IEEE Foundation 50 YEARS
FOCUS
Illuminate Educate Engage Energize Future
April 2023 | Issue 35

IEEE Foundation Marks a Golden Occasion

A Message from Ralph Ford, IEEE Foundation President

Thanks to its unwavering purpose, strong execution, and generous donors and volunteers, the IEEE Foundation celebrated five decades of impact on 16 February 2023. We are proud of our 50-year partnership with IEEE to deliver opportunity, innovation and impact across the globe through the power of technology and education and look to the future.

It is an honor to serve the IEEE community as the IEEE Foundation's 23rd President during the 50th anniversary. This milestone offers the opportunity to look back on a half-century of outstanding achievement and look ahead to establish the foundation for the future we envision.

As we look to the future, we know technology will play an ever-critical, central and complex role in people's lives. Investment in programs that support the scientists, engineers, leaders and technical professionals we need to solve the world's most pressing problems for the benefit of humanity has never been more important. In celebration of our 50th Anniversary, a fifth program pillar "Future" has been added. "Future" looks at the years beyond our lifetimes to consider what educational, inspirational and foundational services and programs we want to ensure for generations. (See the article on page 7 for more on the Future pillar.)

This occasion also provides the perfect opportunity to say, thank you. Thank you to the thousands of donors, leaders, volunteers and staff across the decades. To celebrate our honored philanthropists for their investment in our work, we added six new levels to the **IEEE Heritage Circle**, named for a diverse set of innovators throughout history. (See the article on page 9 for more on the new levels.)

We are proud to celebrate our golden anniversary by collaborating with strategically-selected IEEE programs, each designed to celebrate the past, lift the present and build the strong future.

- **IEEE Smart Village** (ISV) – Conceived in 2009 and first funded in 2010, ISV carefully vets business development projects that integrate 1) renewable energy, 2) educational opportunities and 3) entrepreneurship development to empower energy-impoverished communities around the world. With close to 200 projects established across 18 sub-Saharan Africa, India, Latin America and Southeast Asia countries, ISV benefits more than 1.4 million people, and by uniting engineers, educators, volunteers and donors, ISV guides local entrepreneurs to develop and sustain clean, renewable energy systems, implement education programs and operate new businesses.

- **IEEE History Center** – Established in 1979 to prepare IEEE to celebrate its 1984 centennial, today the Center preserves and promotes the history of technology, the profession and IEEE, including nearly 1,000 technology icons' memories in IEEE Oral Histories, more than 200 IEEE Milestones honoring significant technical achievements worldwide, and more than 5,000 articles on the Engineering and Technology History Wiki (ethw.org).

- **IEEE Women in Engineering** (WIE) – Established in 1997, WIE is a global network dedicated to promoting women engineers and scientists, and inspiring girls to pursue careers in science, technology, engineering and math (STEM), with 30,000 members in more than 100 countries.

- **TryEngineering** – Focused on empowering the next generation of technology innovators and launched in 2006, the IEEE Foundation has been a frequent investor in TryEngineering, IEEE's STEM portal providing educators and students with free resources, lesson plans and STEM-centered activities. Programs reach North America, Central and South America, Europe, Africa, India and Southeast Asia.

Other IEEE Foundation-supported programs include: **IEEE-Eta Kappa Nu** (IEEE-HKN), the honor society of IEEE with more than 250 student and alumni chapters in 29 countries, **IEEE SIGHT,** with 18,000 members across more than 130 countries tackling the most urgent problems of local communities, the **IEEE Life Members Fund**, supporting lifetime and student members, and **IEEE Scholarships and Fellowships**.

(continued on page 2)

IEEE Smart Village

Invests in the Wellbeing of Farmers in Turkana, Kenya

In the far northwest corner of Kenya, you will find Turkana County, one of the poorest counties struggling to provide adequate food for both humans and animals. Located in equatorial east Africa, this region has one of the lowest rainfalls of the continent but is endowed with ample solar energy.

In 2017, a dream became reality when Bright Hope International, a United States based Christian charity, started a farm – known as the Natoot Farm – to improve the region's agriculture with the goal of creating a year-round sustainable source of produce.

The Natoot Farm sits on community-owned land in Lodwar, Turkana Central. The land, divided into 11 blocks, serves more than 350 households and employs more than 100 local farmers. A soil survey showed great potential in the cultivation of a wide array of crops across the seasons with the introduction of a comprehensive irrigation system.

In 2020, Bright Hope International approached IEEE Smart Village (ISV) for technical and financial support. Site inspections indicated that water was readily available from an aquifer right under the farm. What was needed was power and equipment to pump the water during the dry season. By early 2022, a plan was laid out with ISV funding made possible by donations from IEEE Fellow and ISV volunteer leader John Nelson and the Bright Hope International program of Hope Evangelical Free Church, Springfield, IL. Using its three-tiered approach of **energy + education + enterprise development**, ISV supported the technical solution provisioning irrigation, onsite farmer education and enterprise mentorship.

