MICHIGAN STATE UNIVERSITY Project Plan Presentation MSU – HFH Research Synergy Vanguard Portal (RSVP) 2.0 The Capstone Experience

Team Henry Ford Innovations RSVP

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From Students...

Spring 2025

Project Sponsor Overview

- Henry Ford Health is one of the nations leading academic medical centers
- Operates 13 hospitals in Michigan
- Treated over 4 million patients in 2023
- The official medical services provider for the Lions, Tigers, Pistons, and Red Wings



Project Functional Specifications

- Aims to connect capabilities of MSU researchers with the clinical needs of HFH
- Search algorithms and automated matching will work to facilitate meaningful collaborations
- Web and Mobile App based platform usable only to MSU and HFH members
- Storable, editable, removable profiles and information

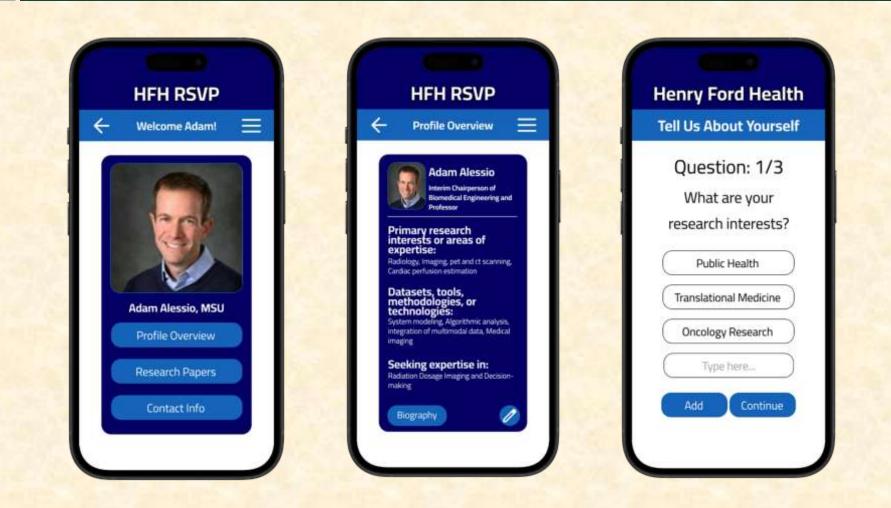
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Project Design Specifications

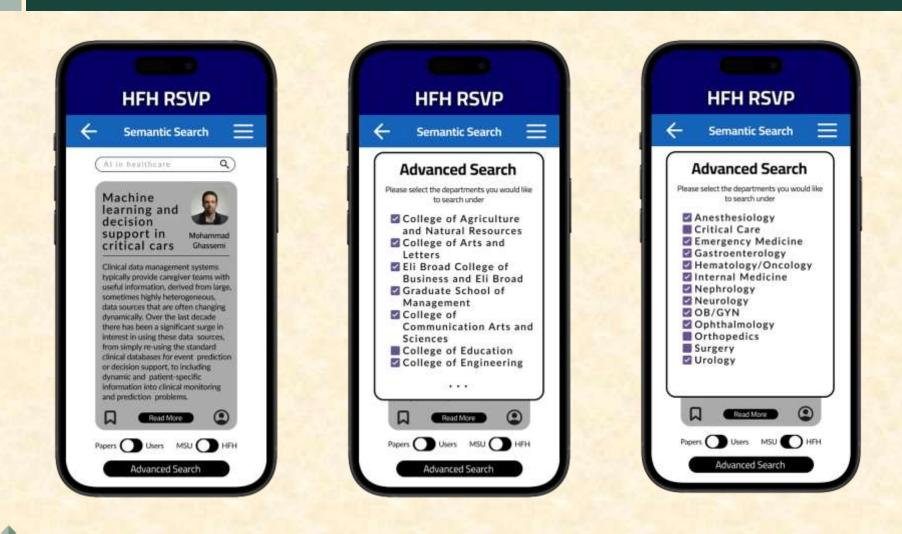
- Secure login and profile creation
- Improving database schema to make data fetching much faster
- Migrating web system to iOS mobile app
- Adding advanced options for semantic search to eliminate ambiguity when fetching data
- Enhance admin capabilities: ability to add and remove users from the system



