

MICHIGAN STATE

UNIVERSITY

Beta Presentation

Modernizing Robotic-Surgery Education

The Capstone Experience

Team Henry Ford Innovations RSE

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*From Students...
...to Professionals*

Project Overview

- Provide an analytical dashboard for medical students and educators to visualize progress in the Henry Ford Health curriculum
- Designed to track and improve training performance in robotic assisted surgery
- Supplies real-time insights on skill proficiency, engagement, and learning patterns
- System will analyze performance metrics and offers personalized learning recommendations



Team Member's Technical Tasks

Technical Tasks Assigned

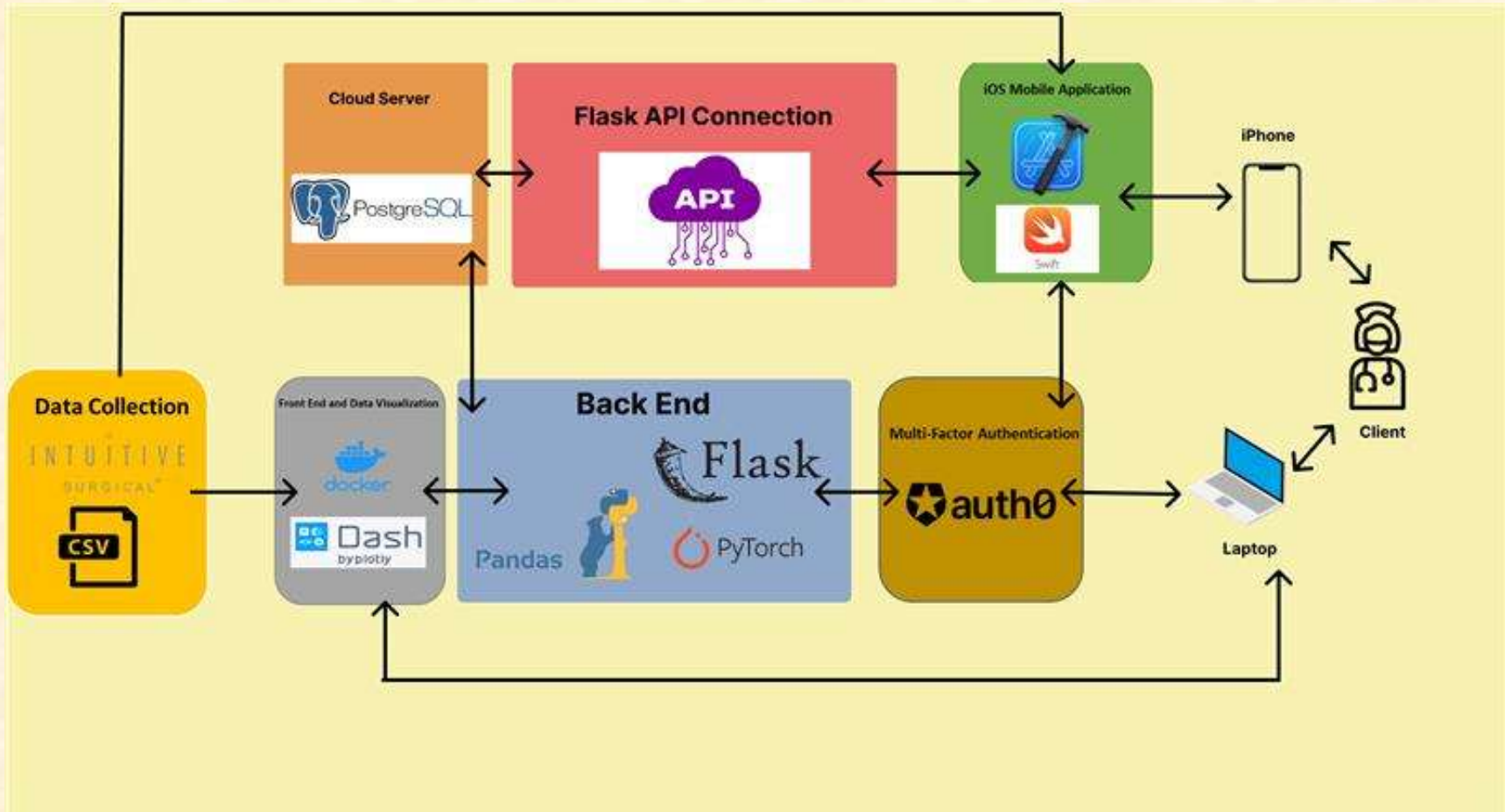
- Hayden Hiller
 - Create an instructor dashboard for mobile
 - Develop Auth0 integration within mobile application
 - Populate student data in data view of mobile application
- Miranda Gabbara
 - Student dashboard on mobile application
 - Student insights/grades/PGY pages implementation
 - Discussion post forum on mobile (instructor and student)
- Bryan Tran
 - Web discussion forum
 - Web PGY Progress Pages
 - Auth0 security on routes
 - Create mobile app API to connect to database
- Caden Fisher
 - Create a role-based user system
 - Develop a certificate transfer system
 - Implement a CSV upload feature
- Neha Kumar
 - Implemented student dashboard on web application
 - Connect tables, graphs, and charts on web to GCP database
 - Widget functionalities and display on web student dashboard
- Dylan Troyer
 - Implemented instructor dashboard for web application
 - Dashboard customization and saving/loading of layout
 - Dashboard widgets like graphical data and predictive modeling

