fletcher (MIT D-Lab), Tim Burke (Arch Systems Inc.), Sona Shah (Neopenda), Navid Amini (UCLA), Steve Feng (UCLA)
- 12:30pm - 1:30pm **Sponsor Speech: Maurizio Vecchione (Global Good) (Grand 2/3)**
Lunch (Grand 2/3)
- 1:30pm - 3:30pm **GHTC Posters Session (Grand 1) (chaired by Suryadip Chakraborty)**

- 1570265528 Proposal on the affordable and sustainable water supply approaches in disaster response by application of innovative water flocculant
Yasuhiro Soshino (Japanese Red Cross Kumamoto Hospital, Japan)
- 1570267777 Sports and Sports Technology as an Enabler of Global Health and Understanding
Terrance Malkinson (Southern Alberta Institute of Technology, Canada)
- 1570273269 Prototype and Model of Passive Tropical Fruit Dryer Utilizing a Flexible Transpired Solar Collector
Samantha Huselstein, Steven J Weinstein and Robert J Stevens (Rochester Institute of Technology, USA)
- 1570273345 A Personal Particulate Matter Exposure Monitor to Support Household Air Pollution Exposure and Health Studies
Seung-Hyun Cho and Ryan Chartier (RTI International, USA); Mukesh Dherani (The University of Liverpool, United Kingdom); Terence Tafatatha (Karonga Prevention Study, United Kingdom); Kevin Mortimer (Liverpool School of Tropical Medicine, United Kingdom)
- 1570274801 New aspects for organic farming practices: Controlled crop nutrition and Soilless agriculture
(also SIGHT poster) Mahesh PJ (University of Kerala & TKM College of Engineering Kollam, India); Minhas Naheem and Razak poster) Mubafar K (University of Kerala, India)
- 1570274938 Intelligent Control Of Showers In Solar Heating Systems and Gas To Water Economy
Camila Rezende and Marina R. P. Oliveira (Pontifical Catholic University of Minas Gerais, Brazil); Rubia Silva (Pontifical Universidade Católica de Minas Gerais, Brazil); Thelma Virginia Rodrigues (Pontifical Catholic University of Minas Gerais, Brazil); Vitor Souza (IPUC Pontifical Universidade Católica de Minas Gerais Brazil, Brazil); Walton Morais (Pontifical Universidade Católica de Minas Gerais, Brazil)
- 1570280621 Internet of Things: A relief for Indian Farmers
Nishant Verma (Reva University & Innohabit Technologies Pvt Ltd, India); Adil Usman (Indian Institute of Technology Mandi, India)
- 1570281700 Learning strategies in mobile and industrial robotic for people with auditory impairment
(also SIGHT poster) Tito Alberto Nuncira Gacharná (Universidad ECCI, Colombia); Alba Dalila Angel Rodriguez and Cristian Barbosa (Universidad ECCI)
- 1570282249 Human Tracking System Embedded in Stuffed Animal
Miwo Sakai and Masashi Sugano (Osaka Prefecture University, Japan)
- 1570283327 Using Data Assimilation method to predict People Flow in Areas of Incomplete Data Availability
Yongwei Xu (The University of Tokyo, Japan); Xiaowei Shao and Ryosuke Shibasaki (University of Tokyo, Japan)
- 1570260511 Implementing Low-Cost Energy Solution to Water Heating in Rural Dominican Republic
Lauren Hoffman and Truc T. Ngo (University of San Diego, USA)
- 1570263694 A Low-Cost Real-Time Movement Monitoring System To Evaluate Parkinson Disease Treatment
Farid Farahmand (Sonoma State University, USA)
- 1570274357 Service-Learning Outcomes in Psychology and Materials Engineering Courses
Jill Manapat (University of the Philippines Diliman, Philippines)
- 1570274773 Intelligent Irrigation
Damaris Sena (Pontifical Universidade Católica de Minas Gerais, Brazil); Thelma Virginia Rodrigues (Pontifical Catholic University of Minas Gerais, Brazil)
- 1570281527 Long, Thin Continuum Robots for Remote Inspection Operations
Ian D Walker (Clemson University, USA)
- 1570283225 Innovative Landing Gear for Unmanned Aerial Vehicles
Kishore M n, Madhavaram Sai Krishna and Suresh Nagesh (PES University, India)
- 1570283238 A Survey to Identify Requirements for Applying Mobile Technologies towards Improving Services Access in Underserved Communities
Donald Ekong and Mary Mathis (Mercer University, USA)
- 1570283266 Engineering principles applied to Pre-University Education
(also SIGHT poster) Augusto Herrera (UNC - National University of Cordoba, Argentina)
- 1570283859 Community Development and Energy equality: Experiences from micro hydro implementation in a Tribal settlement in India
Ravindran Nair (Amrita Vishwa Vidyapeetham, India); Ravishankar N (Amrita University, India); Ilango Karuppasamy (Amrita School of Engineering, Amritapuri, Amrita Vishwa Vidyapeetham, Amrita University, India); Sai Shibu N B (Amrita Vishwa Vidyapeetham, India); Deepthi B and Nikhila Sanampudi (Amrita School of Engineering, Amrita Vishwa Vidyapeetham, India); Renjith Mohan (Amrita Vishwa Vidyapeetham, India)

