Automated Method for Editing Surgical Videos

This technology offers a semi-automated method for video editing surgical videos. It runs full-length videos through a software where the outputs are edited via a computational model with biological tissue and surgical tool recognition.

What is the Problem?

Surgical videos are commonly used for trainee education, academic publications, and conference presentations. Condensing surgical videos to include only informative scenes can be a largely manual, tedious, and lengthy process. Current automated techniques for condensing surgical videos generally do not provide quality results, as informative scenes are omitted and non-informative scenes are included too often. Video editing remains a manual and time intensive process.

What is the Solution?

The solution is a semi-automated method for video editing surgical videos that includes key scenes that accurately summarizes the surgery. Full-length videos are run through the software, which outputs an edited surgical video that retains key scenes and eliminates non-informative scenes. This is done via a computational model, where images of a source image stream as valid images or invalid images based on whether the images include biological tissue or a surgical tool; and generating a condensed image stream that includes the valid images. Another method includes classifying input images as valid images or invalid images using a clustering algorithm that classifies each of the input images into either a first group or a second group and using labels that indicate whether the input images include a surgical tool. The method also includes training a computational model to identify the valid images based on whether the valid images include biological tissue or a surgical tool, or whether the valid images have at least a threshold level of clarity.

What Differentiates it from Solutions Available Today?

Current automated techniques for condensing surgical videos can result in the elimination of informative scenes, or the inclusion of non-informative scenes. This system will enable automatic video editing, saving time and money during editing and training.

Patent Information:

Technology ID

BDP 8131

Category

Software/Healthcare IT Selection of Available Technologies

Authors

Randall Bly

Learn more

US20220262098A1

References

1. Lingga Adidharma , Zixin Yang , Christopher Young , Yangming Li , Blake Hannaford , Ian Humphreys , Waleed M. Abuzeid , Manuel Ferreira , Kristen S. Moe , Randall A. Bly(2021) , https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0041-1725452, Neurol Surg B Skull Base