Bruise Analysis Platform

GMU-23-018

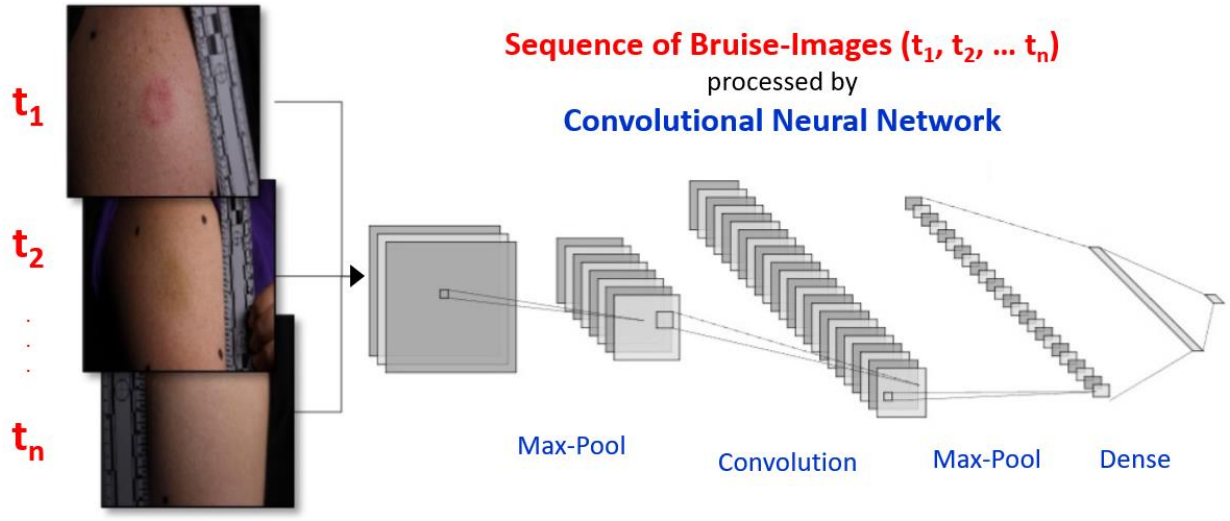
AI-based Bruise Detection & Analysis for Criminal Justice Applications

This is an artificial intelligence (AI) based system that detects bruises even when not visible by the naked eye and determines bruise age and impact force. The system uses a large multi-institutional collaborative database. The database includes bruise images, descriptive bruise information and individual demographics. The bruise images are acquired using a proprietary image acquisition technique. Proprietary deep learning (DL) algorithms process the images and perform bruise detection and assessment. The platform provides clinicians with a reliable tool for detecting bruises and their severity. This provides law enforcement with reliable evidence. In an NBC interview Angelina Jolie, an activist in the fight against domestic abuse, recognized this George Mason platform as a valuable tool for detecting and preventing domestic abuse.

Law enforcement and prosecutors rely heavily on the accuracy and interpretation of injury documentation to form their decisions. However, traditional bruise assessments by forensic clinicians provide little valid or objective data about bruise age. Image analysis using deep learning (DL), a sub-domain of machine learning, has demonstrated significant benefits in accuracy and reliability within healthcare.

By incorporating the George Mason image acquisition techniques with DL based image analysis, our researchers have developed a new quantitative approach to the forensic analysis of bruises images. The system provides reliable bruise detection and the assessment of bruise age, bruise size and impact force for people of various backgrounds (e.g. skin color).

Development stage: **Prototype**



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