Abstract

Robotics and sensor technology have made impressive advancements over the years. The most powerful systems integrate robots and sensors, which are natural complements to each other. In this research, some novel systems and techniques were developed to foster the development of advanced sensor-integrated robotic systems. First, a software system was created to process, analyze, and classify data from a specific kind of sensor (a Raman spectrometer). Second, an image guidance system was made for use with a sensor-integrated robotic system (a Raman probe attached to a surgical system). The system supports tool tracking, sensor activation, real-time sensor data analysis, and presentation of the results in a 3D computer visualization of the environment. This talk details the work and some related technologies.