The technical component involved the expansion of a modest 1.5 KWp existing PV solar power system to a much more powerful 12.5kWp islanded utility. The enhanced PV array drives a 3-phase 7.5kW (10hp) submersible multistage centrifugal pump of >50% efficiency at a duty point of 27 – 30 cubic meters of water per day.

The pump is submerged below the local water table receiving power via an insulated submersible electric cable installed in the bore hole with a drop pipe to connect to the pump. A cement enclosure was constructed to house the pump positioned on a waterproof underlay of fibrous-reinforced building paper and 500-gauge polythene sheeting. The pump supplies a series of external 10 cubic meter commercial UPVC tanks set on an elevated steel platform storing 40,000 liters of fresh water. The tanks gravity-feed an extensive drip irrigation system as well as provide water for post-harvest produce washing and adjacent domestic usage.

(Continued on page 3)

Farmers learn about the proper use and maintenance of the newly installed PV and pumping systems.

IEEE Foundation Marks a Golden Occasion

Cover Story Continued

JOIN THE CELEBRATION

As the IEEE Foundation commemorates its landmark 50th anniversary throughout 2023, we recognize the indelible contributions to our longevity and success that have been made by you, our committed donors, and celebrate our partnership and bright future together.

We welcome your support of the IEEE Foundation 50th Anniversary Celebration! Gifts may be made to provide immediate support today or arrangements can be made through your estate plan to provide support tomorrow. To discuss how you may support important IEEE initiatives, contact the IEEE Foundation or simply make a donation online at ieeefoundation.org/donate. Learn more by exploring our recently launched IEEE Foundation Website at ieeefoundation.org.

Together, we enable IEEE programs to improve access to technology, enhance technological literacy, and support education. ■

IEEE Smart Village *Continued*

The solar PV powered pump control system is located above ground featuring an adjustable operating frequency, and a monitor to observe open circuit voltage and amperage, input power and pump speed. New LED street lamps provide lighting at the installation which extends the produce-processing working hours during harvest season and provides a level of security at night.

In alignment with the three pillars of ISV project support, the program includes significant educational programs for the farmers. Introducing appropriate farming methods and small-farm operations, proper use and maintenance of the newly installed PV and pumping systems, and basic reading, writing and financial literacy skills.

Onsite training is tailored to an adult agrarian community with no formal education. Three experienced teachers were contracted to educate the farmers with two-hour classes several times per week. Materials included a series of 10-minute training videos, in the local dialect, showing best practices for maintaining water and electrical systems.
The ready access to irrigation is producing harvests which meet the basic food needs of the community, and a bountiful excess allows for commercial sales. As a result, the farmers have become 'micro-entrepreneurs,' selling produce at local and district markets generating much needed revenue.

The third pillar of the ISV program, enterprise development, is now well underway. With multi-season harvests coming in, local businesspeople are engaged to mentor the farmers in small-scale commercial operation. Working with experienced businesspeople is exciting for the local farmers who never before had these opportunities. Their education continues as they expand their business skills. Learning how to sell their produce at cash-market rates to new customers was a challenge. Mentoring is the enabling factor.

The outcomes resulting from the Natoot Farm Upscale project are inspiring. **Together these following factors have made the Natoot Farm a financially self-sustaining project:**

- Increased solar power system capacity from 1.5 KWp to 12.5 KWp
- Increased water storage capacity from 20,000 liters to 45,000 liters
- Reduced crop losses due to water shortage by 15%
- Expanded size of the farm by 10 acres

Introducing multi-season harvests throughout the year, IEEE Smart Village's investment in the wellbeing of the farmers in Turkana, Kenya is transformative. The IEEE Foundation is grateful to the generous donations which made this project possible. Our sincere thanks to IEEE Fellow and ISV volunteer leader John Nelson and the Bright Hope International program of Hope Evangelical Free Church, Springfield, IL, US.

To learn more about IEEE Smart Village, visit https://smartvillage.ieee.org/. To support this program, contact Michael Deering, Sr. Development Officer, at m.deering@ieee.org or +1-732-562-3915. ■

ISV volunteer, Mercy Chelangat Koech (center), walks the fields with two of the farmers.

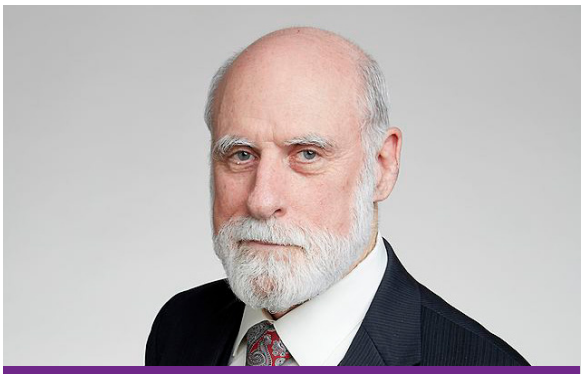
It's time for the 2023 IEEE Vision, Innovation and Challenges (VIC) Summit & Honors Ceremony

The IEEE VIC Summit, one of IEEE's premier, annual events, will be held 5 May 2023. The event highlights the innovation and creativity of engineering, science and technology through provocative, educational and inspiring talks with a vision for the future. The Summit culminates with the IEEE Honors Ceremony Dinner and Gala—an evening of festivities that include the celebration of the contributions of some of the world's greatest minds.

