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IEEE Is Your Professional Home

DID YOU KNOW that IEEE is not just an organization of electrical and electronics engineers? We welcome all those who are interested in and want to contribute to our technological mission.

As the world's largest technical professional organization, IEEE has long been composed of engineers, scientists, technologists, practitioners, and entrepreneurs. Members are experts from the highest echelons of academia, industry, and government, and they work in every vital area of technology. For this reason, the organization is now referred to simply as IEEE—your professional home.

As your professional home, within IEEE one can find computer scientists as well as electrical, mechanical, and electronics engineers. One can also find physicists and biologists who use our technical literature in their daily

work; entrepreneurs and marketers who build their businesses on our members' technologies; technicians who demonstrate their proficiency through their technical advances published in our journals; and teachers who share their knowledge of science and technology with their students through our educational offerings.

Although IEEE still honors its electrical engineering roots, during the past few decades, its fields of interest have expanded well beyond electrical and electronics engineering and computing into just about any area one can imagine.

As technologies and the industries that developed them have increasingly transcended national boundaries, IEEE has kept pace. It has continued to expand its global presence to enhance its excellence in delivering products and

services to members, industries, and the public at large.

Over the years, I have volunteered my time and effort to make IEEE a better place for all of us. I started as a student member more than 36 years ago. I started volunteering with the IEEE Signal Processing Society. Eventually I went on to oversee all of IEEE's societies and councils as vice president, Technical Activities, and I served on the IEEE Board of Directors. However, I am also still a member, just like all of you. I continue to read IEEE journals, participate in conferences, and use IEEE standards, and I enjoy engaging with my local chapter.

I understand the issues many of you, my fellow members, are facing in your professional lives, whether it's getting your career started after graduation, excelling or struggling in your position in academia or industry, or leveraging the "gig economy" as an entrepreneur.

And though the days when a technologist could count on lifetime employment with a single company are long gone, IEEE can be your professional home base from the time you first join as a student member until retirement. IEEE offers the products, services, networking opportunities, and educational and professional development programs required for every stage of your career.

IEEE spans our members' entire professional life cycle—catering to those just thinking about engineering or science as a career, as well as those already studying, teaching, practicing, inventing, or advocating for technology.

IEEE also provides members with a strong sense of community and a worldwide network of personal connections that can help mentor and nurture your professional journey.

The future

Together with the IEEE Board of Directors, I began this year with a commitment to shaping the IEEE of the future and examining ways in which the organization can evolve

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to best meet the needs of all technical professionals in the years ahead. Many of the advances we will make this year will be driven by an emphasis on our long-term success—all with a clear focus on our Code of Ethics and member conduct activities, including our commitment to inclusion and diversity.

My plan to make IEEE your professional home includes improving our engagement with our members and audience, seeking out the next big opportunities for IEEE and our members, enhancing IEEE awards' prestige, guiding IEEE in playing a leading role in addressing the climate crisis, and preparing IEEE for a world full of demographic, technological, economic, and environmental changes.

As a nonprofit organization, IEEE's key impetuses are the promotion of technical excellence, thought leadership, and the facilitation of collaboration and networking—rather than amassing profits.

The essential roles of our organization have always been facilitating the exchange of knowledge, advancing the technical state of the art, promoting guidelines and standards for professional excellence, and raising public awareness and recognition of members' contributions.

I encourage all our members to be engaged, be involved, and be part of the drive to reaffirm awareness of IEEE as your professional home to all members and other technologists around the world. After all, IEEE is your professional home. Please take care of yourself and each other.

—K.J. RAY LIU
IEEE president and CEO

Please share your thoughts with me at president@ieee.org.

Innovations for the Underserved

Ensuring those who need technology have access to it

MANY IEEE MEMBERS start off their engineering career as interns, but few end up running the company. That's not the case with Natarajan "Chandra" Chandrasekaran. The senior member has risen through the ranks and is now the chairman of Tata Sons, in Mumbai, India, the holding company for the Tata Group.

His focus for the company is to have a positive impact on society. On page 54, he discusses his vision for using artificial intelligence, cloud computing, the Internet of Things, and other technologies to improve conditions for the underserved.

On page 61, read about *Alvin*, a U.S. human-operated submersible that changed the course of oceanography. Now an IEEE Milestone, the 58-year-old vessel is still operating today. Scientists have used *Alvin*—developed by a research team at Woods Hole Oceanographic Institution—to study the effects of pressure on seafloor microbes. It also has discovered hydrothermal vents that help regulate ocean chemistry and support ecosystems.

As a youngster, Member Aadeel Akhtar made a pledge that one day he would build affordable artificial limbs.

He fulfilled that promise in September when his startup, Psyonic, released the Ability Hand, the fastest bionic hand on the market and the only one with touch feedback [page 64]. The haptic hand contains pressure sensors on the index finger, pinky, and thumb. It functions almost like a regular hand.

Another member who has done groundbreaking work is this year's IEEE Medal of Honor

recipient, Asad Madni [page 56]. The award recognizes his contributions to the development and commercialization of innovative sensing and systems technologies.

The Life Fellow's quartz microelectromechanical system, GyroChip, is the first MEMS-based gyroscope and inertial measurement unit for aerospace and automotive safety.

On page 58, meet the members who are running to be the 2023 IEEE president-elect. The Board-nominated candidates are Life Fellow Thomas Coughlin and Senior Members Kathleen Kramer and Maïke Luiken. Life Fellow Kazuhiro Kosuge is seeking to be a petition candidate. Learn about some of the key deadlines in this year's election on page 66. Also on that page you'll find the results of the 2021 election.

Need to brush up on some of today's latest technologies? IEEE Educational Activities is offering courses on blockchain [page 60].

On page 63, learn about the IEEE standards that can be found in a variety of well-known medical devices used both at home and in hospitals.

The IEEE Standards Association is also working to bring Internet access to those living in rural communities. Its Connectivity and Telecom Practice group has released several videotaped interviews with industry professionals, researchers, and policymakers working on providing worldwide access [page 63].

—KATHY PRETZ
Editor in chief, *The Institute*

For updates about IEEE and its members, visit us at spectrum.ieee.org/the-institute