

Mobile Device Camera Connector (Tabiscope)

600.446 Computer Integrated Surgery II
Project 7

Daniel Ahn, Deepak Lingam, and Kyle Wong
Mentors: Dr. Amit Kochhar, Kevin Olds



JOHNS HOPKINS
MEDICINE

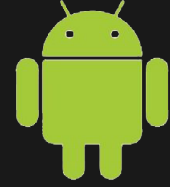


JOHNS HOPKINS
WHITING SCHOOL
of ENGINEERING

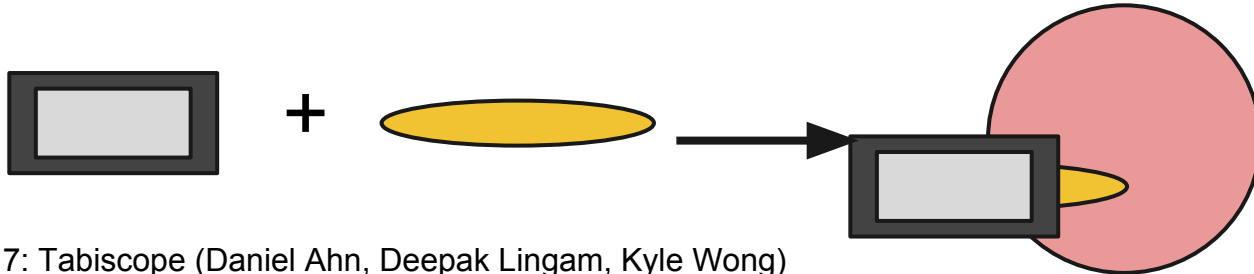
ciis



Project Overview



- Design a low cost endoscopic adapter
 - Needed for third world use where costs are major issues
 - Useful in emergency situations
 - Allows for rapid image sharing when doctors are not on site
- Create a system for Android devices
 - Current solutions only work with iPhones



Deliverables

Minimum:

- Adapter for a Specific Tablet for Endoscope **(Done)**
- Android app: Being able to view images using the tablet's camera **(Done)**



Expected:

- Updated Adapter that allows users to adjust tablet position **(In Progress)**
- Android app: GUI / label images (patient identifier) **(In Progress)**
- Automatically detecting image circle and maximizing to screen size **(In Progress)**

