Assist MD

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Assist MD is a computer vision platform that tracks surgical events in real time!

Mentor: John Batikian

"Generating operative reports is the holy grail of medical tech industry"
-Bruce Kennedy (Arthrex Tech VP)
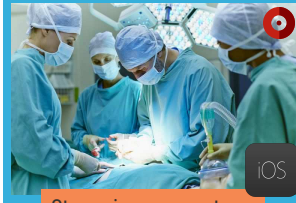
Motivation

A surgeon's story

On average, surgeons write 398 operative reports a year, each taking 10 minutes to complete. Over a 35 year career, a doctor loses 2320 hours on this paperwork!

- 50% of a surgeon's time spent doing paperwork
- 92% are upset with paperwork and 90% say it obstructs patient care

Integrating a solution

1. Hospital registers with Assist MD
2. Set up Assist MD cameras
   Perform surgery as usual
3. Live event tracking
   Surgery streamed for observation
   Instrument stats collected
4. Operative Report is generated
   Performance estimation generated
5. Surgeon saves time on paperwork
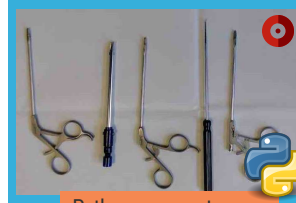   More time for patient care

Assistance in Surgery

Equipment needed: Dual Cameras

Surgery Feed

Streaming app captures medical scene

Instrument Feed

Python server streams webcam data

Content Manager

Instrument detector

Bambuser remotely stores surgery feed

Tensorflow backend performs detections

IoT server distributes prediction data
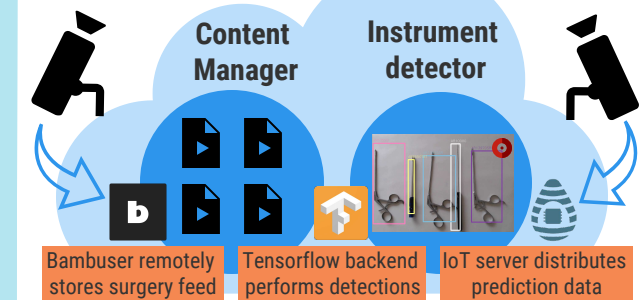
Streamed content and event details are delivered to app in video/graphical format

Live Surgery

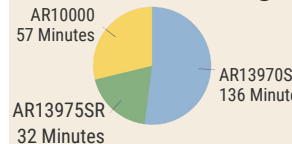#### Event Sequence

Incision — Probe Extraction — Deviation — Suture

Instrument Usage

AR10000 57 Minutes
AR13975SR 32 Minutes
AR13970SRF 136 Minutes
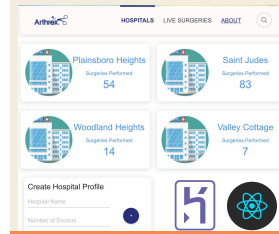
Live Indicators

AR13970SRF
AR10000
AR13975SR
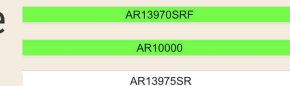
Dr. Humphreys is currently using 2 instruments

Web App

Register new hospitals to Assist MD
Observe surgery streams from anywhere
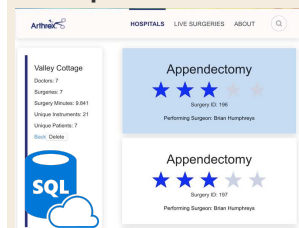Retrieve Operative Reports

Home Page

Surgeons interface with React app deployed on Heroku

- Register hospital to start tracking surgeries
- Profiles count surgeries performed
- Observe all surgeries from any hospital

- Watch surgeries and see stats live
- All surgeries auto upload to profiles
- Review performance estimation

Hospital Profile

Surgeries saved in database and displayed on Hospital Profiles

Operative Report
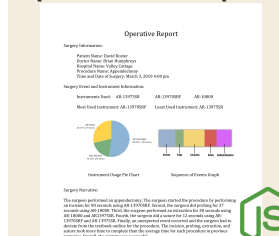
- Narrative of surgery is generated as Operative Report in a PDF
- Surgeon cuts out manual paperwork and reclaims lost time

No more hand-written reports
More precise narratives

Travis testing for production
Mocha-Chai testing for app