Project 07: 
A Cognitive Training Quiz Application

Ran Liu, Nick Uebele

Mentors:
Michael Cohen, Gorkem Sevinc, Yuri Agrawal
Project Motivation

• Older adults often have difficulty with spatial memory and navigation.
• There is a test to help develop and assess these cognitive skills, but it’s currently a pencil-and-paper test.
• Digitizing this test would enable access by so many more individuals.
Project Description

• Create a web-based visuospatial cognitive training program
  • Has 5 modules and progressively trains participants
• Custom-designed graphics and animations supplied by the Arts as Applied to Medicine Department
• Employ user experience design and gamification to enhance the test
Requirements

• Allow elderly patients to self-administer cognitive visual/spatial training and testing

• Application should attempt to replicate current written test, while improving the ease with which physicians can collect, access, and monitor patient data

• HIPAA Compliance
Use-Cases

• Actors: Physicians, Patients

• Physician:
  • Logs in, arrives at dashboard of patients
  • Selects patient and views their testing history

• Patient:
  • Logs in, arrives at dashboard of quiz modules
  • Selects module, completes training, then test
  • Also able to view their own testing history
Architecture

• RESTful API backend
  • Spring/Hibernate/H2(SQL)

• Platform agnostic web-app
  • AngularJS
  • Unsemantic
    • Responsive design
RESTful API Specification

- REST endpoints are routes mapped to controllers
  - Parameters are passed as JSON in the body of HTTP requests

- Example:
  - User login endpoint
    - Path: /api/user/login
    - Method: POST
    - Parameters: username [String], password [String]
    - Success response:
      - Code: 200
      - {
        "accessToken" : [String]
      }
UI Sketches

Login

Physician Dashboard

Patient Dashboard
Deliverables

• Design documents
• Production code
• Iterations on the above
  • Particularly on refining UI/UX
  • Build, deploy, obtain feedback, revise design
Deliverables

• **Minimum:**
  - Design documents & UI mockup
  - HIPAA-Compliant, Encrypted Database
  - Serve the quiz (3 out of 5 modules)
  - Working barebone interface

• **Expected:**
  - Serve all 5 modules of the quiz
  - Store results, allow patients to view own results, allow physicians to view their patient’s results
  - Polished UI
  - Plot performance history over time

• **Maximum:**
  - Data analytics on stored data
  - Allow for advanced queries on data
  - Conduct usability studies/pilot studies with actual patients
Dependencies

- Software dependency management: npm, bower, mvn – **Done**
- Test question illustrations – **Arts as Applied to Medicine Department**
- Stash (Git) access – **Pending (waiting for confirmation from Michael)**
- Jira access – **Pending (waiting for confirmation from Michael)**
- Possible deployment environment – **Pending**
HIPAA Compliance

• Full-database encryption, user authentication, HTTPS, access logs
• Consult Mike regarding security in general
Management Plan

• Team meetings: Sundays and Wednesdays
• Weekly meeting with TIC: Wednesday 12:00-1:00 PM
• Use Jira for project management and Stash (Git) for version control

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Questions?