

What Engineering Heaven Looks Like

Student Design Competition winner's internship at TREAT leads to new opportunities and experiences

Seong-Hee Yoon didn't know what to expect when her team's design was awarded "Technology Most Likely to Become Commercially Available" at last year's RESNA Student Design Competition. The award came with a \$500 cash prize and an internship at the Center for the Translation of Rehabilitation Engineering Advances and Technology (TREAT) to further develop the product.

At the time, Seong-Hee was a student at the University of North Carolina, Chapel Hill. She and her teammates' idea was "AlphaBraille," a game designed to teach children how to recognize Braille letters. Almost a year later, she found herself in Lebanon, New Hampshire, at TREAT's facility, meeting with a design team of engineers and discussing how to bring her idea to market.

"This opportunity was a real hands-on experience," said Seong-Hee. "I not only discovered how to make the design more functional, I also received help in developing a business plan. I learned to go beyond being an engineer and become an entrepreneur."



TREAT staff were also thrilled with how the internship turned out. Program Manager Joshua Nelson wasn't quite sure at first that it was going to work out. "We weren't sure if Seong-Hee was going to take advantage of it, but when she finally arrived, she took to it like a fish to water," he said.

Seong-Hee worked closely with an industrial designer at TREAT to revamp her design and make it more economical. "I redesigned the electronics of the game to make it cheaper to produce," she said. "I also made it compatible with a popular toy, Leapfrog, in order to appeal to a broader audience."

TREAT has full access to the Thayer School of Engineering at Dartmouth, giving Seong-Hee the opportunity to use the engineering labs on campus. "Laser etching, welding, 3-D printers, milling machines, plasma cutters – I was in engineering heaven," said Seong-Hee.



Product
Shot

Working on the design at the TREAT facility



Besides a design focus, the TREAT internship includes everything a budding product designer needs to bring a product to market, such as help with setting up usability studies, marketing research, business plan development, and funding sources. “Seong-Hee was able to do some intellectual property research while she was here, which led her to change the name of the product from “AlphaBraille” to “Braille Bot,” said Joshua. “It makes the game sound much more appealing to the target market.”

The TREAT team even taught Seong-Hee how to make her product herself, so she can produce working prototypes to show to potential investors. “They showed me how to cast mold polyurethane in my kitchen and my bathroom,” she said proudly.

Seong-Hee is now finishing up her business plan and investigating funding options through a possible Kickstarter campaign and contacting organizations that fund products for people with vision impairment. She is still in touch with the TREAT team, who continue to provide counsel and advice. Now graduated from school, she is working at biotech firm that she worked at during college while seeking more engineering opportunities.

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“This internship reignited my passion for engineering,” she said. When we won the prize, I thought it was too good to be true, but it turns out it was completely true!”

Editor’s Note: The 2013 TREAT award winner is “Doodle Bug,” a writing aide designed by students from California Lutheran University. Check out this design and all of the Student Design Competition finalists [on the website](#). RESNA members are encouraged to leave notes and comments for the student designers.