

Position Control of BIGSS Lab Snake for Revision Total Hip Arthroplasty (THA) Surgery

Project 6: Farshid Alambeigi

Mentors: Dr. Mehran Armand, Ryan Murphy, Dr. Russell Taylor

Goals

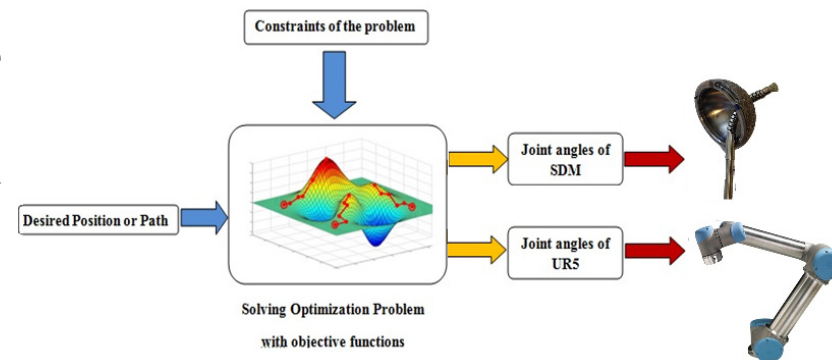
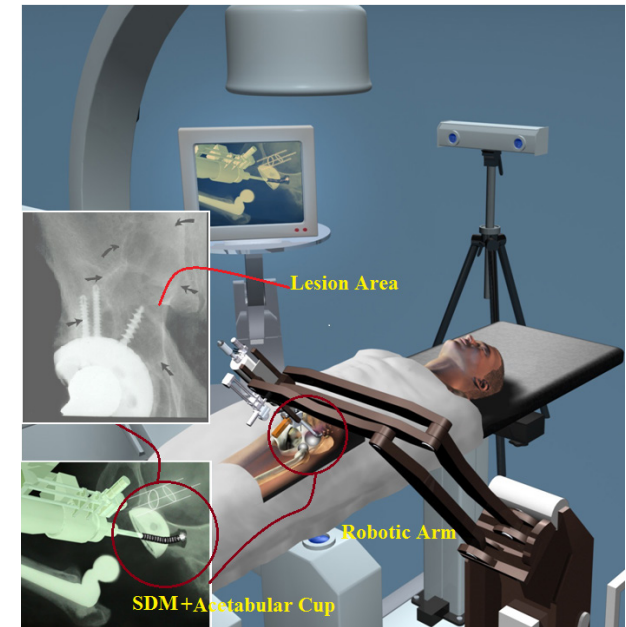
- ✓ Mechanical interface of the Snake-like Dexterous Manipulator with the robotic arm- which is a 6 DOF Universal Robot (UR5)
- ✓ Position control of the tip of the SDM inside the lesion area.

Significance

- ✓ One motivating application of this minimally-invasive surgical workstation is the treatment of osteolysis (bone degradation) behind the well-fixed acetabular component of a total hip arthroplasty (THA).

Results

- ✓ Kinematic modeling and control of a coupled 8 DoF robots used for treatment of osteolysis in confined spaces based on a linearized multi-objective constrained optimization algorithm.
- ✓ Design and fabrication of a mechanical interface



Results

