



Facial and Eye Recognition Device for People with ALS Born Out of Collaboration and Drive

by Kate Gawlik

Oklahoma City, Oklahoma. Feb. 22, 2018: The ingenuity of engineering students, mixed with compassion and drive, can be an unstoppable force. Ash Srinivas was such a force as he pursued his master's degree in engineering at Oklahoma Christian University in Edmond. His idea was to create a device that would allow people with ALS (amyotrophic lateral sclerosis) to use a computer or tablet to communicate by facial or eye recognition. His inspiration was a friend living with ALS. Based on his suggestion, a capstone project for undergraduate seniors was launched, and Srinivas and one of his professors served as mentors throughout the project. The friend tested an early prototype but died before the system was complete. Nonetheless, the idea for a life-changing device was just being born.

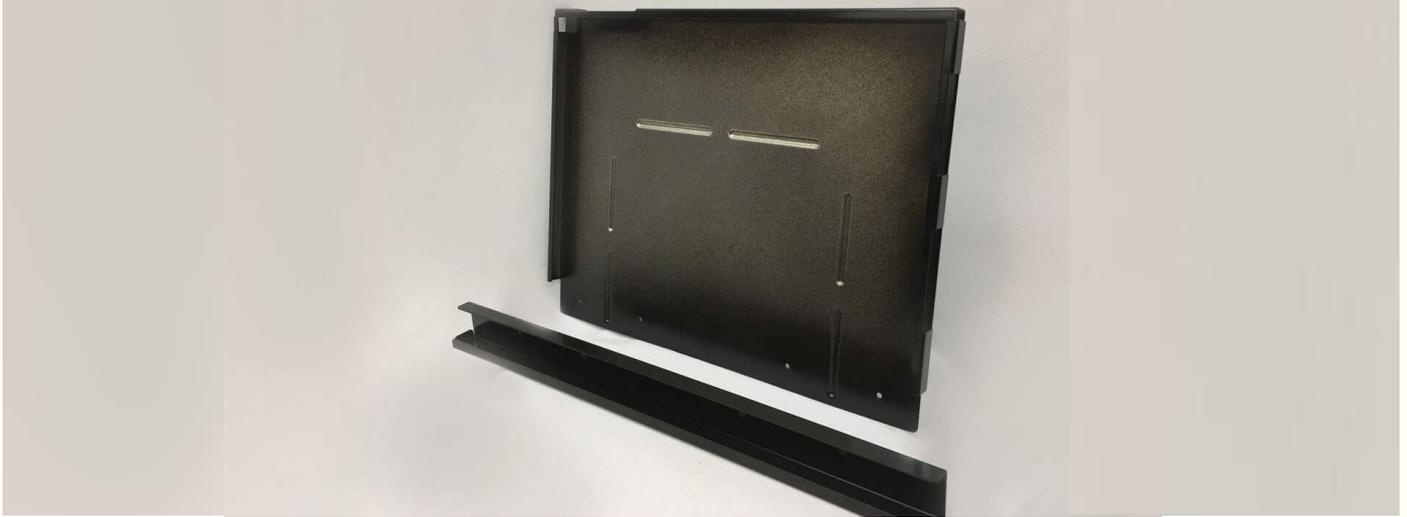
The following semester, in fall 2016, a second team of seniors set out to improve the invention. Together they developed VisuALS, an affordable assistive communication device that, with eye tracking capabilities, allows people to communicate and stay connected with their world—by using only their eyes. A company by the name of VisuALS Technology Solutions LLC was launched in April 2017 to develop, produce and distribute the system. Before going to market, improvements were needed to securely mount the device on wheelchairs and make it more user-friendly. VisuALS approached Progressive Stamping & Fabrication, Oklahoma City, to manufacture a metal case for the mounting apparatus, and the company jumped at the chance.

"Our team is always up for a challenge and an intriguing project," says Tim Hughes, outside sales representative for Progressive Stamping & Fabrication, which is owned by Flex-Ability Concepts. "We were really excited about this opportunity that could change the daily lives of people living with ALS and other disabilities."





PROGRESSIVE
Stamping & Fabrication



According to Steve Maher, chair of the graduate school of engineering and computer science and associate professor of electrical and computer engineering at OC, as well as a founder of VisuALS Technology Solutions, the VisuALS system started as a laptop with a gaming gaze tracking bar. Students made the device affordable by assembling the system with available hardware and writing the software. This improved version of the prototype was given to the first beta tester—Carl Phelps, a man from Chickasha, Okla., who learned about VisuALS at a support group meeting. Phelps began showing symptoms of ALS in 2014, and he could no longer speak when he met the OC students. Two weeks after the January 2017 meeting, Phelps was given the device, and every day from then on, he told his wife that he loved her via VisuALS. Phelps professed his love for VisuALS too, and he offered the students advice for improvements. Phelps said the device worked well on a table, but he wanted it to be mobile and easily attachable to his wheelchair.

"Once Carl put the device on his wheelchair, he never took it off. Carl used a rubber band to attach the system on a wheelchair, and I knew we could do better than this," Maher said. "For the gaze tracking to work properly, it is important for the bar to stay at the same spot relative to the screen, so we needed to create one concise assembly."

The team developed a 3D plastic stand in May 2017, which allowed the integrated system to sit as a unit on a table. They then began investigating 3D plastic printing options when the Oklahoma Manufacturing Alliance recommended aluminum as a lightweight and sturdy option, as well as introduced the team to Progressive Stamping & Fabrication.

"We met with the people at Progressive Stamping & Fabrication, and we went with them because metal is a good long-term option. They took the 3D print and turned it into a metal design for a case. We attach a magnetic bolt clip to the back of the case. With that clip, you can attach a table stand and a table clamp, and you have at least two options for attachment to a wheelchair. People can choose which assembly they want based on their physical capabilities and needs," Maher explained.



PROGRESSIVE
Stamping & Fabrication



The device costs just under \$3,000, in comparison to \$10,000 or more for a similar system. VisuALS launched the product on Sept. 1, 2017, and the VisuALS system with the metal stand became available in October 2017. VisuALS systems can be purchased at: <https://visuals.tech>.

“The OC students and professors should be commended for what they have done for people living with ALS and other disabilities,” Hughes says. “Our contribution is such a minor component in their years of effort. We at Progressive Stamping & Fabrication are nonetheless humbled to be part of VisuALS, and we hope the stand changes the way people communicate and live.”
