Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

☐ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

☒ I do not have any potential conflict of interest
Imaging Analysis of Angioscopy using Open Source Computer Vision Library in Patients with BTK Amputation and Salvaged Limb

- Does the direct view says more than the indirect? -

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WHAT IS OPENCV?

OpenCV is an open-source, computer-vision library for extracting and processing meaningful data from images.

Gary Bradski in Dr. Dobbs Journal, 2000

OpenCV Overview

All in all, OpenCV contains more than 500 functions. OpenCV is aimed at making computer vision accessible to programmers and users in the area of real-time human-computer interaction and mobile robotics. Thus, the library comes with source code and hand-tuned assembly language binaries optimized for Intel processors, so that users can both learn from the library and make use of its performance.
INTERFACES

Support OS: Windows, Linux, MacOS, Android
EXAMPLE OF USE

Real-time Face Tracking

Pupil Tracking
License Agreement

For Open Source Computer Vision Library

(3-clause BSD License)

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PURPOSE

Improvements in computer performance and image processing using OpenCV have become familiar to people without particular technology.

Angioscopy can visualize the character of vessels directly. However, the determination of is technically challenging.

The aim of this study sought to resolve using computer-based analysis of angioscopic images of the below the knee lesion in patients with the healed wound and the amputated leg.
METHODS

Rutherford \( \geq 5 \), CLI Hemodialysis Patients
\[ N = 2 \]

Angioscopy + EVT

- Amputation
- Salvaged
ANGIOSCOPE SYSTEM (MADE IN JAPAN)

Slim and Non-guide wire model: Type S8 (i Heart Medical Co. Ltd)
DEVELOPMENT ENVIRONMENT

Programming environment

VISUAL STUDIO 2017 (C++/CLI, C#)

PC: HP Z420 Workstation
OS: Windows10 pro (64bit)
RAM: 32GB
GPU: Tesla K20, Quadro K2000

OpenCV version

OPEN CV VERSION 3.3.1
VISUAL STUDIO 2017 (C++/CLI, C#)
OPEN CV VERSION 3.3.1
ANALYZING METHODS

OpenCV functions of using:

I. cvtColor –
Converts to BGR to HSV color image

II. calcHist –
Calculates 2-D histogram (Hue and Saturation)

III. compareHist – Calculates the similarity between amputated and salvaged case
HSV color model is based more upon how colors are organized and conceptualized in human vision.

Easier to recognize for human vision, reduce hue colors to 45 and saturation to 64 steps.
RESULTS

Amputated

Salvaged

Low Chromatic

Red to Magenta

Yellow to Green
RESULTS (COMPARE HISTOGRAM)

Comparing selected amputated case images and salvaged case video
CONCLUSION

This is the first study to investigate the effect of angioscopic image processing with OpenCV in BTK.

The technology that we have identified therefore assists in our understanding of the role of angioscopy in BTK lesion.
Now we're developing artificial intelligence application (Google TensorFlow).
Access my twitter account.
Thank you!
@Okinawa Island
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