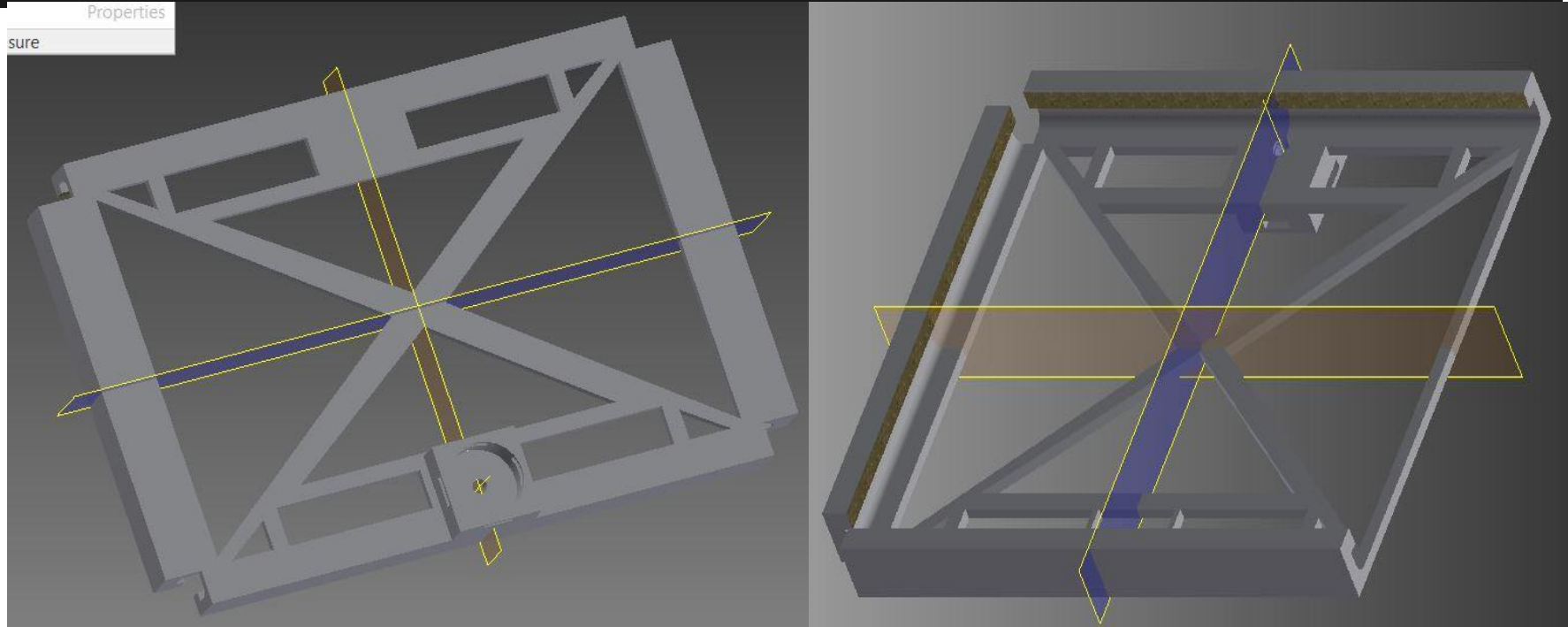
Max Deliverables

- Android application: upload and secure viewing of patient endoscopy images
- Real-time image processing method to prevent specular reflection

Minimum Deliverables: Camera Adapter

- **Adapter for a Specific Tablet for Endoscope (Done)**
- Android app: Being able to view images using the tablet's camera (Done)

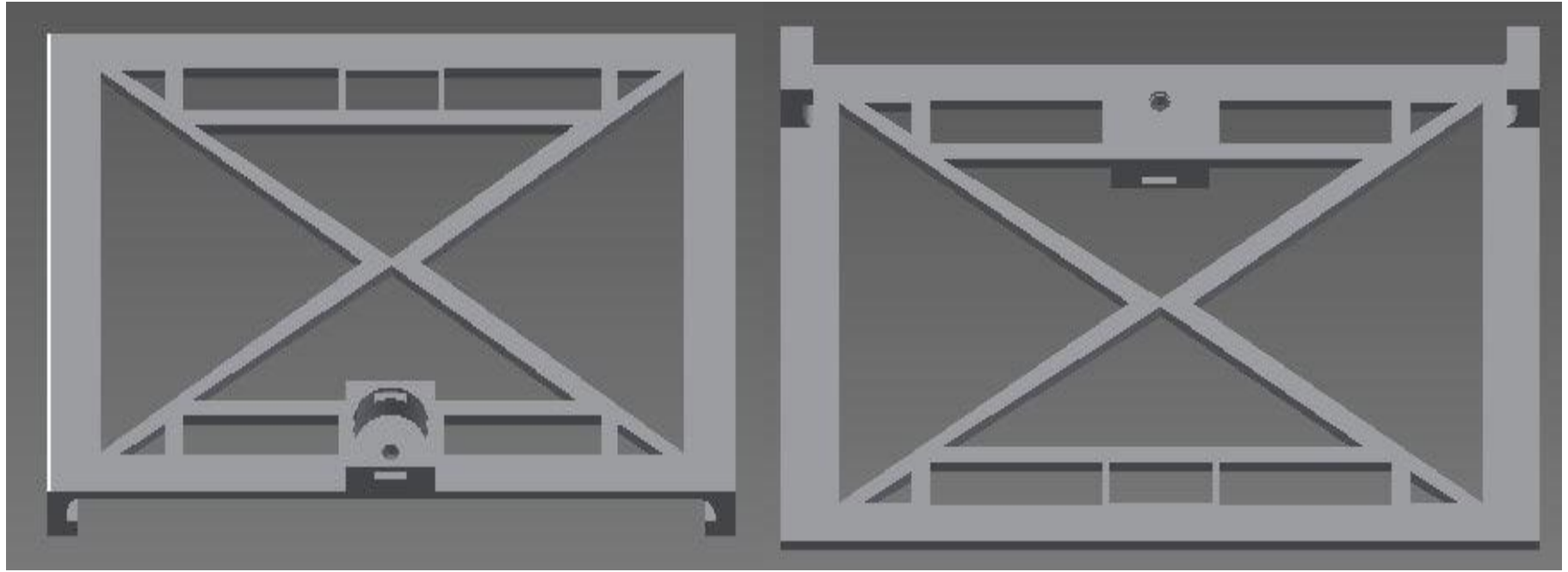
Minimum Deliverable: Camera Adapter



Expected Deliverables: Camera Adapter

- **Updated Adapter that allows users to adjust tablet position (In Progress)**
- Android app: GUI / label images (patient identifier) **(In Progress)**
- Automatically detecting image circle and maximizing to screen size **(In Progress)**