Ahead of the IEEE VIC Summit and Honors Ceremony, Georgia Aquarium, the largest US aquarium, will play host to a VIP Welcome Reception on Thursday 4 May 2023. This event is complimentary to all attendees.

This year's IEEE Medal of Honor goes to Vinton "Vint" Cerf, widely known as the "Father of the Internet." He will be recognized "for co-creating the Internet architecture and providing sustained leadership in its phenomenal growth in becoming society's critical infrastructure." The IEEE Foundation sponsors the annual medal presentation along with the Founders Medal, which is going to Rodney Brooks "for leadership in research and commercialization of autonomous robotics, including mobile, humanoid, service and manufacturing robots," and the Haraden Pratt Award, going to IEEE Foundation Vice President of Programs Marko Delimar "for inspired vision and steadfast leadership in improving global IEEE influence, member engagement and governance."
See page 10 for more about Marko.

You can learn more about this event and view a complete list of the 2023 honorees on the IEEE Awards website, corporate-awards.ieee.org. If you are unable to attend the event, you can tune into IEEE.tv and watch the Honors Ceremony live. ■



Congratulations to 2023 @IEEE Medal of Honor recipient Vinton G. Cerf. Vint Cerf has been the Vice President and Chief Internet Evangelist for Google since 2005. The IEEE Medal of Honor is sponsored by the IEEE Foundation and is the highest recognition awarded by IEEE.

IEEE Foundation Launches New Website!

To kick off the New Year, we are pleased to announce the launch of our new IEEE Foundation website! With new and improved navigation, including pages about our supporters, impact, ways to give and more, it has never been easier to learn about all aspects of the IEEE Foundation. Be sure to head to ieeefoundation.org to explore the new site. ■

Record Attendance for 2022 IEEE-HKN Student Leadership Conference

"Networking with alumni from the chapter and with IEEE as a professional after graduation," "the ideas for building community and leveraging our various networks", and "collaborate with local chapters" were just a few of the key takeaways expressed by students who attended the 2022 IEEE-Eta Kappa Nu (HKN) Student Leadership Conference 28-30 October, 2022, held at the University of North Carolina-Charlotte, US. The conference broke attendance records with more than 250 students, advisors, recruiters, IEEE Society members, HKN Board members and staff gathered for two-plus days of learning, networking and community building. As its first in-person gathering since 2019, the 2022 HKN Student Leadership Conference attracted participants from 54 chapters from 5 countries. Funding generously provided by the Samueli Foundation helped to offset registration and travel costs for chapters.

The 2022 HKN Student Leadership Conference provided chapter officers and members opportunities to hone leadership skills, connect with each other, and hear from industry experts on how to prepare for their future careers. A robust recruitment fair offered students the chance to meet with more than 26 potential employers, IEEE Societies, and graduate schools.

Silas Perry, a junior at the University of Nebraska studying computer engineering, said, "The IEEE-HKN conference was a life changing event." Summing up the impact the conference had on him, he said, "I would have never had the opportunity to meet such lovely people, nor such fantastic companies. I walked away from the conference with new friends, opportunities, and ideas for my chapter, Beta-Psi." Close to 98% of students responding to a post-conference survey stated that they are highly likely to encourage other chapter mates to attend next year's Student Leadership Conference.

HKN is the honor society of IEEE founded in 1904, HKN merged with IEEE in 2010. Today IEEE-HKN has more than 269 chapters around the world, and more than 200,000 members and alumni. If you would like to learn more about IEEE-HKN and programs like the Student Leadership Conference, visit hkn.org. The HKN program is fueled by philanthropy and generous corporate and industry donors; your support is critical to developing the leader in our community. To discuss how to support HKN, contact Michael Deering at m.deering@ieee.org or +1 732-562-3915. ■

Group photo of 2022 Student Leadership Conference held at University of North Carolina-Charlotte.

The IEEE Foundation

Now Accepting Cryptocurrency Donations!

There are more than 300 million cryptocurrency users worldwide, all of whom have some IEEE members to thank for inventing the blockchain, the technology that enables the existence of cryptocurrency.

Crypto philanthropy is an emerging and taxwise way for crypto users to make philanthropic donations. The IEEE Foundation is excited to announce that it is now accepting donations of Bitcoin, Ethereum and more than 100 additional leading cryptocurrencies.

"Accepting Cryptocurrency seems like a natural fit for our members who are innovators in the space." said Sarah A. Rajala, Vice President, Development, IEEE Foundation. "With the addition of this new giving method, we hope to give our long-standing donors another way to support our work and attract new donors with these assets."

