Antibiotic Ninja

- Antibiotic Ninja is a start-up team at **Johns Hopkins Medicine** created to solve the problem of antibiotic over-prescription in the United States. The team has designed a mobile, interactive app that helps diagnose and provide antibiotic recommendations for conditions.
- **What Students Will Do:** Work with the antibiotic steward (physician), a business/design student from Johns Hopkins Carey Business school, and the TIC to develop this application so that it is ready for pilot at the Johns Hopkins Bayview campus
- **Deliverables:**
  - Design management system for mapping clinical pathways based on different syndromes
  - Build mobile app minimum viable product for Bayview pilot
- **Size group:** 1-3
- **Skills:** Ruby on Rails or Python, data structures, prior experience with building a mobile or responsive web application
- **Mentors:** Jennifer Townsend (jholme27@jhmi.edu), Gorkem Sevinc (gsevinc1@jhmi.edu) / Michael Cohen (mcohen56@jhmi.edu)

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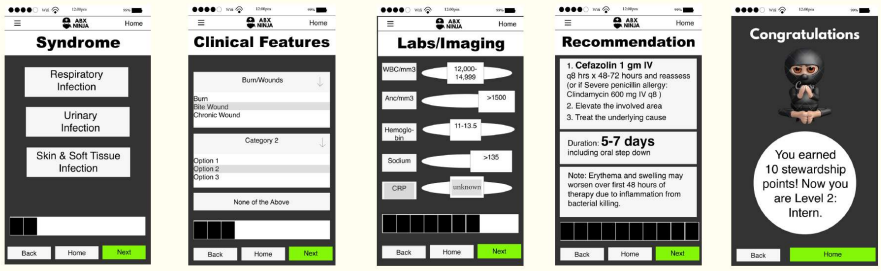
OUR SOLUTION

Identify Pathway for a Patient | **Enter Clinical Data** | **View Recommendation & Earn Points**



Depictation

- Depictation is a start-up team at **Johns Hopkins Medicine** that is working to bring the sketch back to post-operative note with 3-D imaging tool that is manipulatable. The tool will improve communication, save time, and increase efficiency.
- **What Students Will Do:** Work with a Johns Hopkins surgeon, two medical illustrators, and potentially a 3-D gaming company to design wireframes and build interface for this application. Depending on students' abilities, could also work with 3-D gaming company to build out 3-D models.
- **Deliverables:**
  - Updated wireframes
  - User Interface design and development
  - EMR integration
  - Assistance with 3-D modeling (Optional)
- **Size group:** 1-3
- **Skills:** Ruby on Rails or Python / Django, Unity (optional), experience developing a mobile app previously
- **Mentors:** David Efron (defron1@jhmi.edu), Gorkem Sevinc (gsevinc1@jhmi.edu), Michael Cohen (mcohen56@jhmi.edu)

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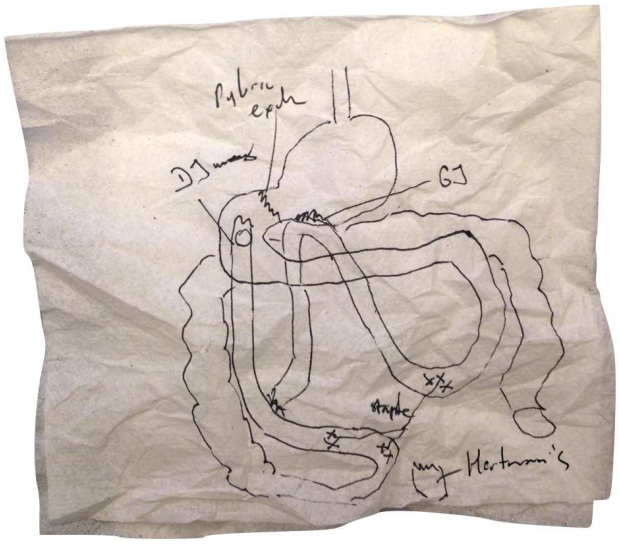

"A bad picture on a napkin is better than reading the post-op note…"

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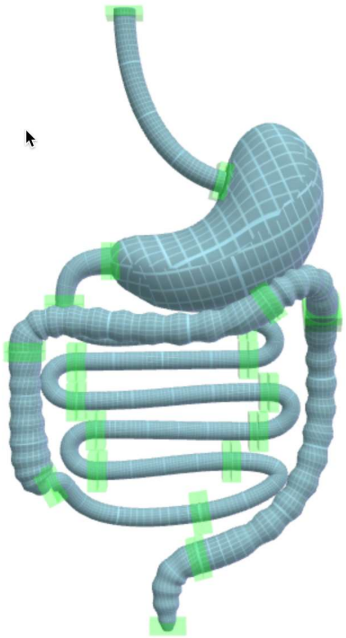

The Solution

- DEPICTATION Tool
- Begins with a 3D model
- Takes < 3 minutes to modify
- Signable & EMR embeddable
- Improves communication, saves time, and increases safety

5

Murmur Detection Algorithm

- The Murmur detection algorithm is the next phase of the Murmurquiz.org project, a gamified teaching website for medical students, residents, and other clinical professionals to quiz themselves on heart auscultation cases collected over years of research.
- **What Students Will Do:** Work with Dr. Reid Thompson and the TIC to help develop an algorithm based on existing data around auscultations for prediction of different types of heart murmurs
- **Deliverables:**
  - Build algorithm to detect murmur in audio files and potentially identify other features of the murmur
- **Size group:** 1-3
- **Skills:** Ruby on Rails, applied math and algorithms
- **Mentors:** Reid Thompson (thompson@jhmi.edu), Gorkem Sevinc (gsevinc1@jhmi.edu), Michael Cohen (mcohen56@jhmi.edu)