Expected Deliverable: Camera Adapter



Minimum Deliverables: App. (Camera Control and GUI)

- Adapter for a Specific Camera for Endoscope (**Almost Done**)
- **Android app: Being able to view images using the tablet's camera (Done)**

Minimum Deliverables: App. (Camera Control and GUI)

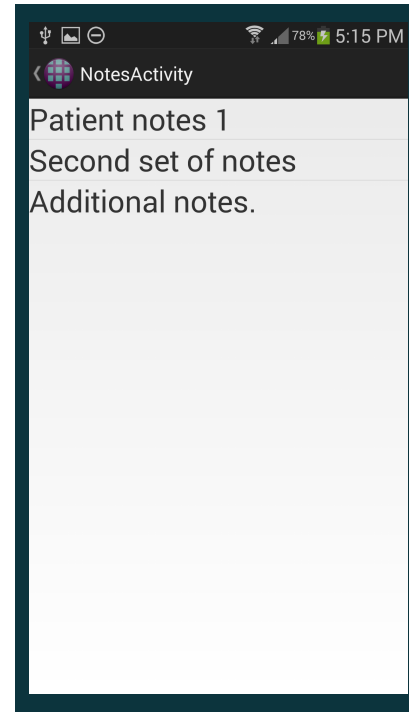
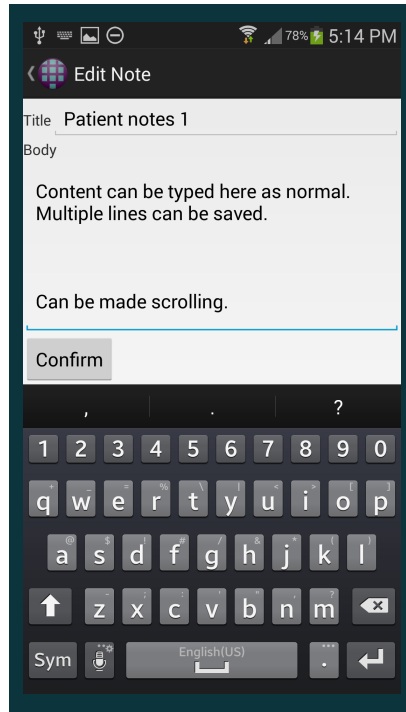


Expected Deliverables: App. (GUI)

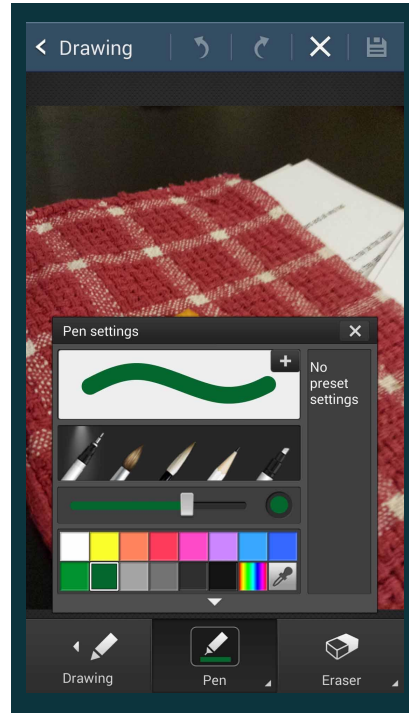
Expected:

- Updated Adapter that allows users to adjust tablet position (In Progress)
- **Android app: GUI / label images (patient identifier) (In Progress)**
- Automatically detecting image circle and maximizing to screen size

Expected Deliverables: App. (GUI)



Expected Deliverables: App. (GUI)



Project 7: Tabiscope (Daniel Ahn, Deepak Lingam, Kyle Wong)

