

Daniel Ahn, Kyle Wong, and Deepak Lingam,
Under the guidance of Kevin Olds, Dr. Amit Kochhar and Dr. Simon Best

Introduction

- Created an Android application capable of recording endoscopic images
- Gave doctors the ability to modify images
- Designed and manufactured a mechanical adapter
- There is a need for a portable, low cost solution for capturing endoscopic images

Problem

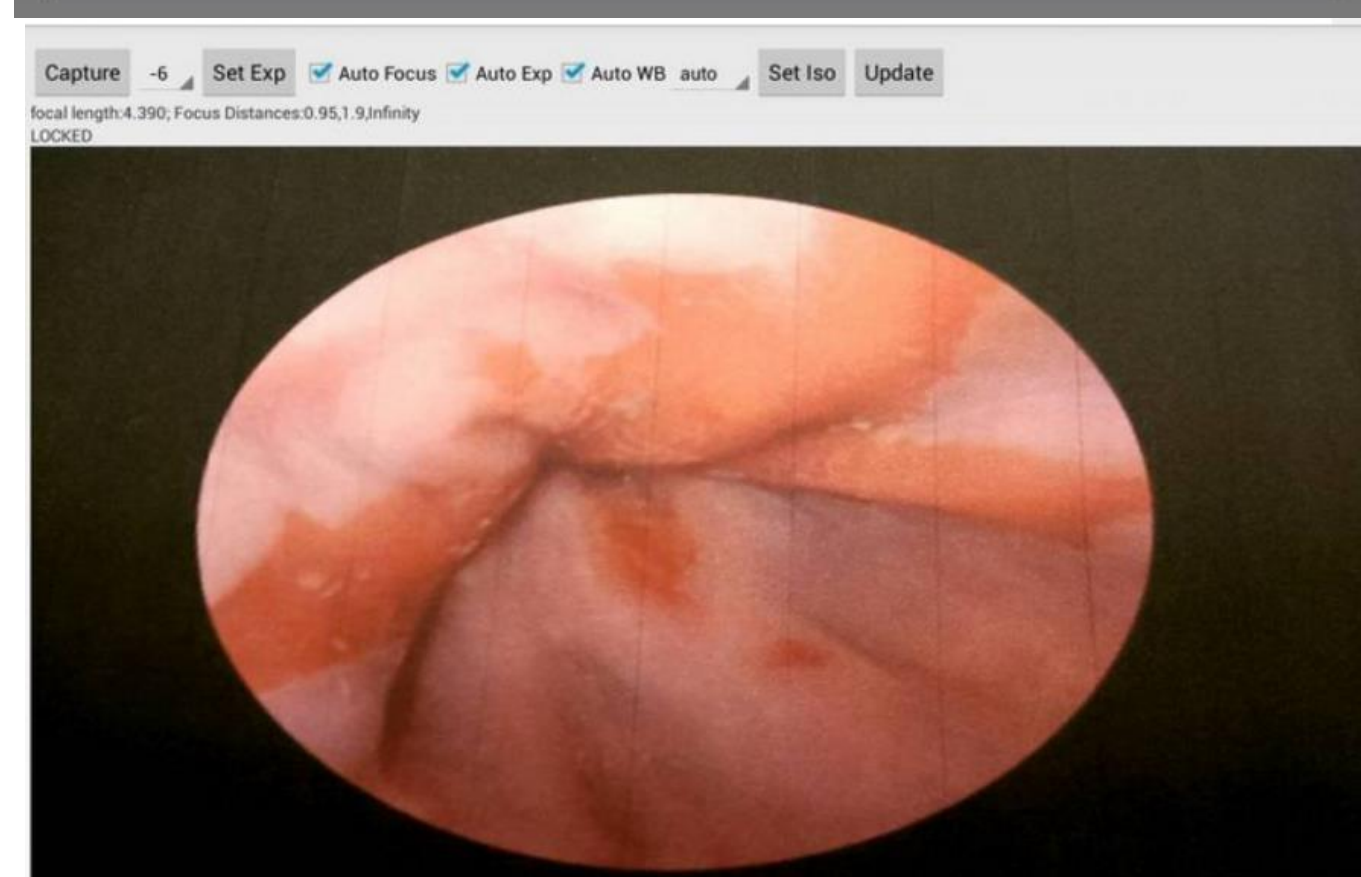
- Current imaging towers are large and bulky
- They cost thousands of dollars (~\$6000)
- Difficult for hospitals in third world nations to buy
- Not enough to keep one in the ER at all times
- Size makes it difficult to transport

