

Distinguished members of Zonta International, honored guests, colleagues, and friends, I am deeply honored to stand before you today. Receiving the Zonta International Women in STEM Award is not only a recognition of my work — it is a reminder of responsibility. Zonta’s commitment to advancing women globally aligns with something I firmly believe: when women shape science and technology, they shape the future of society itself.

I am currently pursuing my PhD in Industrial Engineering, focusing on machine learning applications in advanced manufacturing systems. My earlier research centered on intelligent welding systems — integrating computer vision, sensors, and deep learning to monitor weld quality in real time. Welding may appear simple — sparks, metal, heat — but behind it lies complex physics and precision control that directly impact infrastructure, transportation, and safety. That work led me to ask a deeper question:

What if machines could not only see defects — but also hear them?

Today, my research focuses on acoustic analysis using machine learning. I study how sound signals — often overlooked — contain rich information about system stability and emerging faults. By training intelligent models to interpret acoustic signatures, we can detect problems earlier, reduce waste, improve efficiency, and enhance industrial safety. Sound is invisible. But it carries patterns and patterns, when decoded correctly, become knowledge.

This evolution from visual intelligence to acoustic intelligence reflects my broader vision: building manufacturing systems that are smarter, safer, and human-centered. In the era of Industry 5.0, technology must enhance human capability — not replace it. Artificial intelligence should support engineers, technicians, and operators — empowering them with better insights and better decisions.

Beyond research, I have also been committed to serving my academic community. I have had the privilege of teaching courses in probability and statistics, as well as engineering economic analysis. Teaching has been one of the most meaningful parts of my journey. Guiding students through uncertainty analysis, cost modeling, and decision-making frameworks reminds me that engineering is not just about equations — it is about responsible choices that affect real people and real systems.

I have also been selected as a judge for various competitions at Western New England University, including the FIRST Robotics Competition. Watching young students design, build, and program robots with passion and creativity reinforces my belief that innovation begins early. When we support young minds — especially young women — in STEM fields, we invest in a future defined by ingenuity and courage.

In addition to academia, I completed an internship at Eppendorf, a global company specializing in precision instruments for life sciences and biotechnology. There, I witnessed how rigorous engineering principles translate into real-world impact — from laboratory equipment to medical and research applications. That experience strengthened my commitment to bridging research and industry. It reminded me that innovation must be practical, reliable, and aligned with human needs.

This award will meaningfully support my research trajectory. Advanced experimental setups for acoustic sensing, data acquisition systems, and machine learning model development require resources. Support from this recognition will help expand my experimental capabilities, strengthen collaboration opportunities, and allow me to disseminate findings more broadly through conferences and publications. More importantly, it provides validation — encouraging continued work in areas that connect artificial intelligence with responsible manufacturing.

As a woman in engineering, I have learned that innovation requires both technical rigor and resilience. Excellence becomes the strongest response to doubt. Curiosity, discipline, and persistence became my foundation.

But tonight, I also carry something beyond research. I carry the voices of young people in Iran.

According to numerous reports from activists and independent sources, more than 43,000 civilians have been killed in recent crackdowns, and the number continues to rise as many remain detained. A significant portion of those affected are under the age of thirty — students, young professionals, young women and men whose lives were just beginning. Many remain imprisoned. Many families still wait for answers. When young people disappear into detention, when students are silenced, when classrooms lose their brightest minds — the loss is not only personal. It is intellectual. It is scientific. It is generational. For many women in Iran, education is not simply a path to a career. It is an act of courage. Studying science can carry risk. Asking for dignity can carry consequences.

I accept this award in honor of those young women and men whose brilliance deserved laboratories, not limitations — whose futures deserved opportunity, not fear. Women in STEM are not only participants in the future — we are architects of it. We are shaping artificial intelligence. We are designing the systems that will influence industry, healthcare, and global infrastructure. If women are absent from these spaces, the systems we build will be incomplete. Diversity in engineering is not symbolic — it is structural. Inclusive perspectives make technology safer, stronger, and more ethical. This recognition belongs to my mentors, who guided me with patience and belief. It belongs to my students, whose questions sharpen my thinking. And it belongs to every young woman who wonders if she belongs in science.

You belong.

And even in the face of repression, even in the face of fear, knowledge continues. Innovation continues. Women continue. In engineering, small signals can reveal profound truths. In society, persistent voices can reshape history. Women in STEM are that signal. Thank you, Zonta International, for amplifying it. I am deeply honored — and deeply committed — to continuing this work with integrity, courage, and hope.

Thank you.