SIGHT Posters (Grand 1)

- 1570282469 A Wearable Diagnostic device to combat Children's Pneumonia
Mala Krishnamoorthi, Manoj Kumar Kalaiselvan, Vignesh Ravichandran and Manoj Kumar Baskaran (Easwari Engineering College, Chennai, India)
- 1570270374 Design and Implementation of a Low-cost and Reliable Wireless Mesh Network for First-Response Communications
Nestor Michael C. Tiglao (University of the Philippines, Philippines)
- 1570283232 Electrically Facilitated Solar Cargo Hauler - A Key to Easy and Safe Transportation of Goods without Dependency on the National Grid
Audrika Purbasha, Fabiha Khan, Mir S Redoy and A. K. M Abdul Azad (BRAC University, Bangladesh)

- 1570282683 Impacts of using microwave oven transformers on micropower distribution grids
Richard Sandoval and Patricio Mendoza-Araya (University of Chile, Chile)
- 1570274371 Using a Recycled Container to Setup a Community Learning Centre in Rural Cambodia - A Case Study
Kenneth Wai Kwan Lo, Stephen Chi Fai Chan and Grace Ngai (The Hong Kong Polytechnic University, Hong Kong)
- 1570283348 Educational Outdoor Mobile Robot for Trash Pickup
Shunmugham Pandian, Kiran Pattanashetty and Kamal Balaji (Indian Institute of Information Technology, Design & Manufacturing-Kancheepuram, India)
- 1570273240 Community Engagement Assessment of Global Humanitarian-based Projects
Randy Lewis, Cameron Quist, Terri Bateman and Carol Ward (Brigham Young University, USA)
- 1570282973 Case study: Technology Transfer for Resource-Constrained Farming Communities: Perspective and Future Direction
Pradipta Chandra, Titas Bhattacharjee and Bhaskar Bhowmick (Indian Institute of Technology Kharagpur, India); Ranjan Sen (Kapgari Inc., USA)
- 1570274888 Mobile Health Adoption in Burundi: A UTAUT Perspective
Patrick Ndayizigamiye and Manoj Maharaj (University of KwaZulu-Natal, South Africa)
- 1570255751 Participatory smartgrid control and transactive energy management in community shared solar cogeneration systems for isolated rural villages
Gerro Prinsloo (Stellenbosch University, South Africa); Andrea Mammoli (New Mexico University, USA); Robert Dobson (Stellenbosch University)
- 1570274841 Implementation of a low cost aerial vehicle for crop analysis in emerging countries
Luis C Velasquez, Juan Argueta, Kevin Mazariegos (Universidad del Valle de Guatemala, Guatemala)

3:30pm - 4:00pm **Break**

4:00pm - 6:00pm **Parallel technical presentations (Northwest 1-3 and Evergreen 1-4)**