To donate cryptocurrency to the IEEE Foundation or to learn more visit ieeefoundation.org/ways-to-give/cryptocurrency. We are happy to have a conversation with you about the impact your cryptocurrency donation will have on IEEE programs. Help us celebrate this advancement by donating crypto today. ■

The information in this article is for educational purposes only and is not intended as legal, tax, or investment advice. If you are considering a donation of cryptocurrency, consult your tax and legal advisors to determine the best options for you..

A Historical Partnership

The IEEE Foundation looks back on a half-century of outstanding achievement this year and celebrates an enduring almost 45-year partnership with the IEEE History Center, which is committed to preserving, researching and promoting the history of information and electrical technologies.

Established in 1979 through the efforts of such advocates as Jim Brittain, Fred Terman, Robert Lucky, and others, and further strengthened by the leadership of Robert Friedel, who became the History Center's first director in 1980. Over four decades later, and currently under the direction of Michael Geselowitz and the History Committee, the History Center continues to preserve the legacy of technology, its icons, the engineering profession, and IEEE itself through a wide array of unique and beneficial programming.

Through the years, the IEEE Foundation and IEEE History Center together with generous donors have collaborated on many landmark achievements that will positively impact the field of engineering for generations to come. Among those are the following:

- **The William and Joyce Middleton Electrical Engineering History Award** — Established in 2014 by a gift from the estates of longtime IEEE leader William W. Middleton and his wife Joyce F. Middleton, this award, which carries a prize of US $2,000, recognizes the author of a book on the history of an IEEE-related technology published within the previous three years that both exemplifies exceptional scholarship and reaches beyond academic communities towards a broad public audience.
- **Elizabeth & Emerson Pugh Young Scholar in Residence at the IEEE History Center** — The Pugh Young Scholar in Residence internship, created and funded by its namesakes, provides students with the opportunity to conduct research on the history of technology and engineering at the History Center while working full-time for two months on a History Center project connected to his or her own area of interest..
- **REACH** — Launched in December 2016 through the collaborative efforts of IEEE History Center Senior Director Michael Geselowitz and IEEE Foundation Directors Lyle Feisel and John Treichler, IEEE REACH (reach.ieee.org), which stands for Raising Engineering Awareness Through the Conduit of History, aims to bring the history of technology alive for students in the classroom through videos, hands-on-activities, multimedia offerings, and other engaging tools and resources.
- **IEEE Life Member History Fellowship** — Created in 1977 as a collaboration between the IEEE Life Members and History Committees and funded by the IEEE Life Members Fund of the IEEE Foundation, the IEEE Life Member History Fellowship supports one year of full-time graduate work or one year of post-doctoral research for a scholar who has received their Ph.D. within the past four years in the history of IEEE designated fields.

LOOKING FORWARD

"As the IEEE Foundation commemorates its landmark 50th anniversary throughout 2023, we recognize the indelible contributions to our longevity and success that have been made by and with the IEEE History Center and celebrate our strong partnership and bright future together," shared IEEE Foundation Executive Director Karen Galuchie.

With an ongoing focus on taking the History Center to new heights, the IEEE Foundation and IEEE History Center are working to raise $1 million to support a number of objectives, including increased use of the IEEE Oral History collection as a primary source for museums, authors, documentarians, news outlets, and technical papers, growth of the Center's endowment to reduce reliance on annual activities and budgetary fluctuations, and strengthening of the Center's ability to preserve and promote the history of technology and IEEE. To discuss how you may support these initiatives, contact Danny DeLiberato, CFRE at d.deliberato@ieee.org or call +1 732.562.5446. ■

A Special Thanks to Our Dedicated 2023 Board

The 2023 IEEE Foundation Board of Directors, from left to right are Director John D. McDonald, President, IEEE Canadian Foundation David H. Whyte, IEEE Foundation Executive Director Karen Galuchie, Director Karen Panetta, Chair, IEEE Life Members Committee Howard Wolfman, Treasurer Christopher Geiger, Vice President of Development Sarah A. Rajala, President Ralph Ford, Director Jerry L. Hudgins, Vice President of Programs Marko Delimar, Director Stephen Phillips, Secretary Francisco Martinez,, Director Tomy Sebastian, Director Alex Acero, Director Nim Cheung and Director Howard Michel. Not pictured are Director Mary Ellen Zellerbach, Chair, IEEE History Committee Antonio Savini and President, IEEE-Eta Kappa Nu Board of Governors Sampath Veeraraghavan.

New "Future" Pillar to Empower Women

A desire to lay the foundation for the future we envision led the IEEE Foundation to proudly expand its four pillars of impact to include a new, fifth pillar, "Future," that includes IEEE Women in Engineering (WIE).

Expanding upon its existing four pillars – "Illuminate," "Educate," "Engage," and "Energize" – the IEEE Foundation's new "Future" pillar highlights the IEEE Foundation's long-standing commitment to WIE a member affinity group that coalesces a global network of IEEE members and volunteers dedicated to promoting women engineers, technologists and scientists and inspiring girls around the world to follow their dreams of a career in science, technology, engineering or math (STEM).