Solution

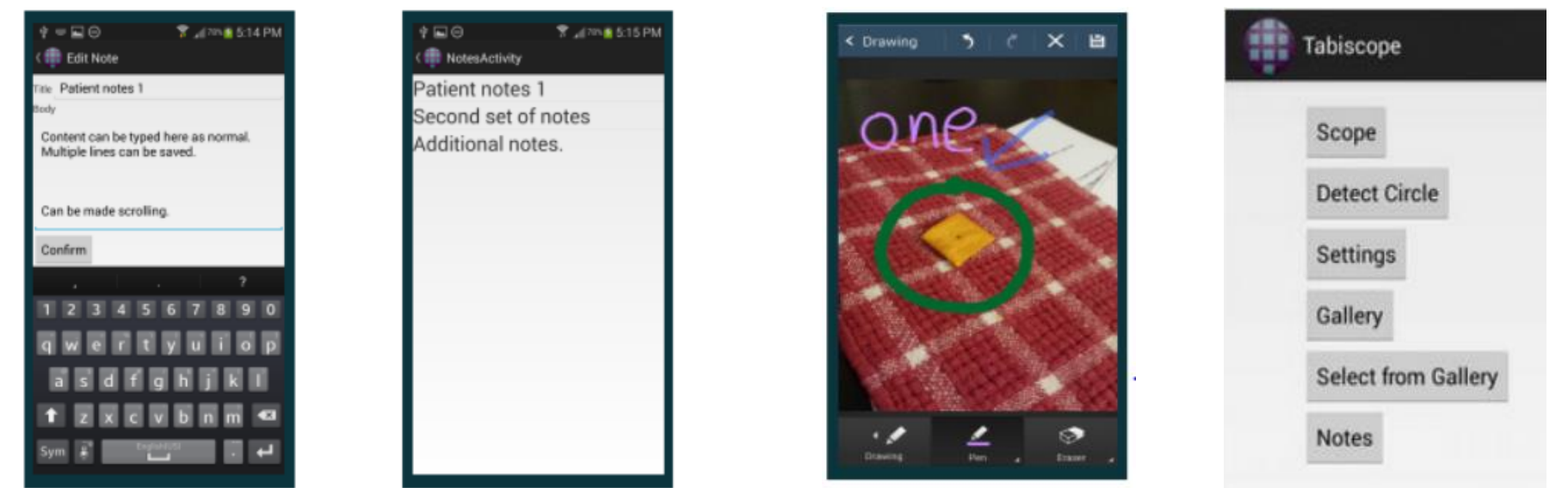
- Android tablets are low cost and have the capability to record videos and images
- Create a hardware adapter that interfaces between an endoscope and the Android tablet
- Create an application that allows the user to manipulate lower level camera settings
- Application needs to allow user to associate notes with images and draw on images



A CAD model of the entire tablet adapter



The top of the image has the camera controls that the user has access to in the app.



Top Left:
Demonstrates ability to write notes

Bottom Left:
Demonstrates circle finding capabilities

Top Middle:
Demonstrates ability to draw on images

Top Right:
Menu

Outcomes and Results

- User has the ability to store high quality images during procedure.
- User has the ability to draw on images to indicate unique pathology
- User can control camera settings in order to achieve desired image quality
- App detects the circular image and expands it to fit the screen
- Hardware adapter costs \$60 while Asus tablet costs \$235
 - 95% reduction in costs (excludes scope)
- Adapter only slightly bigger than tablet, significantly increasing portability

