

DVRK stereo camera calibration and model registration

- **Project Goal:** Phantom placed in the camera view needs to be registered with the PSM robot.
 - First perform a hand-eye calibration to know the relationship between the camera and the robot.
 - Detect the phantom model in the camera view and register the model to the camera.
 - Final get the registration between the robot and the model.
- **Size group:** 1-2
- **Skills:**
 - C++, Matlab/Python.
 - Knowledge of ROS would be very helpful.
 - Image processing, Registration, Hand-Eye calibration
- **Mentors:**
 - Preetham Chalasani (pchalas1@jhu.edu)
 - Anton Deguet (anton.deguet@jhu.edu)



Force controlled elastography with DaVinci Toolkit

- **Project Goal:** Use ultrasound elastography and Davinci Research Toolkit (DVRK) robot system to locate stiff features in a phantom.
 - Extend previous NIH-funded STTR with Intuitive Surgical
 - Incorporate force feedback & virtual fixtures based on current work
- **Deliverables**
 - Integrate existing DaVinci ultrasound tool and ultrasound system to DVRK system in our laboratory (minimum deliverable)
 - Ultrasound imaging with force feedback (expected deliverable)
 - Ultrasound elastography with DVRK (maximum deliverable)
- **Size group:** 2
- **Skills:**
 - C++, ROS, Matlab/Python.
 - Prior experience in dvrk would be very useful.
 - Admittance Control, force motion control
- **Mentors:**
 - Dr. Russell H Taylor (rht@jhu.edu)
 - Dr. Emad Bector (ebector@jhmi.edu)
 - Preetham Chalasani (pchalas1@jhu.edu)



Ultrasound Elastography with DaVinci (Boctor, Billings, Taylor)



**Human-robotic collaboration for in-vivo detection of tumors
and monitoring of therapy**

(Research DaVinci Application – Not for Human Use)

3 600.446/646 CIS2 Spring 2017
Copyright © R. H. Taylor

Engineering Research Center for Computer Integrated Surgical Systems and Technology