Energy track (session F1, chaired by Pritpal Singh)

- 4:00 - 4:20 1570283189 Solar Electric Ambulance Van Unfolding Medical Emergencies of Rural Bangladesh
Rahmeen Tarek, Afra Anjum, Abrar Hoque and A. K. M Abdul Azad (BRAC University, Bangladesh)
- 4:20 - 4:40 1570268829 A Novel Methodology for Load Disaggregation and Demand Forecasting Based on Machine Learning Techniques in Rural Off-Grid, Isolated Systems
Varun Mehra (Massachusetts Institute of Technology (MIT), USA); Rajeev J Ram (Massachusetts Institute of Technology (MIT), USA); Claudio Vergara (Massachusetts Institute of Technology (MIT), USA)
- 4:40 - 5:00 1570272312 Technical design of off-grid energy kiosks
Matt Shields and Henry Louie (Seattle University, USA); Ben Blainedavis, George Goldsmith and Daniel Nausner (Kilowatts for Humanity, USA)
- 5:00 - 5:20 1570274363 Designing a Sustainable Business Plan for an Off-Grid Energy Kiosk in Chalokwa, Zambia
J McLean Sloughter and Jenna Isakson (Seattle University & KiloWatts for Humanity, USA); Kim Shields (Boeing & KiloWatts for Humanity, USA); Matt Salmon (KiloWatts for Humanity, USA); Yin Ping Mak and Alexandra Keiko Schleicher (Seattle University & KiloWatts for Humanity, USA); Henry Louie (Seattle University, USA)
- 5:20 - 6:00 1570281968 Case study: Effects Of Loadshedding On Energy Utilisation Trends Of Various Domestic Consumer Groups: A Case Study Of Kitwe, Zambia
Robert Ngoma, Abel Tambatamba and Benta Oyoo (The Copperbelt University, Zambia); Henry Louie (Seattle University, USA)

Health track (session F2, co-chaired by Charmayne Hughes and Alan Mickelson)

- 4:00 - 4:20 1570264408 A Hand-Cranked, affordable defibrillator for resource-poor settings
Sreeram Dhurjaty (Dhurjaty Electronics Consulting LLC & Senior Member, IEEE, USA); Aniruddha Atre (Jeevtronics, Pvt Ltd, India)
- 4:20 - 4:40 1570281506 Low-Cost Electrocardiogram Device for Preventative Health Care in Rural Populations of Developing Countries
JP Ertola, Silvia Figueira, Meghan Carlsen, Uma Palaniappan and Kelsey Rondini (Santa Clara University, USA)
- 4:40 - 5:00 1570274933 Robot-assisted Intelligent Emergency System for Individual Elderly Independent Living
Jiang Lu (University of Houston Clear Lake, USA); Lei Wu (University of Houston-Clear Lake, USA); Ting Zhang (University of Houston Downtown, USA); Jiaqi Gong (University of Virginia, USA)
- 5:00 - 6:00 1570280935 Demo: A Smartphone-Based 96-Well Plate Reader for Cost-effective Point-of-Care ELISA Test Quantification
Brandon Berg, Bingen Cortazar, Derek Tseng, Haydar Ozkan, Steve Feng, Qingshan Wei, Raymond Yan Lok Chan, Jordi Burbano and Qamar Farooqui (University of California, Los Angeles, USA); Michael Lewinski (Roche Molecular Systems, Inc., USA); Dino Di Carlo, Omai Garner and Aydogan Ozcan (University of California, Los Angeles, USA)

Water and Sanitation track (session F3, chaired by John Prohodsky)

- 4:00 - 4:20 1570273883 Affordable, Rapid, Electrochemical Nitrate Detection towards Point-of-Use Water Quality Monitoring
Lillian Tatka and Unyoung Kim (Santa Clara University, USA)

