

Title: Automated Device to Measure Forces and Frequency of Vibrations in Mosquito Bites

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Client: Professor Amit Lal, Dept. of Electrical Engineering

Date: Reporting progress from November 1 - November 7

Problem Statement: To design a self-contained, automated device to sense and record forces and vibrations present in mosquito bites.

Restatement of Team Goals: Last week we wanted to perform the testing on the mosquitoes, as well as post the progress reports and timeline on the web site. Also, we need to order parts for the motion detector circuit.

Summary of Accomplishments: This week Jake and I spent a good amount of time in the lab working on the motion detector circuit and doing online searches for electronic parts and components of a Carbon Dioxide dispenser. We dismantled a glade-plug in to find it consisted of a nicron wire resistor wrapped around yarn-like material embedded in molded plastic. The resistance of the device was measured at 9kohm suggesting that running it off a battery may not be practical, but for our current goal of modifying the device and testing the effectiveness of it at attracting mosquitoes, we will still be able to plug it into a standard 120V outlet.

Kevin also attended an IronCad tutorial that should be useful in making 3D images of our parts.

We have also been in contact with John Randell, chief entomologist at SCJohnson, and we are planning a trip to Racine in the near future.

Statement of Team Goals: Try to set up a time where Jake and I can both go to Racine to see Dr. Randell's operations and ask him questions. Conduct tests, with mosquitoes, to determine the effectiveness of octenol and CO₂ at attracting mosquitoes. Specifically, the tests are aimed at determining the usefulness of these attractants to attract mosquitoes to within a very close proximity of the sensor, and to provide information which we can use to develop a strategy of where to locate these attractants within the device.

Difficulties: Jake and I are a two person group instead of four like most others. Neither of us has much experience with programming or developing software; an area that could become a significant part of our project.

Activities:

Online research for products and parts: 2 hours (Jake and Kevin)

Patent searches: 1 hour (Kevin)

Working with circuit: (Jake)
Ironcad tutorial: 2 hours