

## Building an Intra-operative "Kinect" with a Flexible Endoscope

- Implement structured light with an existing laser pattern by integrating with a flexible endoscope through the working channel.
- **What Students Will Do:**
  - Calibrate 3D sensor with light and camera
  - Implement real-time 3D reconstruction
  - Implement "camera tracking" to stitch 3D reconstruction
    - Tested under both static and dynamic scenarios
- **Deliverables:**
  - Source code and quantitative demonstration of: *calibration* (with accuracy), *reconstruction* (with accuracy), and *camera tracking* (with accuracy)
- **Size group:** 1-3
- **Skills:** intro to computer vision; Python, C++, or MATLAB
- **Mentors:** Austin Reiter, Russ Taylor

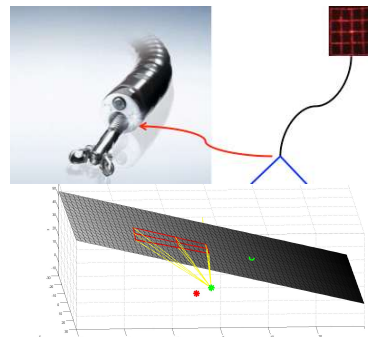
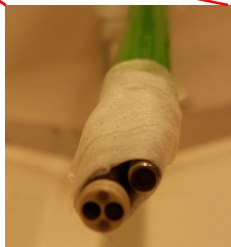
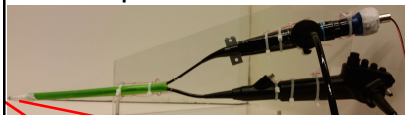
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## Application to Sleep Apnea

- This technology incredibly useful for diagnosing and planning interventions for Sleep Apnea
- Dynamic 3D reconstruction from video an unsolved problem in medical computer vision field



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