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: **10/12/18**

(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 researched tooling for the Android platform and determined that a good approach would be to develop using Java. Java has an interfacing library called the Neural Networks API (written in C) which abstracts many of the neural-net accelerating hardware details from the higher-level application.	

Name: Nora Ward (BME)	Hours spent on project: 3
Summary of progress in past week: Nora Ward has been researching the Multi-View stereopsis and has been coordinating a meeting in the burn ICU with our sponsor, Dr. Kumar. Nora led the writeup of the weekly senior design seminar assignment.	

Name: Hannah Kang (BME)	Hours spent on project: 3
Summary of progress in past week: Hannah Kang has been researching image processing for skin recognition and has come up with three relevant papers to our project. She described an outlier detection removal algorithm (Li et al., 2015), an automated wound area and severity application (Qi et al., 2017), and an automated burn classification tool (Serrano et al., 2005). She described how an image composed of pixels could estimate the areas of surfaces by using a square reference in the image.	

Name: Jacob Ayers (BME)	Hours spent on project: 3
Summary of progress in past week: Jacob Ayers contributed implementation ideas at the weekly meeting and helped write the weekly senior design seminar assignment. Jacob is researching details on the needs of the application area.	

Name: Dominique Szymkiewicz (BME)	Hours spent on project: 3
Summary of progress in past week: Dominique Szymkiewicz researched burn treatment and demonstrated how the app would make decisions on the treatment method and how the app would communicate those decisions to the user.	

Name: Tommy Yates (BME)	Hours spent on project: 3
Summary of progress in past week: Tommy Yates has been researching different types of neural networks and how they are trained. He suggested that we have multiple neural nets that make a binary classification on different categories. For example, we could have a neural network that labels healthy skin, and three neural networks that individually label the three classifications of burns.	

(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.

This week at the Senior Design Seminar, Dr. Galloway spoke about his experience with Human-Centered Design and about the makerspace. He emphasized the need to empathize with the target user and determine what the real needs are before the design process takes place. In a similar fashion, we would like to further investigate the needs of the intended users – both the first responders and those who are being treated for severe burns. We are currently organizing a meeting with Dr. Kumar for this purpose.
Tommy Yates has organized a meeting with a former paramedic, Mr. McLean.

In the meantime, we are further developing our knowledge base such that we can better design an application that meets the needs of our intended users.

(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.

Li, Weizhi, et al. "Outlier detection and removal improves accuracy of machine learning approach to multispectral burn diagnostic imaging." *Journal of biomedical optics* 20.12 (2015): 121305.

Qi, Xin, et al. "An improved automated type-based method for area assessment of wound surface." *Wound Repair and Regeneration* 25.1 (2017): 150-158.

Serrano, Carmen, et al. "A computer assisted diagnosis tool for the classification of burns by depth of injury." *Burns* 31.3 (2005): 275-281.

Neural Networks Youtube Channel: https://www.youtube.com/channel/UCYO_jab_esuFRV4b17AJtAw