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Wearable Fluorescence Imaging System for Intraoperative Guidance.[1] CHRISTOPHER MELA, The University of Akron, FRANK PAPAY, Cleveland Clinic, YANG LIU, The University of Akron — Surgeons rely on pre-operative and intraoperative imaging technologies such as MRI, CT and ultrasound to guide medical procedures. Due to their cost, complexity, large size and potential risks associated with their long term use these technologies can be cumbersome to implement. Also, it can be difficult to correlate the surgical landscape with the pre-operative images during a surgery. Recently, significant efforts have been directed towards optical modalities, such as fluorescence imaging, due to their high sensitivity and small size. Wearable imaging systems are being developed to overcome challenges encountered during image guided surgeries by implementing a real-time, intraoperative imaging system that can delineate unhealthy lesions from healthy tissue at the surgical site. We present a wearable, intraoperative fluorescent imaging system which provides the surgeon with a real-time, line-of-sight view of the fluorescent information on the surgical landscape. The system is also the first of its kind to offer wide-field, stereoscopic imagery, providing the surgeon with depth perception. Additionally, our system incorporates both a hand-held fluorescence imaging microscope module for detailed site inspection and also a portable ultrasound module for added depth information. The relative low cost of our system, as well as its highly modifiable and modular design, provides for tremendous potential in a variety of surgical settings and applications.

[1]Wearable Fluorescence Imaging System for Intraoperative Guidance

Christopher Mela
The University of Akron

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