Technical Tasks Completed

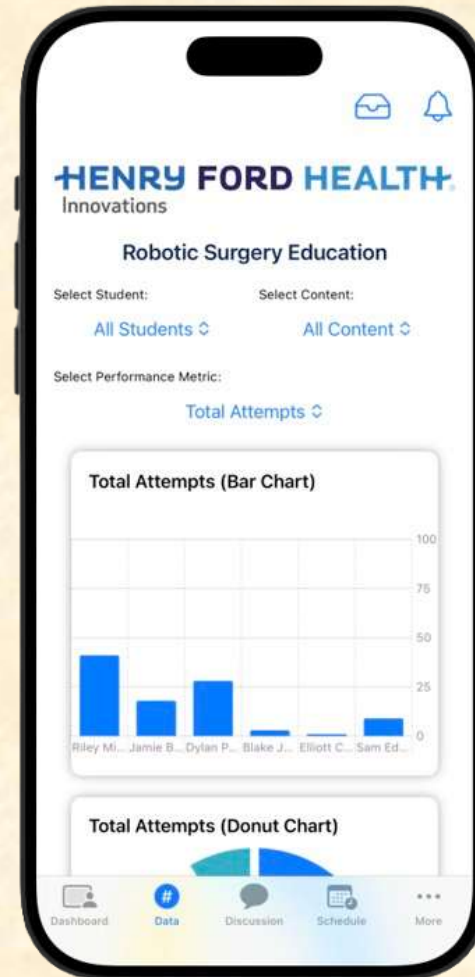
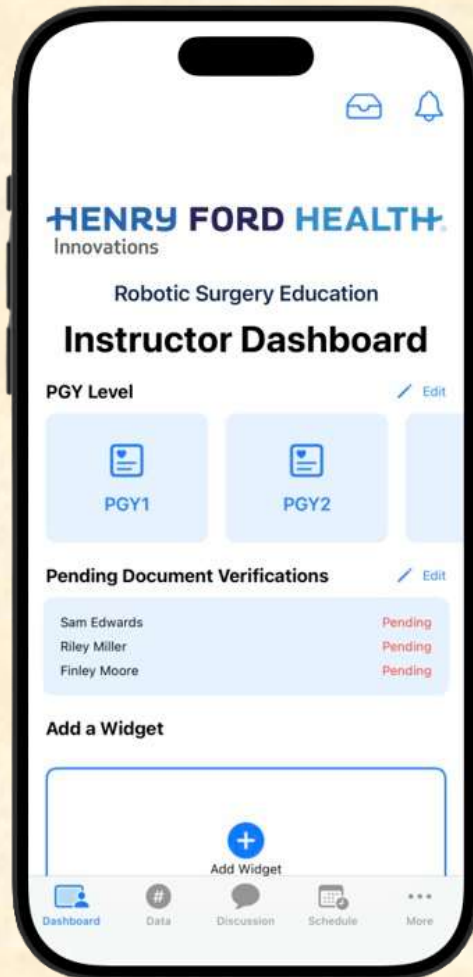
- Hayden Hiller
 - Implemented instructor dashboard for mobile
 - Auth0 integration within mobile application
 - Populated student data in data view of mobile application
- Miranda Gabbara
 - Designed a student dashboard on mobile application
 - Student insights/grades/PGY pages implementation
 - Made a discussion post forum on mobile (instructor and student)
- Bryan Tran
 - Created web discussion forum
 - Created PGY years 1-5 on web application
 - Created mobile API to allow retrieval of data from cloud
 - Created Auth0 token security for all backend routes on web
- Caden Fisher
 - Created a role-based user system with password encryption
 - Created a web certificate transfer system
 - Implemented CSV upload feature to upload Intuitive data
- Neha Kumar
 - Implemented student dashboard on web application
 - Connect tables, graphs, and charts on web to GCP database
 - Widget functionalities and display on web student dashboard
- Dylan Troyer
 - Implemented instructor dashboard for web application
 - Dashboard customization and saving/loading of layout
 - Dashboard widgets like graphical data and predictive modeling



