Department of Industrial and Mechanical Engineering

Project I Description

Project Name: Smart Massage System

Sponsor: LAU

Team Size: 3 MEE Students

Project Overview

One-third of Americans are living with extreme stress and nearly half of Americans (48 percent) believe that their stress has increased over the past five years. Stress is taking a toll on people — contributing to health problems, poor relationships and lost productivity at work, according to a new national survey released today by the American Psychological Association (APA). So in order to decrease daily stress a smart massage system will be designed and prototyped in this project. The students will design a machine that automatically massages the lower back. The device will be connected to a smartphone for alerts and data logging. It will detect stress levels and knots in the lower back and execute a mechanical massage to relief them. Such devise could be embedded in a seat or in a vest.

The students will have to select based on research a method to identify stress levels. This could include but not limited to: heat signature of the back, local electrical impedance of the outer skin, or reading of the electrical signals in the pain nerves. The mechanical massage device could be powered by DC motors or smart materials such Dielectric-Elastomers (DEA).

Project Areas and Majors needed

- Kinematics/CAE
- Instrumentations and Measurement

Project Deliverables

- Research means to identify the need for massage
- Communicate this data with a smartphone
- Select the mechanical power of the massage device based on cost and ergonomics
- Design the massage system
- Create a functioning prototype