System Description

We present *ThimbleSense*, a design for a wearable sensor system which gives force and torque measurements from each finger, allowing reconstruction of contact point positions. This is achieved by combining a commercial six axis force/torque sensor with a pair of support shells. Integration with a marker-based motion capture system provides position and orientation of the system.

**Experiment I: Reconstruction of contacts**

- **Target points**
- **Pressing with a pen**
- **Reconstruction**
  - Several objects with different shapes

**Experiment II: Grasping Objects**

- **Grasping an egg**
- **Reconstruction**
  - Full-fledged force and posture reconstruction

**Experiment III: Invert T Comparison**

- **Normal forces**
- **Comp. moment & lift force**
- **Contact point on thumb**
- **Contact point on index**

**Conclusions**

Qualitative experimental validations show accuracy in estimating contact points (I) and position and orientation of fingertips (II). A quantitative validation (III), performed by comparison with a reliable reference, shows some small differences, which can be ascribed to the glove setup. Future work will involve performing a more thorough validation, and designing a more stable setup.

**References:**