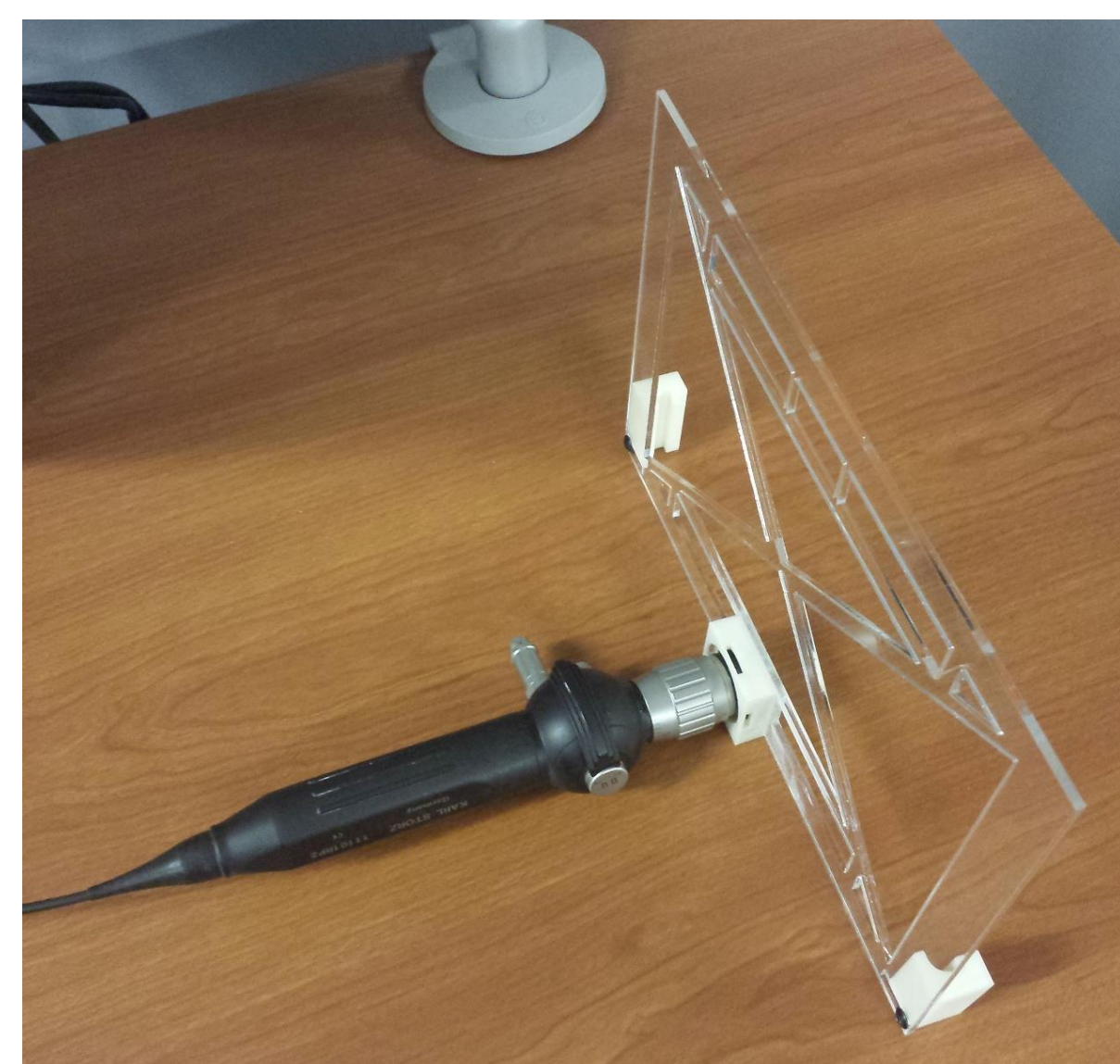


Image of the adapter connected to a flexible endoscope

Future Work

- Connect application to a secure server in order to upload and view images
- Provide frame by frame video playback and option to save frames
- Portable light source

Credits

- Core NSF CISST/ERC; Other Government;; Industrial Partner:
- Thank you to Dr. Simon Best and Dr. Kochhar for coming up with the idea, providing support and providing a budget
- Thank you to Kevin Olds for providing mentorship and guidance for the entire semester