

# Biosensor Integration and Image Guidance for Robotic Surgery

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## Abstract:

Raman spectroscopy is an analysis technique capable of distinguishing normal and abnormal regions of tissue (e.g. cancer). It provides near-real-time results and does not require sample preparation, making it suitable for use during surgery. Image-guided surgery helps the surgeon position and track instruments (such as a Raman probe) inside the body, making it a natural complement for Raman spectroscopy. Finally, robotic surgery enables accurate positioning and manipulation of instruments while reducing surgeon discomfort and the invasiveness of the surgery.

In this presentation, we will discuss the integration of these three technologies for an advanced surgical system. We will provide background information on each area as well as the results of our preliminary work. We believe that these kinds of technologies will become increasingly prevalent in future systems since they can improve tumor removal accuracy and reduce patient recovery times.

## Bio:



**Brady King** received a B.S. in Computer Engineering from Lawrence Technological University and a M.S. in Computer Engineering from the University of Michigan–Dearborn. He is currently working towards a Ph.D. in the same field at Wayne State University. His research interests include intelligent systems, embedded systems, and biomedical applications.

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