Three University of Houston electrical engineering students were recognized as the top design team at the Texas Space Grant Consortium Design Challenge Showcase this month. Seniors Lazaro “Danny” Rodriguez, Dhruval Bhatt and Bryant Lopez, known as the Space Coogs, won three awards, including best poster, best oral presentation, and best overall design team for their Smart Fabric Communicator.

The team created a wireless communicator, similar to a Star Trek badge, for astronauts to use in conference calls while aboard the International Space Station, with each other as well as mission control. The communicator will be embedded in a shirt with an interface that uses conductive threads. It will use WiFi already installed on the station to connect to a voice over IP server which manages the conference calls. The communicator automatically logs into a general conference call and can accommodate two private calls, with volume and mute buttons that work on the cloth.

The idea for this wireless communicator grew from a previous project that Rodriguez worked on with voice activation and voice over IP while at NASA. He approached Cory Simon, a human interfaces engineer at NASA, who championed the idea of placing this technology on a shirt. Simon served as the team’s mentor and guided them through the NASA proposal process. Professor John Glover of the UH department of Electrical and Computer Engineering supervised the team’s project as part of their senior design coursework.

Smart, wireless communication in space holds much potential. Currently, astronauts use wired communication housed in selected modules on the space station. To make calls, they must secure what they’re working on and float to the communication module—a time-consuming, inconvenient process. The need for wireless communications in space is a priority, and the Space Coogs’ idea has garnered much interest at NASA, which will be developing its own voice communication systems using the components introduced by the Space Coogs. Moving forward, the team is exploring the technology’s viability in the use of headsets and detachable mechanisms.
The TSGC design challenge allows undergraduates to provide fresh ideas and practical solutions for NASA's areas of opportunity. The team is confident that the Smart Fabric Communicator will gain momentum in NASA's technology development. They will present their work at the Cullen College of Engineering on December 5. All three will graduate this semester.

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