



Breakthrough research and innovation reign
as the University hosts the ASEE conference

A Gathering of Talent

By Leslie Geary

It's bad enough when a car or flashlight battery dies. But the inconvenience of being stranded by the road pales in comparison when pacemakers lose their charge. Patients who rely on the medical devices to regulate their heartbeat generally have to change them every five to ten years.

That concerned UB engineering student Nazar Fadhil. "Getting a new pacemaker is expensive and patients have to spend time in the hospital. There's also a small risk of infection."

He began wondering if there was some way to prolong a pacemaker's lifespan. >

Illustration by Joe Tenerelli

With guidance from Biomedical Engineering Department Chairman Prabir Patra, Fadhil developed a thin film composed of graphene nanoplates and a polymer known as PVDF to harnesses energy created by the body's mechanical movement (in this case, an artery or the actual heartbeat) and generate electricity for the pacemaker.

Their work was presented for review in April, when Fadhil and more than 500 other presenters showcased research at the American Academy of Engineering Schools (ASEE) Zone Conference, which this year was held at was held at the University's Cox Student Center.

For three days, industry experts, faculty, and students from more than 135 colleges, universities, and companies throughout the eastern U.S. and Canada attended tutorials and panels about topics ranging from biomedical nanotechnology to automation, robotics, and technologies.

They competed in conference competitions for professional papers, outstanding teaching, and research, while experts, such as Dr. Damir Novosel from Quanta-Technology, spoke about energy and sustainability. Dr. David McLaughlin, from the University of Massachusetts, Amherst, lectured on "Collaborative Adaptive Sensing of the Atmosphere."

"It's a great place for professionals, faculty, and students to exchange ideas," said School of Engineering Dean and Senior Vice President for Graduate Studies and Research Tarek Sobh, who called the conference "an outstanding success and a pivotal accomplishment for UB as a national engineering and STEM leader."

More than 430 posters and papers were submitted to the conference, and by the end of the three-day

event, the University captured most of the awards for student research.

In the Graduate Research Paper Competition, Tamer Abukhalil and Madhav Patil won first place in a field of 150 competitors. The duo, who were advised by Sobh, used specially designed robots that work in parallel with a control framework to accomplish complicated physical tasks at low cost and optimal speeds. (In all, UB won two out of the out of three awards, and two out of three honorable mentions

for the research paper category.)

Wafa Mohammed Elmannai won the Big Data Analytics Professional Paper Award from Decisyon, Inc. Her work with adviser and Professor Khaled Elleithy creates new methods for managing and extending the life of wireless networks underwater.

Meanwhile, Sarosh Patel, a PhD student majoring in Computer Science and Engineering, won first place in the Graduate Student Research

Poster Competition for his work with robotics. UB students also won second and third prize, as well as all three honorable mentions, in a field of more than 100 students.

In his research Patel used algorithms to create systems that customize standardized robots that are frequently used in industries to manufacture goods, handle materials, and other tasks.

Robots work well enough, Patel explained, but because they are standardized, work frequently needs to be designed around the devices' mechanical abilities and limitations. That drives prices up, reduces efficiency, and lowers performance. His research eliminates such problems

"I did not expect to win," added Patel. "It felt great." ■



Illustration by Joe Tenerecci