EECE 4950 – Fall 2018
Capstone Senior Design Project
Weekly Progress Report

Instructions to the Design Group Leader: **Please email a copy of this progress report to your project sponsor and to Dr. Bruce each Friday by 5 p.m. (excluding Oct 19 – Fall Break and November 25 – Thanksgiving Break).**

Project Title: **Burn Resuscitation and Management for Early Responders (BME)**

Date: **10/26/18**

(a) For each member, provide (1) the number of hours spent working on the project in the past week, and (2) a brief (one paragraph) summary of your progress in the past week. (Each group member should provide his/her information. If none is provided, list "no report" for that person.)

Name: Eric Yeats (EECE)	Hours spent on project: 3
Summary of progress in past week: I met with my AI Professor, Dr. Doug Fisher, to explain our goals for our project and to discuss our plans for implementing a neural network in our smartphone application. I also met with Dr. Kumar for an introduction of the Regional Burn Center in the VU Medical Center.	

Name: Nora Ward (BME)	Hours spent on project: 3
Summary of progress in past week: Nora Ward performed an IP search for our proposed product. Additionally, Nora attended the weekly meeting and met with Dr. Kumar for an introduction to the Burn ICU. She also helped write a BMEidea proposal for the BME Senior Design Course.	

Name: Hannah Kang (BME)	Hours spent on project: 3
Summary of progress in past week: Hannah Kang attended the weekly team meeting and met with Dr. Kumar for an introduction to the Burn ICU. She also helped write a BMEidea proposal for the BME Senior Design Course.	

Name: Jacob Ayers (BME)	Hours spent on project: 3
Summary of progress in past week: Jacob Ayers attended the weekly team meeting. He also helped write a BMEidea proposal for the BME Senior Design Course.	

Name: Dominique Szymkiewicz (BME)	Hours spent on project: 3
Summary of progress in past week: Dominique Szymkiewicz attended the weekly meeting and met with Dr. Kumar for an introduction to the Burn ICU. She also helped write a BMEidea proposal for the BME Senior Design Course.	

Name: Tommy Yates (BME)	Hours spent on project: 3
Summary of progress in past week: Tommy Yates met with Dr. Kumar for an introduction to the Burn ICU and he helped write a BMEidea proposal for the BME Senior Design Course.	

Name	Hours spent on project:
Summary of progress in past week:	

(b) **Briefly describe your group's planned efforts over the next week. Please list any resources (hardware, software, documentation, tools, etc.) that your group may require in the near future, but which you do not yet have. If your group requires additional advice or guidance about an upcoming technical aspect of the project, please describe it.**

The biggest goal this week is to have a clear definition of what the expectations are for the app's use in the field; then we can design it such that it is helpful and useful in realistic applications. Visiting the Burn ICU today was very helpful in giving us an idea of the way it could be used within a clinical setting. Additionally, he sent us

Dr. Kumar mentioned a document that is used to determine the severity of a burn injury and assess where the burn victim should go to receive treatment. A potential design implementation for including the document's information in the severity assessment algorithm would be to specify all of the 'rules' in a separate, modifiable, and readable document such as a JSON or a YAML specification file. Thus, if the rules by which the algorithm made decisions were to be changed, the change could be made easily in the JSON or YAML file.

We also received a more in-depth description of the resuscitation and treatment process and how our app could produce treatment recommendations from a collection of input images and a simple survey completed by a first-responder.

Dr. Fisher mentioned that we would only need 100-200 images of burned tissue of varying severity in order to train a pre-trained neural network. We would label each image for healthy skin and burned skin of a certain severity type. Then we would replicate each of the images and feed them sequentially to the neural network in training. Once the Neural Network was able to classify healthy and burned tissue pixels on its own, the total body area percent of burned tissue could be determined.

Dr. Kumar mentioned a different method for judging the total burned body percent that does not rely on a Neural Network and could be an attractive alternative. It would involve the first responder shading in the burned and healthy skin manually and then leaving the percent calculation up to the phone. This could be an easier method to implement and then troubleshoot if something is going wrong.

One of my goals over the next few weeks leading up to Thanksgiving Break is to develop a simple Android application that opens and uses the camera. Additionally, the camera output would be displaying on the screen in live-time and screen overlays would provide a human machine interface (HMI) that can give instructions to the user on what to take pictures of.

(c) **If appropriate, attach any additional items such as documentation / test results / schematics / diagrams / etc. that may assist your group sponsor and Dr. Bruce in evaluating your progress and aiding in your design effort. Please provide a brief description of these items if needed.**