WIE is made up of dynamic and vital members, and has partnered with the IEEE Foundation for the past quarter-century. WIE has achieved a number of outstanding milestones, including the following:

- **Continuous Growth** – WIE has grown to encompass more than 30,000 members (both men and women) across more than 100 countries and 950+ local IEEE-WIE groups worldwide.
- **Critical Funding** – The IEEE Foundation is home to the "Women in Engineering Fund," which has managed donations to the Fund since it was founded in 2010. Since then WIE and the IEEE Foundation have funded pre-university initiatives, fellowships/scholarships, travel grants, and activities designed to promote greater public awareness and understanding of women in engineering.
- **Vital Scholarships** – IEEE Women in Engineering takes pride in recognizing and providing scholarships to outstanding female students who are dedicated to advancing the field of engineering. Two major scholarships supported through donations to the WIE through the IEEE Foundation include the following:
  - **IEEE Frances B. Hugle Engineering Scholarship** – First presented in 2018, this annual initiative awards a US $2,500 scholarship to one or more female IEEE student members in honor of the memory of Frances B. Hugle, a pioneering engineer who started several companies in Silicon Valley. Recipients of the prestigious award in 2022 included Kimberly Betty and Krista Marrocco.
  - **IEEE WIE International Scholarship** – Established in 2022, this annual scholarship provides an award of US $2,500 to one female IEEE WIE Student Member who has completed two years of undergraduate study in an engineering curriculum at an accredited university or college outside the U.S. The recipient of the 2022 IEEE-WIE International Scholarship was Runxi Wang.

ADVANCING WOMEN – INSPIRING GIRLS

In seeking to be the change that it wants to see, WIE has successfully developed and delivered activities that help girls and women enter and advance in engineering and related technical fields. WIE now seeks to expand its offering to make the profession even more accessible and diverse for generations to come.

As part of their shared desire to see a vibrant community of IEEE women and men collectively using their diverse talents to innovate for the benefit of humanity, the IEEE Foundation and IEEE Women in Engineering have established a new fundraising goal of $750,000, which will support the following beneficial and impactful activities:

- The piloting of a new "Family Care Grant" which will provide grant money for IEEE Members to help with the costs of caring for family – children, elders, adults with special needs - in order to attend an IEEE Conference. Conference attendance is especially for members needing to present papers to advance their careers.
- Expanding support of the "IEEE-WIE International Scholarship Program," which aims to provide financial support to female students studying engineering at an accredited college or university anywhere in the world over the next decade.

In addition to promoting WIE, the IEEE Foundation's new "Future" pillar also highlights the IEEE Foundation Fund, which provides critical resources needed to sustain, grow, and advance the IEEE Foundation's mission to invest in IEEE programs that deliver societal benefit. To discuss how you may support these initiatives, contact Eileen R. Heltzer, CFRE at e.heltzer@ieee.org or +1-732-799-4431. ■

Future

Krista Marrocco, *an electrical engineering student at the University of Florida, Gainesville, FL, USA.*

Kimberly Betty, *a mechanical engineering student at Kettering University, Flint, MI, USA.*

Runxi Wang, *electrical and computer engineering student and incoming Ph.D. candidate at the University of Michigan-Shanghai Jiao Tong University Joint Institute, Shanghai, China.*

Fellowship in Electrical Engineering Recipient

In November 2022, graduate student Brandon Wei Seng Ung was awarded the IEEE Life Members Graduate Study Fellowship in Electrical Engineering. The fellowship is administered by the IEEE Educational Activities Board and funded through your donations to the IEEE Life Members Fund of the IEEE Foundation. Established in 2000, the fellowship recognizes the exceptional achievements of a student in their first year of a graduate program in any area of electrical engineering.

Ung is pursuing his studies at the University of Minnesota in the Department of Electrical and Computer Engineering. Ung's interests lie in VLSI, computer architecture, and machine learning, areas that are critical to advances in the 5G, data center, and automotive industries. Ung views the IEEE fellowship as the outcome of his strong academic performance and his deep and sustained engagement with the UMN IEEE student branch and IEEE-HKN. ■

IEEE Foundation Director and former Vice President of EA Stephen Phillips (left), and S. K. Ramesh (right) congratulate Brandon Ung.

Opening Doors to a World of Wonder

Educators often struggle to help students relate to and develop a love of science. But thanks to IEEE Region 4's fun, innovative and informative "Science Kits for Public Libraries" (SKPL) initiative, kids have never been so excited about science, and libraries have access to a unique new offering that will both attract and inspire the next generation of STEM leaders.

First launched in 2010, the science kits – which can be enjoyed at the library or checked out and taken home as easily as checking out a book -- teach kids from preschool age through their teen years about everything from dinosaurs and electronic circuitry to robotics, coding, insects, simple machines, electricity, and much more using fun, hands-on, age-appropriate activities.