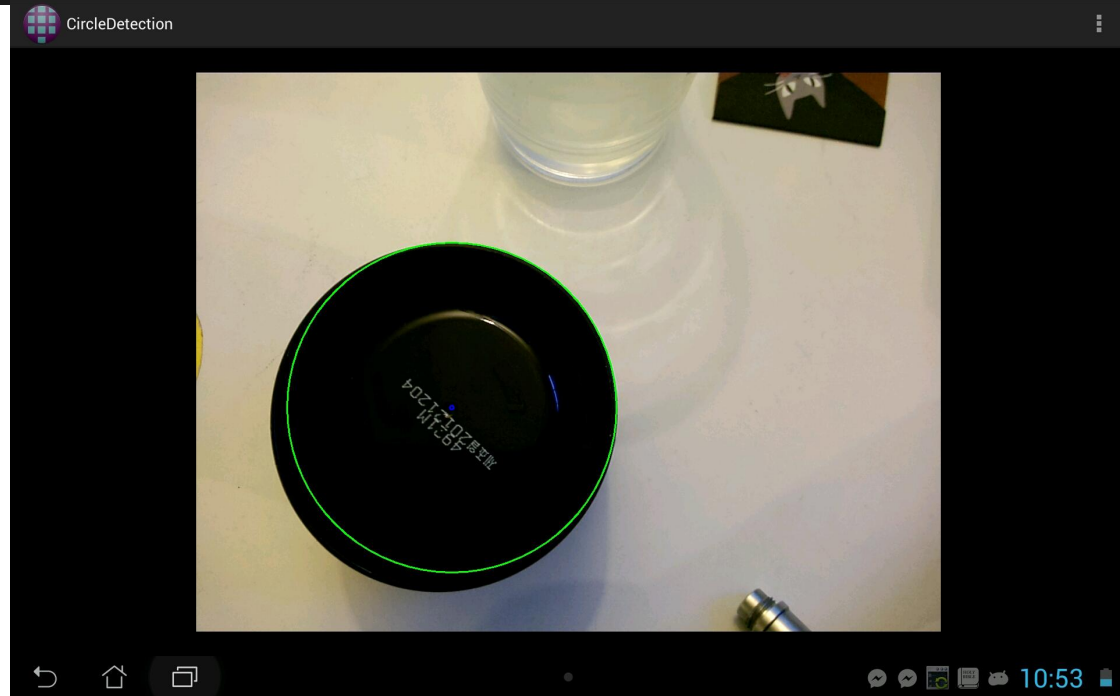
Expected Deliverables: App. (Camera Control)

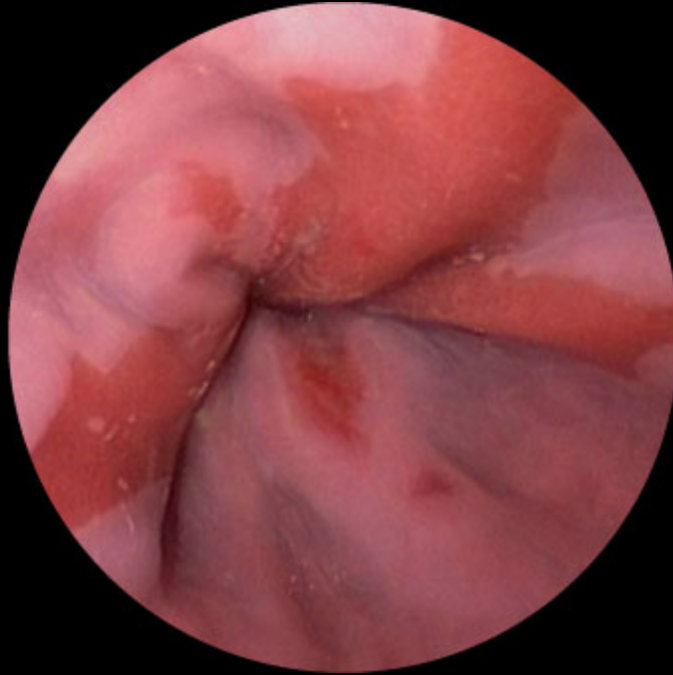
Expected:

- Updated Adapter that allows users to adjust tablet position (In Progress)
- Android app: GUI / label images (patient identifier) (In Progress)
- **Automatically detecting image circle and maximizing to screen size (In Progress)**

Expected Deliverables: App. (Camera Control)

