IEEE Rochester Section

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January 2025 Newsletter

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Message from the Chair

Dear Colleagues,

Happy New Year!

Being professionally active is essential for your career and the vitality of the Rochester area technical community. I challenge you to participate in at least one professional event each quarter in 2025.

Our IEEE Rochester Section will help you! Come to our IEEE Rochester Section Joint Chapters Meeting on Tuesday, March 25, 2025, at the RIT Inn and Conference Center. You will learn new things, meet interesting people, elevate the practice of engineering, and enrich the experience of your colleagues.

Our IEEE Rochester Section Executive Committee meets monthly to organize events. Our February meeting is tentatively scheduled for Tuesday, February 4th, from 12:00 PM to 1:30 pm. We may change the meeting date and time, so please review the registration information using the link below.

Please feel free to register for in-person or virtual (Zoom) attendance using this link: https://events.vtools.ieee.org/tego_/event/manage/452252

I look forward to working with you!

Regards,

Kelly Robinson, PE, PhD
Chair, IEEE Rochester Section

IEEE Rochester Section Leadership Opportunities

We are looking for IEEE members interested in leadership positions on our Rochester Section Executive Committee. We are especially looking for the Treasurer and Young Professionals positions, the latter representing practicing engineers in their first 10 years after graduation. Don't hesitate to contact Kelly Robinson to explore these and other opportunities.

Region 1-2 and Region 10 - Collaborative Medical Device Engineering

The persistent need for affordable, low-cost medical devices in low-income and middle-income countries can be addressed by innovative design engineering of products carefully targeted to those marketplaces. The goal is to provide a high level of usability and identical functionality using advanced electronics combined with lower component and manufacturing costs, simplified user interfaces, and innovative product aesthetics.

A medical-grade defibrillator is being developed by a team headed by Dr. Ram Dhurjaty from IEEE Region 1 and Professor Aparna Dixit of Pranveer Singh Institute of Kanpur, India, in IEEE Region 10. A defibrillator is a product that can uniquely stop defibrillation, which is the uncoordinated firing of segments of the heart muscle; and return the heart muscle to a state where normal neural excitation will result in the return of synchronized muscle contraction. That will start the blood flowing normally again. Nothing can substitute for a defibrillator when the heart is in defibrillation. Defibrillation is confirmed by the absence of a normal EKG (ECG) waveform sensed with two electrodes on the chest or extremities.

The defibrillator is not the first product this team has worked on. The first product was an affordable oxygen concentrator targeting patients with COPD and other respiratory diseases. The oxygen concentrator was prototyped, evaluated, manufactured, and marketed in India. The effort on the oxygen concentrator involved several prototypes, careful evaluation, and clinical testing. It has proved that understanding the required solution's scientific and engineering principles and the newest technologies available can lead to a more affordable solution.

The lessons learned from the oxygen concentrator (first product) are currently being applied to the defibrillator's design. This involves a holistic approach where usability, electrical, mechanical, and product design are simultaneously considered. The willingness to question design decisions on an ongoing basis has already produced substantial improvements to the product, system, and individual functional blocks. This approach continues as the team progresses toward creating a minimally viable prototype (MVP) and beyond.

Dr. Sreeram (Ram) Dhurjaty

Dr. Aparna Dixit