Flash Life

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Today, at a global level, we see that the majority of deaths are attributed to the category of diseases which involve abnormal concentrations of cells and proteins. Consequently, the development of new technologies continue to assist in the diminution of disease, but there still lacks methods for consumers to receive direct and proficient medical care. The goal is to create and develop an efficient biomedical apparatus that can diagnose disease with the biomedical application of spectroscopy in aspiration of being able to detect these diseases at premature stages for immediate treatment. Flash Life proposes the low-cost and efficient design of an innovative biomedical device that can autonomously diagnose 7 medical conditions including anemia, diabetes mellitus, thrombocythemia, thalassemia, leukostasis, leukocytosis and multiple myeloma as well as provide an advisable insight on the presence of pneumonia, lymphoma, myeloproliferative neoplasm and polycythemia vera. Diagnostic tests were completed using a simulation software known as Monte Carlo Extreme which had incorporated optical properties of the finger. A hypothetical blood vessel was inserted into the a modelled finger and tests were performed in order to calculate the concentration of hemoglobin which resulted in a 95.3% accuracy. The following test was also completed with leukocyte, thrombocytes and glucose. To conclude, Flash Life is a low-cost, portable and reliable medical diagnostic tool that can be used non-invasively to detect blood related diseases at early stages.

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