- 4:20 - 4:40 1570274183 Quantification of a Latex Agglutination Assay for Bacterial Pathogen Detection in a Low-Cost Capillary-Driven Fluidic Platform
On Shun Pak, Kyle Pietrzyk, Scott Fukuoka, Andy Ly, Andres Maldonado-Liu and Unyoung Kim (Santa Clara University, USA)
- 4:40 - 5:00 1570282841 An Acoustic Based Approach for Mitigating Sewer System Overflows
Muhammad Safeer Khan (Arkansas Tech University)
- 5:00 - 5:20 1570283044 Performance of a Vertical Subsurface Flow Constructed Wetland in Treating Biomethanation Effluent
Stephanie Wietlisbach (Swiss Federal Institute of Technology, Zurich, Switzerland); Nikhil Kothurkar (Amrita Vishwa Vidyapeetham, Amrita University, India); Kaavya Ram (Amrita School of Engineering, Amrita University, India); Revathy Nair and Sreedhar Harigovind (Amrita Vishwa Vidyapeetham, Amrita University, India)
- 5:20 - 5:40 1570283263 Plastic Waste Cycle Biomimicry of Natural Nutrient Cycle - an Integrated Technology Case Study
Keegan Clarke (St Alban's College & Sanctus Consulting, South Africa); Christiaan Mouton (St Alban's College, South Africa)

Education track (session F4, chaired by Adil Usman)

- 4:00 - 4:20 1570274840 Didactic: a low-cost and portable didactic lab for electronics
Bernardo Cunha and Priscila Dutra (Pontificia Universidade Católica de Minas Gerais, Brazil); Selmar Mendes (PUC Minas - Pontificia Universidade Católica de Minas Gerais, Brazil); Thelma Virginia Rodrigues and Carlos Augusto Martins (Pontifical Catholic University of Minas Gerais, Brazil); Lorena Nunes and Felipe Machado (Pontificia Universidade Católica de Minas Gerais, Brazil)
- 4:20 - 4:40 1570274961 TextTETEA - An SMS-based Education Service
Michael Neumann (Santa Clara University, USA); Keegan Wincewicz (TETEA, USA)
- 4:40 - 5:00 1570282351 Teaching Bilingual Workshops on Data Mining in Peru
Mila Kwiatkowska (Thompson Rivers University, Canada); Alberto Un Jan (Universidad Norbert Wiener, Peru)
- 5:00 - 5:20 1570283348 Educational Outdoor Mobile Robot for Trash Pickup
Shunmugham Pandian, Kiran Pattanashetty and Kamal Balaji (Indian Institute of Information Technology, Design & Manufacturing-Kanchepuram, India)
- 5:20 - 6:00 1570282973 Case study: Technology Transfer for Resource-Constrained Farming Communities: Perspective and Future Direction
Pradipta Chandra, Titas Bhattacharjee and Bhaskar Bhowmick (Indian Institute of Technology Kharagpur, India); Ranjan Sen (Kapgari Inc., USA)

Deployment track (session F5, co-chaired by Jackie Stenson and Roger Johnson)

- 4:00 - 4:20 1570285573 Autonomous OCR Dictating System for Blind People
Christos Liambas and Miltiadis Saratzidis (Aristotle University of Thessaloniki, Greece)
- 4:20 - 4:40 1570282539 A Look at Private Sector - NGO Partnerships in the Nexus of Water-Energy-Food-Climate Change
Yesim Sireli (UNC Charlotte, USA)
- 4:40 - 6:00 1570280209 Panel: Intellectual Property, Innovations and Global Food Security: Feeding the 9 Billion in 2050
Jane Payumo and Ruth Mbabazi (Michigan State University, USA); Katy Graef (BIO Ventures for Global Health, USA); Frank Shotkoski (Cornell University, USA); Jennifer Dent (BIO Ventures for Global Health, USA); Sita Pappu (Washington State University, USA); Karim Maredia (Michigan State University, USA)

6:00pm - 6:30pm **Break**

6:30pm - 8:00pm **Dinner (Grand 2/3)**

Keynote Speaker: Dave Cook, Engineers Without Borders-USA 2016 President

Time Sunday, October 16, 2016

7:00am - 8:00am **Registration Open (Grand Foyer)**

8:00am - 10:00am **Parallel technical presentations (Northwest 1-2 and Evergreen 1-4)**