System Architecture



Mobile Instructor Views



Web Discussion Forum Page

The screenshot shows a web browser window displaying the Henry Ford Health Robotic Surgery Education Dashboard. The browser's address bar shows the URL `http://127.0.0.1:5080/discussion`. The page header includes the Henry Ford Health logo and the text "Robotic Surgery Education Dashboard". A dark blue navigation bar contains the following menu items: "Dashboard", "Schedule", "My Certificates", and "Upload Certificate", along with a user profile icon. Below the navigation bar is a search bar with the placeholder text "Search for topics...". Underneath the search bar are three buttons: "Feed", "Your Posts", and "Create Post". To the right of these buttons is a "New" button with a dropdown arrow. The main content area features two discussion threads. The first thread is titled "Bedside cases" and is posted by "jamiebell@hfhs.org" on "2025-04-02 18:14:16". The text of the post is "Are there any attending a in need of help with a bedside case?". Below the text are two buttons: a thumbs-up button with "0" and a speech bubble button with "0". The second thread is titled "Clutch help" and is also posted by "jamiebell@hfhs.org" on "2025-04-02 18:11:41". The text of the post is "How did your guys improve your clutch score? I have a lot of attempes but have not been able to reach 90."



Web Data Transfer Page

The screenshot shows a web application interface for 'HENRY FORD HEALTH Innovations'. The page title is 'Robotic Surgery Education Dashboard'. The navigation menu includes 'Dashboard', 'Schedule', 'Manage Users', and 'Review Certificates'. The main content area is titled 'Review Certificates' and features a search bar with the text 'Search by user email:' and a 'Search' button. A toggle switch labeled 'Show Approved' is currently turned on. Below the search bar is a table with the following data:

Student	Title	Certificate	Upload Date	Status	Actions
caden@hfhs.org	Intuitive Robotic Equivalency Certificate	View Certificate	2025-04-01 03:26:29	pending	Approve Reject
blakejackson@hfhs.org	Module2	View Certificate	2025-03-28 13:03:11	approved	Approved
caden@hfhs.org	Module 1	View Certificate	2025-03-13 18:00:47	approved	Approved
jamiell@hfhs.org	Jamie Test	View Certificate	2025-03-13 18:14:34	approved	Approved
taylorwilliams@hfhs.org	tester	View Certificate	2025-03-27 17:09:37	approved	Approved
caden@hfhs.org	Module 1	View Certificate	2025-03-13 18:11:40	rejected	Rejected

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Review Cases

Student	Title	Year	Status	Actions
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Instructor PGY Web Page

The screenshot displays the 'Robotic Surgery Education Dashboard' for Henry Ford Health. The main heading is 'Post Graduate Year 1 Progress' with a dropdown menu for the student 'Riley Miller'. Two data tables are shown: 'Basic Robotic Simulation Training' and 'Bedside Assisting Cases'. The simulation table lists various tasks with scores and status indicators (green for complete, red for incomplete). The bedside cases table lists cases with attending names, dates, and status indicators.

Simulation	Score	Status
30 Degree Scope Swap	0	Red
4th Arm Cutting	0	Red
Camera 0	91	Green
Clutch	0	Red
Combo Exercise	0	Red
Ring Rollercoaster 1	0	Red
Ring Tower Transfer	0	Red
Sea Spikes 1	0	Red
Sea Spikes 2	0	Red
Sea Spikes Game	0	Red
Wrist Articulation 1	90	Green
Wrist Articulation 2	0	Red

Name	Attending	Date	Status
First Bedside	admin	03/24/2025	Green
Acceptable bedside case	admin	03/24/2025	Green
Failed Bedside	admin	03/25/2025	Red
Second Bedside	CADEN	03/25/2025	Yellow
Second Failed bedside	admin	03/26/2025	Red
second bedside	admin	03/31/2025	Green
last bedside	admin	03/31/2025	Green
Second Moderate Console Surgery	admin	03/31/2025	Green
Bedside two	CADEN	03/31/2025	Yellow
third bedside	CADEN	03/31/2025	Yellow
Last Bedside	CADEN	03/31/2025	Yellow
First set up	admin	03/31/2025	Green

What's left to do?

- Stretch Goals
 - Notification implementation on mobile and web
 - User data appear on the web certificate page
- Other Tasks
 - Clean up the user interface for web application
 - Update ReadMe and documentation files



Questions?

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