Needle tracking for ultrasound-guided biopsies with inside-out vision

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Sentinel Lymph Node Biopsy
Tracer Injection
Lymph Node
Punch Biopsy with Ultrasound

**Problem**: Needle location difficult in 2D US image

**Solution**: Needle tracking and real-time visualization

Less insertions
Analyse the right cells
Better healing process
Optical Tracking System (OTS)

Ultrasound Transducer

Biopsy Needle

Needle Tracking System
Augmented US image
Punch Biopsy

distance: 23.4 mm