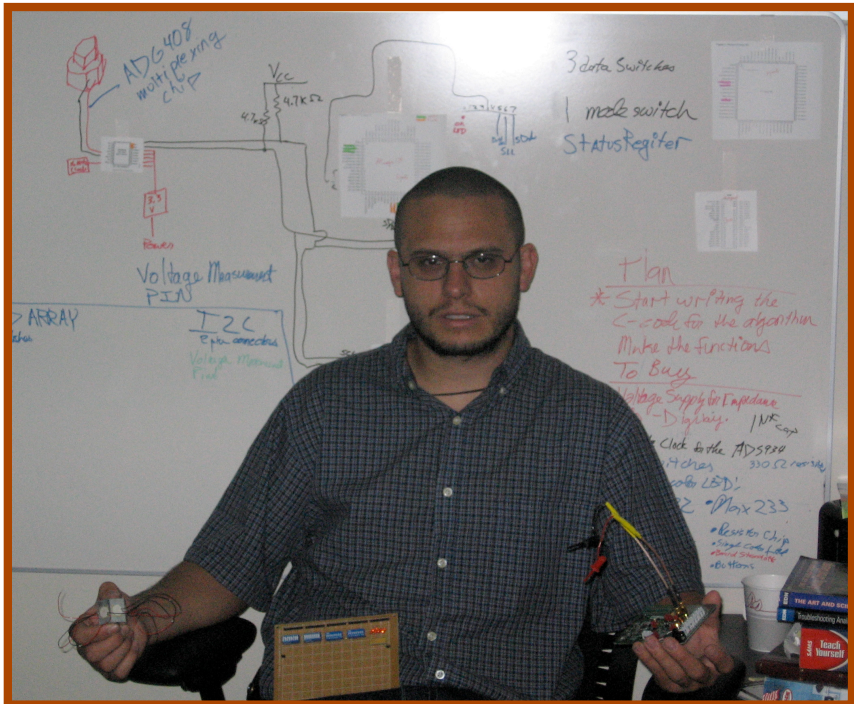


David Mascarenas

David Mascarenas is from Pueblo, Colorado and received his BS in mechanical engineering from Colorado State University in Fort Collins. Currently he is a graduate student at the University of California San Diego studying structural engineering. He is a graduate of 2003 Los Alamos Dynamic Summer School. His interests include chaotic circuits, antenna design, and the impedance-based method for structural health monitoring applications.



His thesis work is concerned with building a wireless sensor node that combines the impedance method with radio frequency identification (RFID) technology. Traditionally, the impedance method has required the use of a \$30,000 impedance analyzer, but recently a new impedance measurement chip has been developed in the commercial market. This device contains the functionality utilized from the impedance analyzer, but costs less than five dollars, and the whole circuit is roughly the size of a business card. The goal of his project is to determine the suitability of this device for structural health monitoring purposes. Once the performance of the device has been ascertained, he will combine the device with a microcontroller, and an RFID transponder into a wireless sensor node. The microcontroller will take the impedance measurement from the impedance chip, and will then process the data in order to determine the level of damage in a structure. This damage level will then be transmitted wirelessly through the RFID transponder.