Optimization of Medical Image Perception in Multiple Modalities Using Colour Mapping and AI, Luxembourg

Quote: "As high-quality radiological data becomes increasingly available in the future, machine learning and novel computational techniques should be incorporated with imaging research to continue generating breakthroughs in this field, and improve patient care at the diagnostic level." Origin of the quote: Concluding statement of our group project report, highlighting the importance of finding ways to enhance medical images as these become more predominant in patient care.	**Photo of the Project** ***Please do not copy the picture here- send it separately, in .jpg format***
Photo of projector ***Please do not copy the picture here- send it separately, in .jpg format***	Vision: …… (limited to 65 words) To generate colour maps to optimally colourise black and white medical images, as a way of rectifying perceptual errors leading to misdiagnosis in a clinical setting.
Bio of projector: …. (limited to 150 words, written in 3rd person) Marie graduated high school in Luxembourg, where she participated in the FJSL Jonk Fuerscher Contest twice. She is now studying medicine at "University College London (UCL)" in the UK. Marie is passionate about biological processes and anatomy, as well as how mathematics and technology can aid in our understanding of the human body. Combining these interests, she is currently studying an intercalated degree in "Mathematics, Computers and	Activity: ……(limited to 200 words) Diagnostic errors in medical image analysis are responsible for 1 in 10 deaths in an outpatient setting and $17-29 billion in wasteful medical spending annually. As the majority of these errors are typically perceptual, developing a mechanism to increase the differentiation of background noise and signal from Regions of Interest (ROI) within medical images would serve to improve patient outcomes. Colour maps were generated using Lookup Tables (LUTs), which were either manipulated within a HSV (Hue, Saturation, Brightness Value) space to resemble parabolic functions, adjusted from pre-existing LUTs from Fiji/ImageJ, or manually segmented to highlight anatomical structures. The efficacy of our generated LUTs was assessed with a survey (n=65) taken by non-radiologists and a Fiji-based automatic lesion detector we coded. While a greater sample

Medicine". Having undertaken research projects involving informatics and fractal mathematics, she hopes to pursue research in these fields in the future.	size of qualified individuals and generated LUTs would be required to refine our results, five colour maps were shortlisted as being optimal for the detection of brain lesions on T1-weighted MRI scans.
Project website address	