Live Demo





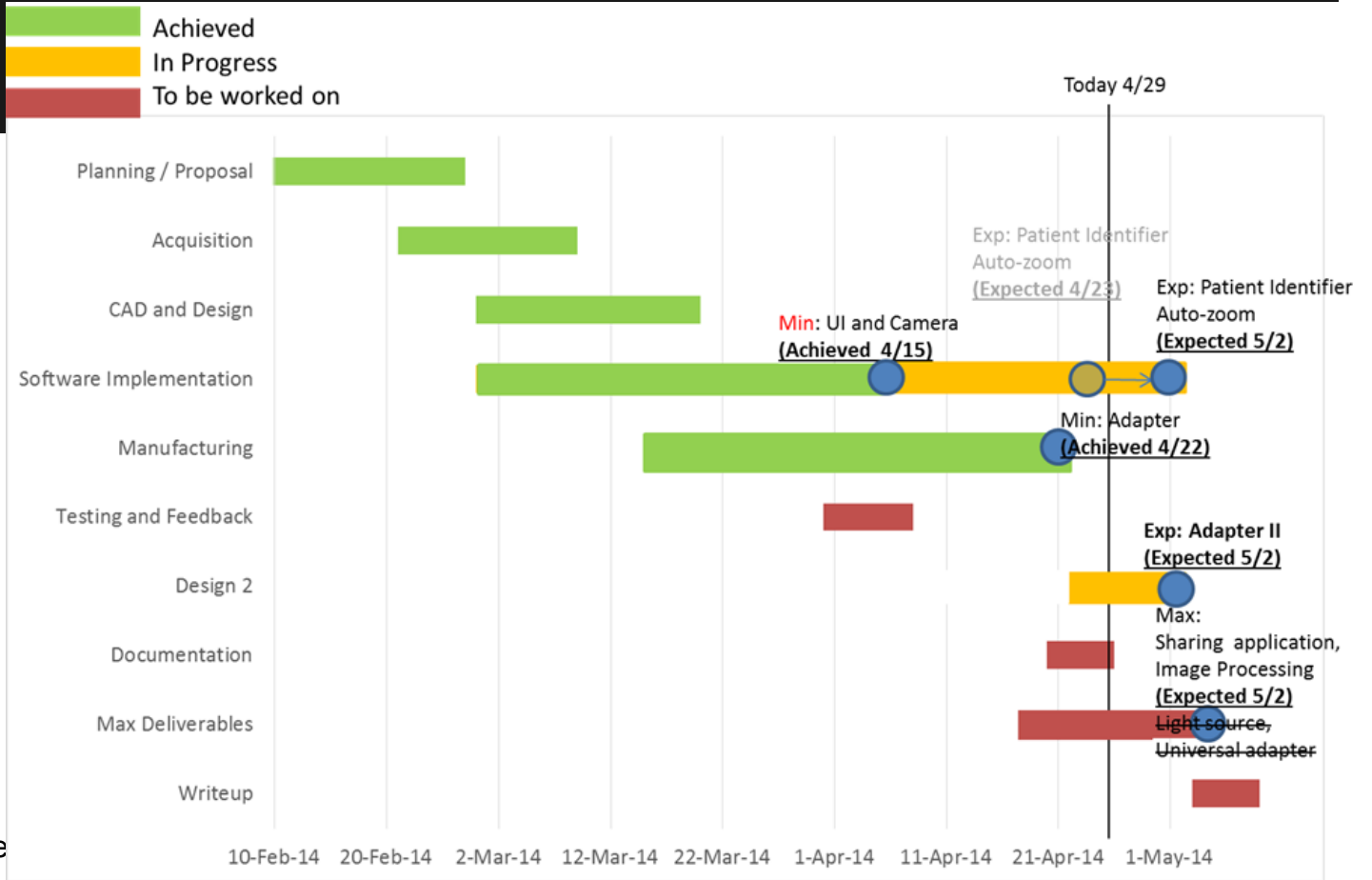
www.webmd.com

GERD (gastroesophageal reflux disease)

Expected Deliverables: App. (Camera Control)

- Circle Detection (Done)
- Zoom on ROI (In Progress)
 - Zoom on a ROI is NOT computationally trivial
 - Two separate streams necessary
 - Low-sampled stream for preview screen
 - High-sampled stream for stored images/videos

Schedule



Summary

- Set to meet expected deliverables by the deadline
- Unlikely to complete maximum deliverables

Questions and Feedback?