Energy track (session G1, chaired by Nathan Johnson)

- 8:00 - 8:20 1570274785 Optimization of a Solar-hybrid System for the Village of El Rescate, El Salvador
Carlos Guadron (Villanova University, USA)
- 8:20 - 8:40 1570274612 Assessment of Building Integrated Photovoltaics and other Renewable Energy Technologies for the Residential Sector in Egypt
Pritpal Singh and Monica Kares (Villanova University, USA)
- 8:40 - 9:00 1570285983 Expanding energy access through the improvement of the Regulatory Framework for Renewable Distributed Generation in Nicaragua
Maria Moncada (National University of Engineering, Nicaragua)
- 9:00 - 9:20 1570290316 Reducing criminality and saving energy
Thiago Matheus Martins de Moraes and Lucas de Paula Santos Petri (Univ Estadual Paulista (UNESP), Brazil)
- 9:20 - 10:00 1570282271 Case study: The Effects of Load-shedding on Residential Electricity Consumption: A Case Study of Kitwe, Zambia
David Mulongoti (Copperbelt University, Zambia); George Mugala and Buchizya Kumwenda (The Copperbelt University, Zambia); Henry Louie (Seattle University, USA)

Health track (session G2, co-chaired by Charmayne Hughes and Alan Mickelson)

- 8:00 - 8:25 1570267830 A SDD and PCM Solution for Vaccine Storage and Outreach
Junshan (Michael) Li, Michael Friend, Andrew Miller and Shannon Stone (Intellectual Ventures Laboratory, USA)
- 8:25 - 8:50 1570283383 Development of Smart Phone Tools for Printed Diagnostics: Challenges and Solutions
Richard Fletcher and Niccolo Pignatelli (MIT, USA); Suparna Ghosh-Jerath (PHFI, India); Adrian Jimenez-Galindo (MIT, USA)
- 8:50 - 10:00 1570274661 Panel: Essential and Emerging Technology in Integrated HIV and Health Service Delivery in Developing Countries
Pamela McCuailey and Sylvia DiPaulo (University of Central Florida, USA)

Education track (session G3, chaired by Adil Usman)

- 8:00 - 8:20 1570273240 Community Engagement Assessment of Global Humanitarian-based Projects
Randy Lewis, Cameron Quist, Terri Bateman and Carol Ward (Brigham Young University, USA)
- 8:20 - 8:40 1570274371 Using a Recycled Container to Setup a Community Learning Centre in Rural Cambodia - A Case Study
Kenneth Wai Kwan Lo, Stephen Chi Fai Chan and Grace Ngai (The Hong Kong Polytechnic University, Hong Kong)
- 8:40 - 9:00 1570271805 Case study: Initiating and Establishing a Humanitarian Technology and Engineering Mobile Outreach Centre by IEEE UGANDA SIGHT
Herbert Lwanga (IEEE, Uganda)
- 9:00 - 10:00 1570274906 Panel: Comprehensive Model for Fostering Humanitarian Engineering Education Using Social Pedagogy Principles and Practice
Mohammed Baaoum (King Fahd University of Petroleum and Minerals (KFUPM), Saudi Arabia)

Agriculture track (session G4, chaired by Khanjan Mehta)