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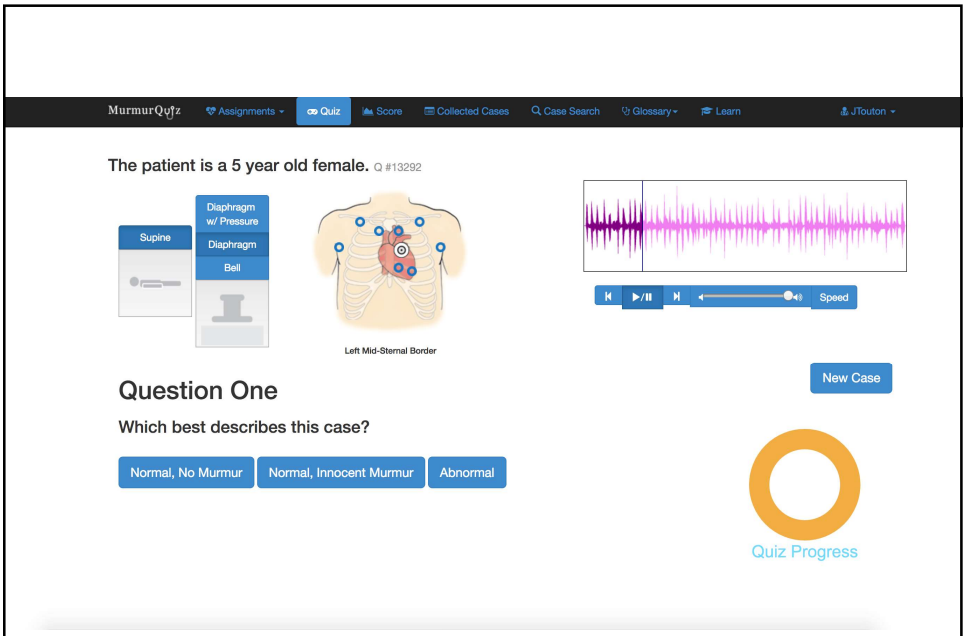

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Clinical Environment Tracking

- The Clinical Environment Tracking project comes out of the Sibley Innovation Hub. Operating room staff need more training in a low-risk environment to set up a operating room table. They've designed and now need assistance building a mobile app for interactive training.
- **What Students Will Do:** Work with the Sibley Innovation Hub and the TIC to develop a iPad that allows for interactive training (i.e. drag and drop features/mimics the setup of an operating room).
- **Deliverables:**
  - Build wireframes
  - iPad app minimum viable product developed for training at Sibley
- **Size group:** 1-3 participants
- **Skills:** Ruby on Rails or Django (Python), JavaScript, Cordova-based cross-platform mobile application development or Swift/Objective-C
- **Mentors:** Sibley Innovation Hub team, Gorkem Sevinc (gsevinc1@jhmi.edu) , Michael Cohen (mcohen56@jhmi.edu)

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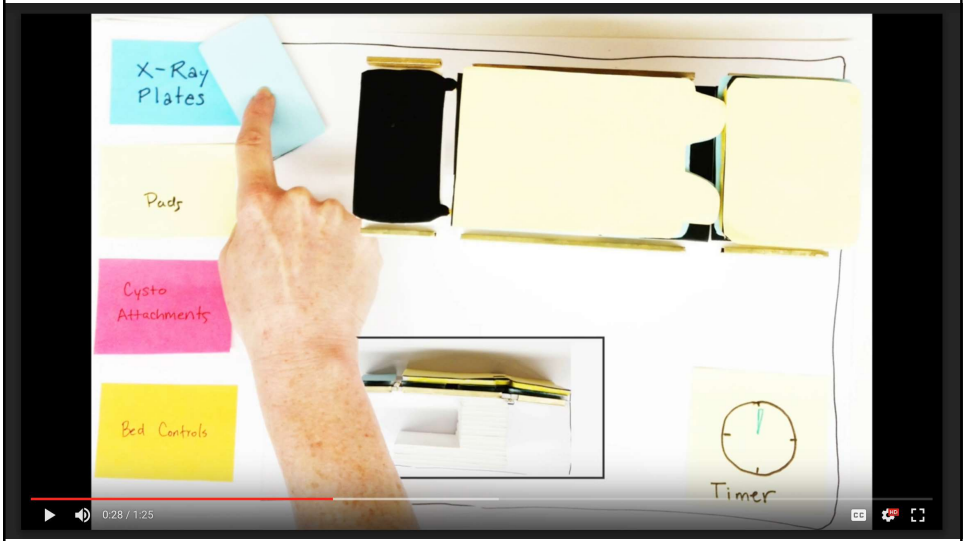

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PainCare

- Development of an app for chronic pain management, allowing for patients to communicate with physicians, collect data from devices (such as Fitbit or HealthKit), and eventually predict pain flares
- **What Students Will Do:** Work with Hopkins physicians and an outside company to co-develop an Apple ResearchKit application
- **Deliverables:**
  - Wireframes
  - Algorithm development
  - Data exploration and discovery with researchers
  - Mobile App minimum viable product
- **Size group:** 1 to 3 participants
- **Skills:** JavaScript, Cordova-based cross-platform mobile application development or Swift/Objective-C, data visualization
- **Mentors:** Gorkem Sevinc (gsevinc1@jhmi.edu) , Michael Cohen (mcohen56@jhmi.edu), Susan Crosby, Joe Cufari, Claudia Campbell, Patrick Finan, Dan Roche

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