Libraries in IEEE Region 4 (which covers North Dakota, South Dakota, Nebraska, Minnesota, Iowa, Wisconsin, Illinois, Michigan and Indiana) that are interested in establishing a new circulating collection of science kits (or expanding an existing collection) can apply for a $2,000 grant from the IEEE by visiting https://r4.ieee.org/skpl/.

AN INVALUABLE OFFERING

Among the more than 150 libraries throughout the Midwest that have been awarded SKPL grants and enjoyed their many benefits is the Lester Public Library in Vesper, Wisconsin, US, a small community of roughly 500 residents.

Following the recent closure of that town's elementary school, "we were concerned about what [the closing] would mean for our library," shared a library staffer, "but the science kits that we can now provide.…[are] a huge benefit to us and to our patrons! Instead of a decrease in children visiting the library, we've seen an increase," she said of their range of kits, which target kids ages 5-10. Popular kits in the Lester Public Library include "Dash Dot Robot," which encourages kids to work collaboratively to code the Dash bot to move around the library, as well as "Code & Go Mouse," "Lazer Maze" and "Robot Turtles."

According to library staffers, the science kits they were able to purchase with their grant have been invaluable to both their young patrons and community members alike. "Children who would normally not have the opportunity [to access] kits such as these have them readily available now to explore," they confirmed, "and their faces light up when they find out they can bring the kits home with them to use."

SUPPORTING THEIR MISSION

IEEE's science kits have similarly transformed Columbus Junction, Iowa, a town of roughly 4,000 residents who are served by the Columbus Junction Public Library. According to Library Director Maggie Grimm, a kit on "3D Printing" is one of the most popular in their library's collection. "Due to such positive feedback and everyone wanting a chance to experiment, we've added a second 3D pen to the kit to allow more people to experiment rather than having to take turns so much," she said of the overwhelming response to that kit.

With many families in the community opting to homeschool their children, a kit on "Coding for Kids" has also been a big hit, as have kits on "Anatomy" and "Outdoor Exploration," the latter of which Grimm said will tie in nicely with the library's summer reading program. According to Grimm, she and her staff couldn't be more grateful for the opportunity to offer the science kits to their constituents and plan to apply for another SKPL grant in order to continue to expand their offering. "It would certainly help us to maintain the supplies needed for all experiments while providing more options for our patrons," she explained, adding that the kits help to support her institution's mission. "Libraries are for life-long learning," Grimm confirmed, "and we appreciate this grant so much because it's allowed us to provide a number of things that we may not have been able to otherwise."

For more information on IEEE Region 4's SKPL program or to apply for a grant to launch a new library program or to make a donation, visit IEEE's SKPL website at r4.ieee.org/skpl/. ■

Celebrating a Diverse Set of Innovators – Expanding the IEEE Heritage Circle

The **IEEE Heritage Circle** is the cumulative giving donor recognition program of the IEEE Foundation. It recognizes the indomitable philanthropic spirit of those who have compassionately given to IEEE and the IEEE Foundation throughout their life and career.

To honor the impact **Heritage Circle** members are making to IEEE and throughout the world, each level of the **IEEE Heritage Circle** is named for a great innovator in the fields of science and technology, including Nikola Tesla, Alexander Graham Bell, Thomas Alva Edison, James Clerk Maxwell, Michael Faraday and Alessandro Volta. As the IEEE Foundation's philanthropy continues to grow, we acknowledge a diverse set of innovators throughout history who shaped the world in which we live.

The IEEE Foundation is excited to announce an expansion of six additional distinguished names to our giving levels. The new levels honor a varied representation of the groundbreaking work of women, people of color and LGBTQ+ community members. These new levels honor Hertha Ayrton, Lewis Latimer, Marie Sklodowska Curie, Jagadish Chandra Bose, Alan Turing and Edith Clarke.

The IEEE Foundation sees the expanded levels as an opportunity for inclusion, which is an important goal as it celebrates the 50th Anniversary. "I'm excited to see the IEEE Foundation acknowledge engineers and technologists from underrepresented groups. Celebrating the diversity of our profession is important and a critical component in engaging our donors and inspiring their philanthropy to make an impact around the world," said Sarah Rajala, VP, Development for the IEEE Foundation and an **IEEE Heritage Circle** Member at the Nikola Tesla Level.

Heritage Circle members are *Honored Philanthropists* whose donations and/or pledges to IEEE Foundation total US$10,000 or more since 1 January 1995. Automatically recognized as members of the **IEEE Heritage Circle**, donors are categorized within twelve giving levels ranging from US$10,000 to more than US$5M. Recognition levels are calculated at the end of each calendar year. The new levels go into effect for giving through the end of 2022 and the first listing will be published in the 2022 IEEE Foundation Annual Report. Contact the IEEE Foundation Development Office at donate@ieee.org with questions or to arrange a confidential donor-giving discussion.

