

Electrical Engineering

Project Title:

[Bi-directional RF Data Link](#)

Team Members:

Mr. Andrew Foster
Mr. Justin Hawkins
Mr. Joseph Kiszka

Faculty Advisor: Dr. Elizabeth Thompson

Area: **Electrical Engineering and Computer Engineering**

Sponsored by: [Attero Tech, LLC](#)

Attero Tech, LLC of Fort Wayne, Indiana desires a bi-directional RF data link for use in various reference designs that require a moderate speed wireless serial connection. Examples of this would be iPod control, general wireless remote control, etc. This RF link is not expected or required to carry digital audio or video data.

This project includes a specific design and implementation of an RF link. This wireless connection will be approved by Attero Tech, LLC to suit their needs specifically. The design requirements include a minimum connection distance of 50 feet through one wall at a baud rate of at least 19,200, and the use of wireless specification IEEE 802.15, task group 4.

Project Title:

[Wireless Transmission of the interior temperature of an Automobile](#)

Team Members:

Ms. Janelle Freeland
Mr. Osama Aboulkheir
Mr. Shawn Shoesmith

Faculty Advisor: Dr. Hossein M. Oloomi

Area: **Electrical Engineering**

We propose to design a wireless remote system that will notify an individual when the interior temperature of his or her automobile reaches the set desired temperature. This system will consist of a temperature sensor to accurately measure the temperature of the automobile's interior, a transmitter to send a message to a handheld remote, a receiver located in the handheld remote, and an indicator in the handheld remote to notify the owner of when the automobile has reached the desired temperature. This system is meant to aid parents in protecting children (specifically children of 0 to 3 years of age) from extreme weather conditions.

Multi-Disciplinary

Project Title: [Interactive Sensor Package Unit](#)

Team Members:

Mr. Veselin Dimitrov (EE)
Ms. Amanda Irish (EE)
Mr. Chad Jones (ME)
Mr. Sean Kirk (ME)
Mr. Joseph Thomas (ME)
Mr. David Welter (EE)

Faculty Advisors

Dr. Yanfei Liu (EE)
Dr. Jiaxin Zhao (ME)

Area: **Multi-disciplinary**

Sponsored by: [Practical Robotic Innovations, LLC](#))

Through sponsorship by Practical Robotic Innovations, LLC (PRI) of Fort Wayne, Indiana, this multidisciplinary senior design team has been commissioned to design, assemble, and test a moving sensor package that is capable of intelligently interacting with its intended environment. The sensor package would be able to acquire and process data (i.e. sound and motion) to make “intelligent” decisions on how to react by means of audio, visual, and mechanical output. The team’s design should allow PRI to expand the unit’s electrical and mechanical attributes per future variations of the product.

Project Title:

[Design of Automated Cut Guide for Orthopedic Surgery](#)

Team Members:

Mr. Sean Campbell (EE)
Ms. Pavla Pletkova (EE)
Ms. Jenna Ross (ME)
Mr. Brad Stout (CmpE)
Mr. Jon Terrell (ME)

Faculty Advisors:

Dr. Chao Chen (EE)
Dr. Bongsu Kang (ME)

Area: **Multi-disciplinary**

Sponsored by: [Zimmer, Inc.](#)

Orthopedic technology involving surgical cutting guides have consisted of manually altered components that require fine tune adjustment that could be tedious and time-consuming to correctly align in three dimensions. In this project, the multi disciplinary Capstone senior design group, in conjunction with sponsorship from Zimmer, Inc., will design, construct, and test a surgical instrument system which provides accurate positioning while maintaining ease of use. In this system, a surgical device will utilize automated means to provide accurate positioning of a cut guide, which can translate or rotate in various planes. Ease of use will be accomplished by providing the user with the ability to adjust the positions of the device throughout surgery with minimal manual input. With this system in place, orthopedic surgeons are provided with a simple, easy to use and accurate solution to aid in orthopedic surgeries.