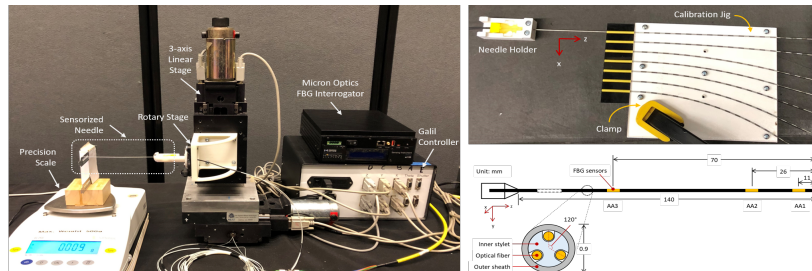


## Robot-Assisted FBG-based Sensorized Needle Calibration

- This project aims to build a robotic system for (semi)automatic calibration of flexible needles with FBG-based shape-sensing capabilities. FBG-embedded needles require precise and consistent calibration which can take several hours and is prone to human errors. Robot-assisted needle calibration would optimize needle construction and improve shape-sensing accuracy.
- **What Students Will Do:**
  - Build/Incorporate a robot for assisted needle calibration
  - Develop experimental set-up for automatic needle calibration
  - Perform FBG-based needle calibration



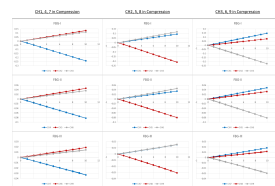
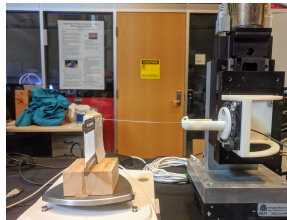
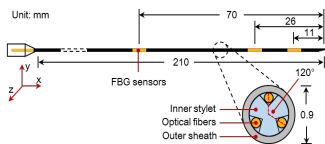
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## Robot-Assisted FBG-based Sensorized Needle Calibration

- **Deliverables:**
  - Hardware: Needle calibration robotic system;
  - Software: Code for performing robot-assisted needle calibration
  - Data: Experimental results.
- **Group Size: 1-2**
- **Skills:**
  - Required: Good analytical skills, Programming (Matlab, C/C++), CAD
  - Desired: Kinematics, Control Theory, ME design, Prototyping,
- **Mentor:** Dimitri Lezcano, Profs. Jin Seob Kim, Iulian Iordachita



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