The IEEE Foundation is incredibly grateful for the charitable commitment of the **IEEE Heritage Circle's** loyal members. We look forward to further developing this community and meeting the challenges of exponential growth. ■

IEEE Foundation 50 YEARS
Reflecting on 50 Years of Impact

THE NEW IEEE HERITAGE CIRCLE GIVING LEVELS

NIKOLA TESLA LEVEL
$10,000-$24,999

HERTHA AYRTON LEVEL
$25,000-$49,999

ALEXANDER GRAHAM BELL LEVEL
$50,000-$74,999

LEWIS LATIMER LEVEL
$75,000 – $99,999

THOMAS A. EDISON LEVEL
$100,000 – $149,999

MARIE SKLODOWSKA CURIE LEVEL
$150,000 – $249,999

JAMES CLERK MAXWELL LEVEL
$250,000 – $499,999

MICHAEL FARADAY LEVEL
$500,000 – $749,999

JAGADISH CHANDRA BOSE LEVEL
$750,000 – $999,999

ALESSANDRO VOLTA LEVEL
$1,000,000 – $2,499,999

ALAN TURING LEVEL
$2,500,000 – $4,999,999

EDITH CLARKE LEVEL
$5,000,000+

IEEE Foundation Happenings

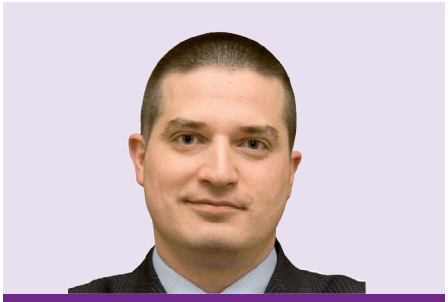
In February 2023, the IEEE Foundation Board approved the appointment of two IEEE Board members as emeritus members. John Treichler (left) was named as IEEE Foundation President Emeritus "in recognition of his unequivocal and valued leadership for nine years. His accomplishments include exceeding the fundraising goal of the Realize the Full Potential of IEEE Campaign raising $32.1 million, successfully navigating the COVID pandemic and strengthening our relationship with IEEE and its many operating units." Fred Mintzer was named as IEEE Foundation Director Emeritus "in recognition of his dedicated service and leadership in IEEE Foundation Programs and Financial Management."

Ralph Ford, IEEE Foundation President recognizes **Dave Green** as Director Emeritus

Former IEEE Foundation Board member Dave Green has been elected to Director Emeritus. The title Director Emeritus recognizes his extraordinary contributions to the IEEE Foundation over the many years he served as Treasurer and Director. Dave was recognized at the February 2023 IEEE Foundation Board meeting by IEEE Foundation president Ralph Ford (left) for "dedicated service and leadership in many officer roles, particularly as Treasurer of the IEEE Foundation; whose accomplishments include leading the Foundation's grant program, managing the growth of the Foundation's assets and formulating strategies to ensure the Foundation's future financial health; and in his role as a mentor, diplomat and conscience of the Foundation."

Karen Panetta, IEEE Foundation Director

Congratulations to Karen Panetta, IEEE Foundation Director, for being elected to the US National Academy of Engineering. As one of the highest professional distinctions awarded to engineers, members are honored based on outstanding contributions to the field. Karen was elected for "empowering females in STEM, and for contributions to computer vision and simulation algorithms."



Marko Delimar, IEEE Foundation's Vice President of Programs

Congratulations to Marko Delimar, IEEE Foundation's Vice President of Programs, for receiving the 2023 IEEE Haraden Pratt Award, which is sponsored by the IEEE Foundation. Marko was selected "for inspired vision and steadfast leadership in improving global IEEE influence, member engagement and governance." Marko will be recognized on 5 May 2023 at the IEEE Honors Ceremony Dinner and Gala which celebrates the contributions of some of the world's greatest minds.

John McDonald, Director and Chair, IEEE Foundation 50th Anniversary Celebration

Congratulations to John McDonald for receiving the 2023 Purdue University Distinguished Engineering Alumni Award. Awarded annually, the award represents the most notable engineering professionals of Purdue among its 13 schools of engineering and is the College of Engineering's highest honor.

New Diversity and Inclusion Projects Powered by the IEEE Computer Society Diversity and Inclusion Fund

In 2021, the IEEE Computer Society (IEEE CS) launched its Diversity and Inclusion (D&I) Fund of the IEEE Foundation, with a primary objective of supporting projects and programs that positively impact diversity, equity, and inclusion throughout the computer engineering and computer science communities. The first call for proposals launched in Q4 2021, to support 2022 activities, and a wide range of strong submissions made for a competitive selection process.

Ultimately, the first round of funded proposals included programs that introduced new ways to bring together BIPOC (Black, Indigenous and People of Color) high-school students, teach computer literacy in rural communities, produce mentoring circles and inclusive teaching spaces, and enable workshops and courses for underrepresented communities in four countries around the world. At the close of 2022, these programs reported that having access to D&I Fund resources allowed them to expand computer science and engineering opportunities for historically underrepresented populations.