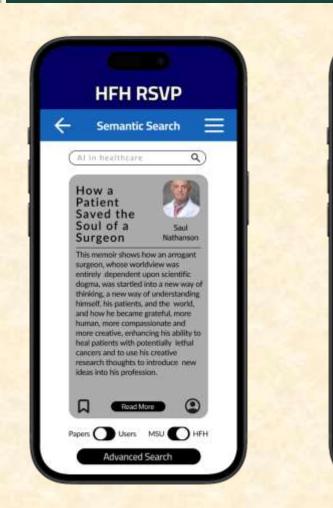
Screen Mockup: iOS Application



Screen Mockup: iOS Application

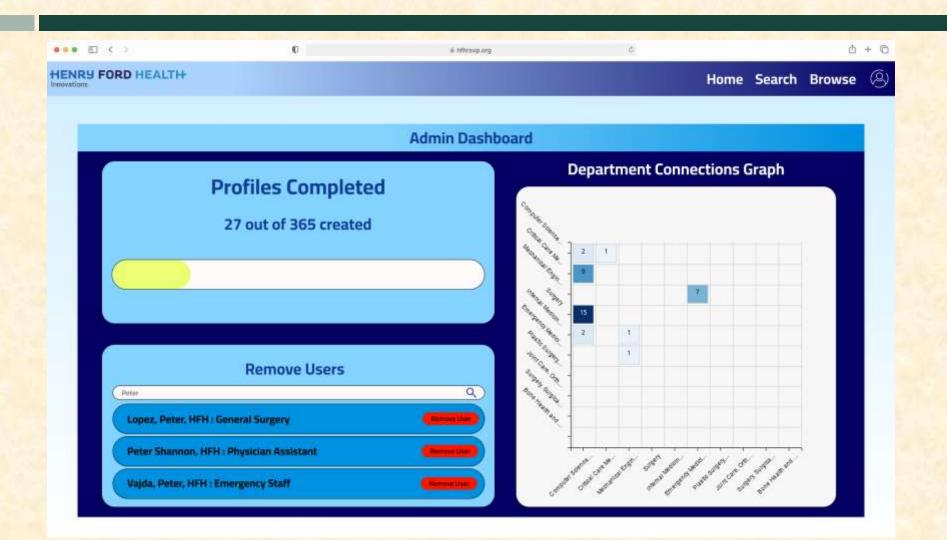


Screen Mockup: iOS Application

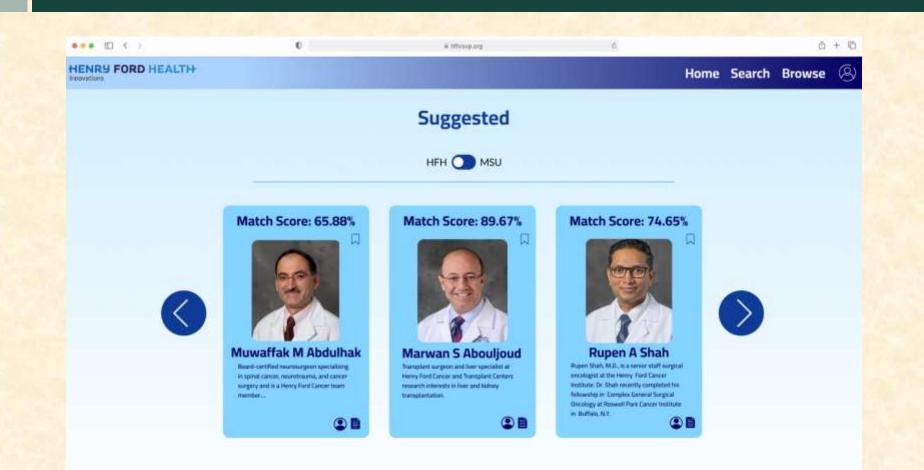




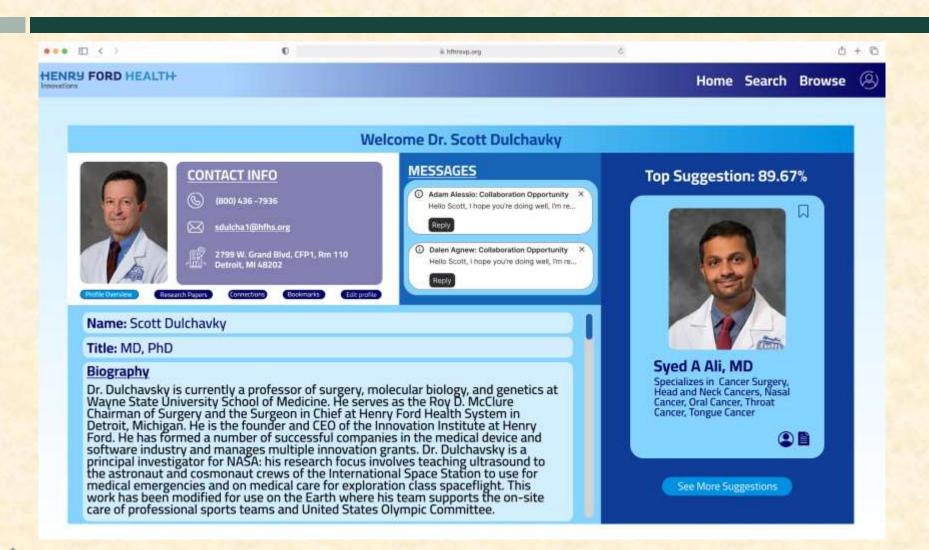
Screen Mockup: Admin Privileges



Screen Mockup: Suggested Page

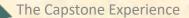


Screen Mockup: Profile Page



Screen Mockup: Semantic Search

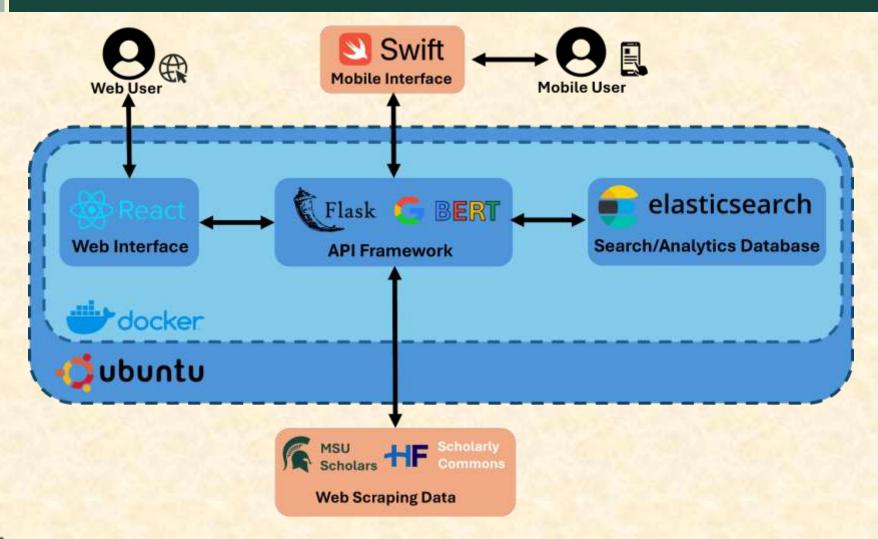
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	professo	r at MSU, specializing in pr ized drug dosing for pediat	ogist-oncologist and assistant ecision cancer therapeutics and tric patients	\bowtie				
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Project Technical Specifications

- Front end implemented with React based portal along with HTML, CSS, and JavaScript
- Back end powered by Flask which handles search queries and editing of user profiles
- Back end will store data on Elasticsearch
- Back end utilizes BERT to provide a similarity score for user search engine results
- iOS Mobile App implemented with Swift

Project System Architecture



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Project System Components

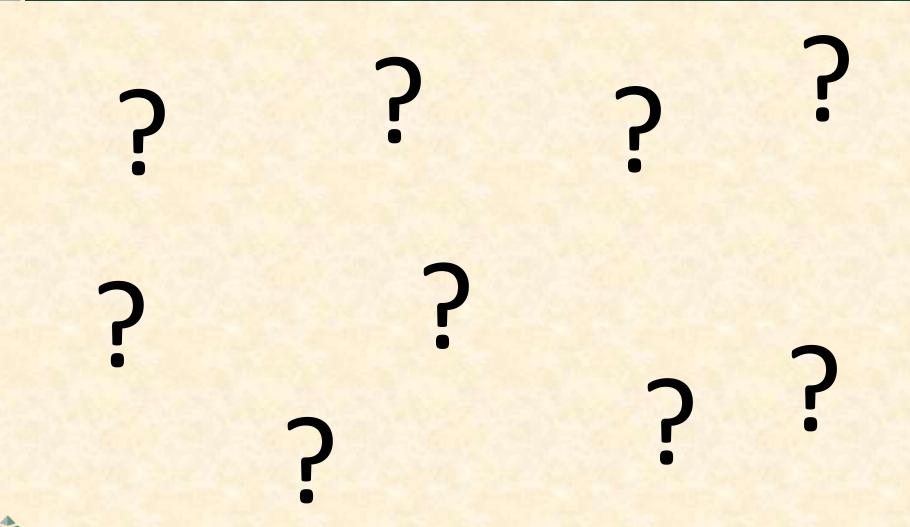
- Hardware Platforms
 - Physical Linux Server
- Software Platforms / Technologies
 - React (Front end)
 - Flask (Back end)
 - BERT (Back end)
 - Elasticsearch (Back end)
 - Python (Back end)
 - Docker (Containerization)
 - Swift (Mobile Application)

Project Risks

Mobile Migration and Connection

- Not sure how to connect mobile application to web database securely
- Research how to extract user data from Flask, including best practices for security
- BERT and Elasticsearch RAM Usage
 - If multiple people are using the site, excessive RAM usage causes search and other functionalities to slow down
 - Research Elasticsearch RAM settings, if there's no way to improve, switch database software, possibly SQL
- Scraping New User Data
 - The database needs to be constantly searching for new hires to prepopulate some parts of their profile
 - Monitor performance under different scraping conditions, discuss with client a possible scraping schedule that aligns with new hires
- Convenient Verification for HFH users
 - Not sure how to get reliable access to a verification method such as OAuth to aid HFH users in easy signup and access to the portal
 - Confer with MSU and HFH client to discuss what user data we have access to, then work with MSU IT to learn how to safely use and store it

Questions?



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Team Henry Ford Innovations RSVP Project Plan Presentation 16