- 8:00 - 8:20 1570274707 A Sustainable Strategy of Farming in Radioactive Contaminated Farmland: A Case Study in Fukushima
Eric Z. Ma (Fuller Theological Seminary, USA); Mansun Chan (The University of Science and Technology, Hong Kong)
- 8:20 - 8:40 1570272867 Development and Evaluation of Solar Powered Sprayer With Multi-Purpose Applications
Yallappa Dengeru, Vijayakumar Palled, M Veerangouda, Sushilendra R (University of Agricultural Science, Raichur, India)
- 8:40 - 9:00 1570283343 Small-Scale Solar Pumping Systems in India: Analysis of Three Implementation Models
Jonars Spielberg (Massachusetts Institute of Technology, USA); Amit Gandhi (Massachusetts Institute of Technology, USA); Sara Pesek (Massachusetts Institute of Technology, USA); Eadaoin Iiten (Technology Exchange Lab, USA); Vandana Pandya (Massachusetts Institute of Technology, USA); Jennifer Green (Massachusetts Institute of Technology, USA)
- 9:00 - 9:20 1570274763 A Framework for Performance Evaluation of Plucking Activity in Tea
Somya Sharma (Innovation Labs, Tata Consultancy Services, Mumbai, India); Sanat Sarangi (Tata Consultancy Services, India); Srinivasu Pappula (Tata Consultancy Services, India)
- 9:20 - 9:40 1570274841 Implementation of a low cost aerial vehicle for crop analysis in emerging countries
Luis C Velasquez, Juan Argueta, Kevin Mazariegos (Universidad del Valle de Guatemala, Guatemala)
- 9:40 - 10:00 1570274908 Densified Mango Residues as Biofuel from Low-Resource Agricultural Processing
Chris Rumble (University of Wyoming, USA); Siri Maley (Penn State, USA); Khanjan Mehta (Penn State, USA)

Deployment track (session G5, chaired by Roger Johnson)

- 8:00 - 8:20 1570279750 Making Telecommunications Services Accessible to People with Severe Communication Disabilities
Rosanna Yuen-Yan Chan, Junnan Ding and Lam Wang Kong (The Chinese University of Hong Kong, Hong Kong); Gladys Yan (SAHK, Hong Kong); Xue Bai (The Chinese University of Hong Kong, Hong Kong); Xiaojuan Ma (Hong Kong University of Science and Technology, P.R. China); Soby So (SAHK, Hong Kong); Xiangjie Wang and Jessica Chow (The Chinese University of Hong Kong, Hong Kong)
- 8:20 - 9:10 *Featured Deployment Workshop* Workshop: Intellectual Property Primer for the Technology Humanitarian
Ronnie Stern, Rimon Law, Seattle, WA
- 9:10 - 10:00 *Featured Deployment Interactive Session* Interactive session: Taming the Carbon Monster with a fee and dividend approach
Kambiz Rahimi, Citizens Climate Lobby

10:00am - 10:30am **Break**

10:30am - 11:30am **Closing Comments -- Dick Wilkins (GHTC 2017 Chair) (Grand 2/3)**
Conference Reflection Session w/ Track Chairs - Jim Miller

1:00pm - 2:00pm **GHTC Steering Committee Debrief Meeting (Room TBD)**

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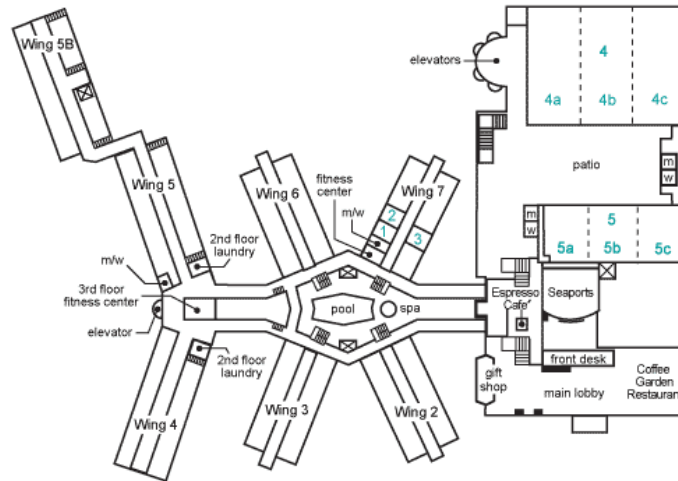


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| 2. OLYMPIC 2 | 4a. GRAND 1 | 5a. NORTHWEST 1 |
| 3. OLYMPIC 3 | 4b. GRAND 2 | 5b. NORTHWEST 2 |
| | 4c. GRAND 3 | 5c. NORTHWEST 3 |

DOUBLETREE HOTEL SEATTLE AIRPORT - SECOND FLOOR