For example, at the University of Washington Bothell, the D&I Fund grant enabled the launch of a summer high school internship program designed to assimilate BIPOC high schoolers into the university research environment. Through a targeted, direct recruiting process that included outreach to an American Indian tribal organization, graduates of color, and a Japanese-American Society, four BIPOC high school students were selected to participate in the program where they gained an understanding of parallel programming, ran parallel-computing libraries, participated in a comparison among C/C++ agent-based parallel simulators or a parallelization of computational geometry programs using MASS and data-streaming tools in Java. They also learned how to use graph-generating tools such as gnuplot and have them visualize their measurements.

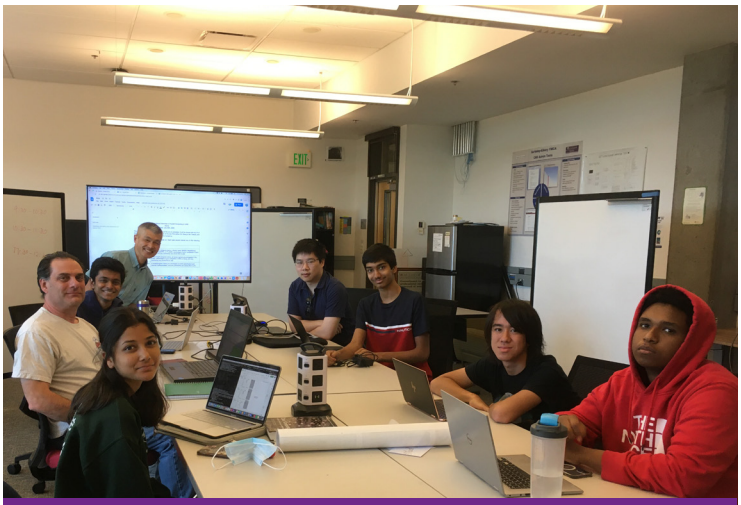
"Our intent was to assimilate our interns into computer science as well as into parallel and distributed computing. We planned to not only give the high school students internship experiences but also mentor them toward their university study in computer science," said Munehiro Fukuda, professor and chair of the distributed computing laboratory at University of Washington Bothell, and the project leader.

By all accounts, that goal was achieved. One of the program's interns received an AP Scholar Award, another took early actions for university application in October 2022, a third is now taking running-start courses, and the fourth has begun working on university applications as part of their senior year.

With the initial year's success as a backdrop, in October of 2022, IEEE CS issued its second call for D&I proposals with the intent to quadruple the amount of funding provided. Nita Patel, 2023 IEEE CS President explained, "In our first year, we received many grassroots proposals. This year, we're striving for a balance of larger-scale programs and continued investment in grassroots initiatives." IEEE CS will announce the newly funded programs during the first quarter of 2023.

The next call for proposals will open in October 2023 for projects to be implemented in 2024, and anyone interested in submitting can find out more by contacting inclusion@computer.org.

For more information on IEEE CS D&I initiatives, visit computer.org/about/diversity-inclusion. To donate, visit ieeefoundation.org/ieee-computer-society-diversity-inclusion-fund. ■



On the last day of their program, University of Washington Bothell interns summarized performance measurement, visualized measurements with Excel and gnuplot, and wrote up their final reports under the guidance of Professor Munehiro Fukuda (back left).

IEEE TryEngineering Summer Institute Emerges Stronger Than Ever

After a two-year hiatus due to COVID-19, attendance at the 2022 IEEE TryEngineering Summer Institute grew more than 100 percent compared to 2020, with 314 students attending.

The experience offers teens an opportunity to explore a variety of engineering disciplines through hands-on design challenges, field trips, industry speakers and more. A valuable part of the experience, the residential component, allows students to see what it's like to live on a college campus while building a sense of independence. TryEngineering 2022 included the campuses of Rice University, the University of Pennsylvania, the University of San Diego and Vaughn College.

Behind-the-scenes tours included Boeing, Leonardo Helicopters, LaGuardia Airport, Space Center Houston and Qualcomm. Highlights from the tours included meeting two longtime NASA engineers and touring the Apollo Mission Control facility. In addition, students learned about 5G technology, Wi-Fi and artificial intelligence from engineers developing new applications. Meeting practicing engineers and learning firsthand about their jobs allowed students a peek at what their future could hold in a STEM career.

Donations from IEEE volunteers, members and societies to the IEEE Educational Activities Scholarship Fund through the IEEE Foundation made the program a success. Their generosity allowed 30 need-based students to attend tuition-free.

"I can't describe how grateful I am for the scholarship," says a recipient who attended the program at Rice. "I loved everything about the camp, from the classes to the activities to the great people I met. Thanks to the camp, I've been able to come to the conclusion that I want to be an engineer."

Registration for 2023 is open. To learn more about IEEE TryEngineering Summer Institute, visit tryengineeringinstitute.ieee.org. To help with a student scholarship contact Eileen R. Heltzer, CFRE, at e.heltzer@ieee.org or +1-732-799-4431. ■

As part of the TryEngineering Summer Institute program, these students toured NASA's Apollo Mission Control facility, in Houston, TX, USA.

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