<div align="center">**Project Proposal**</div>

Title: Near – IR Spectroscopy

Aim of the proposed project:

To create a cost-effective and time-saving method to detect veins and provide a real time projection of the 'vein map' on the body itself, using near infrared spectrum.

Background/Short Description of the project (Be concise and comprehensive):

The project is based on creating a reliable method to detect veins of medical patients in a cost-effective and time-saving manner. The common practice is to manually find veins on the human body prior to canalization. The time taken for this task varies from person to person, but in certain complex patients (for instance, obese, burnt victims, other abnormal vein structures) it takes up a longer time and a difficult process even in the case of obtaining a blood sample. Minimizing such delays will result in a more effective healthcare system. There are devices that already do the task, but they are expensive and considering the Sri Lankan healthcare system, the cost of such devices is almost unaffordable for the said task. Therefore, during this project we are planning to implement a reliable device to overcome the above challenges by using low-cost hardware components available in the market. The device is expected to provide a projection of the vein map which will coincide real time on the skin of the patient. We are also expecting to explore further, the possibility of diagnosing other health conditions using the obtained spectroscopy, by increasing its level of accuracy.

Expected Outcomes (In point form state what is planned to achieve):

- Real time subcutaneous vein detection and projection with 1:1 scale coinciding with the real veins.

- Giving a projected view of subcutaneous veins to the visible eye of the health personal.

References

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2) https://www.accuvein.com/why-accuvein/vein-visualization-technology

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4) An innovative approach to near-infrared spectroscopy using a standard mobile device and its clinical application in the real-time visualization of peripheral veins, Simon Juric, Borut Zalik, BMC Med Inform Decis Mak. 2014; 14: 100

5) Vein Pattern Locating Technology for Cannulation: A Review of the Low-Cost Vein Finder Prototypes Utilizing near Infrared (NIR) Light to Improve Peripheral Subcutaneous Vein Selection for Phlebotomy, Cheng-Tang Pan, Mark D. Francisco, Chung-Kun Yen, Shao-Yu Wang, Yow-Ling Shiue.