

Photoacoustic-based visual servoing of a needle tip: Supplementary Information

Muyinatu A. Lediju Bell^{1,2,3,*} and Joshua Shubert¹

¹Johns Hopkins University, Department of Electrical and Computer Engineering, Baltimore, MD, 21218, USA

²Johns Hopkins University, Department of Biomedical Engineering, Baltimore, MD, 21218, USA

³Johns Hopkins University, Department of Computer Science, Baltimore, MD, 21218, USA

*mledijubell@jhu.edu

Supplementary Video S1

Supplementary Video S1 (online) shows the photoacoustic-based visual servoing system maintaining sight of a needle tip as it is inserted into *ex vivo* bovine liver tissue. Corresponding photoacoustic images and image segmentation results that were used for robot path planning are also shown in the video. Still frames from this video appear below.

