

CREU Project: Web-Based Application for Diabetes Treatment Decision Support
Statement of Work
9/4/06

The following describes the project to be completed by Olga Medvedeva and Tam Knox, supervised by Dr. Jody Paul, in accordance with the CREU 2006-2007 grant. The general purpose of the project is to create a web-based application to assist doctors in making treatment decisions for managing patients with diabetes.

A. The Web-Based Application – Basic Functionality

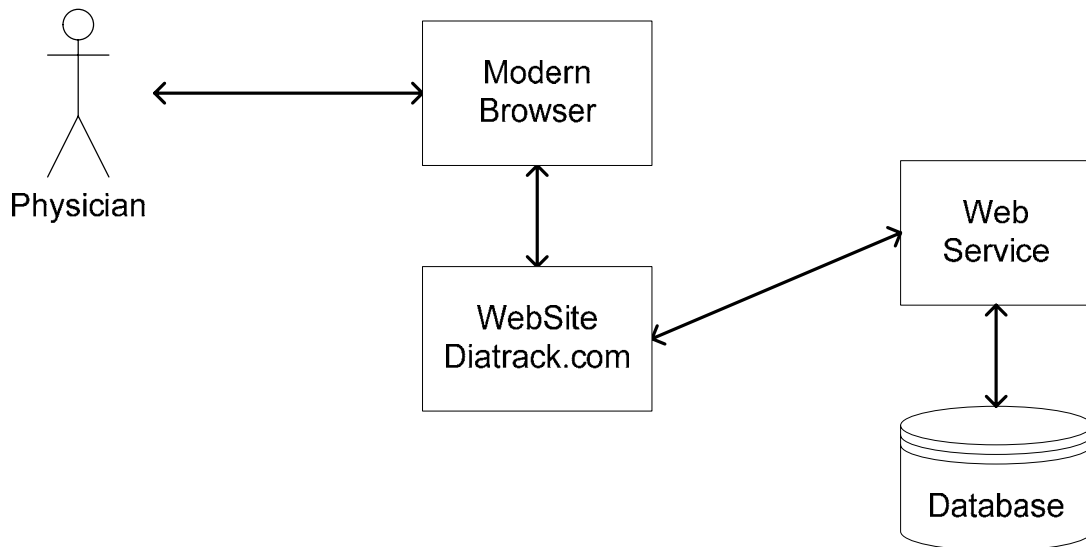


Figure 1: System Overview

The application will run on a remote server and be accessible by commonly-available web browsing software that runs on multiple platforms. Medical staff will be able to sign in and enter patient data securely. The system will be designed with security that prevents unauthorized users from entering data, and also prevents unauthorized access of patient data. Users will be able to run basic queries to find patient data that meets criteria based on the type of patient data entered into the system, such as age, gender, or treatment history. Users will be able to query based on ranges of attribute values, and on combinations of different attributes. The application will provide a user interface that is intuitive for users with basic computer literacy.

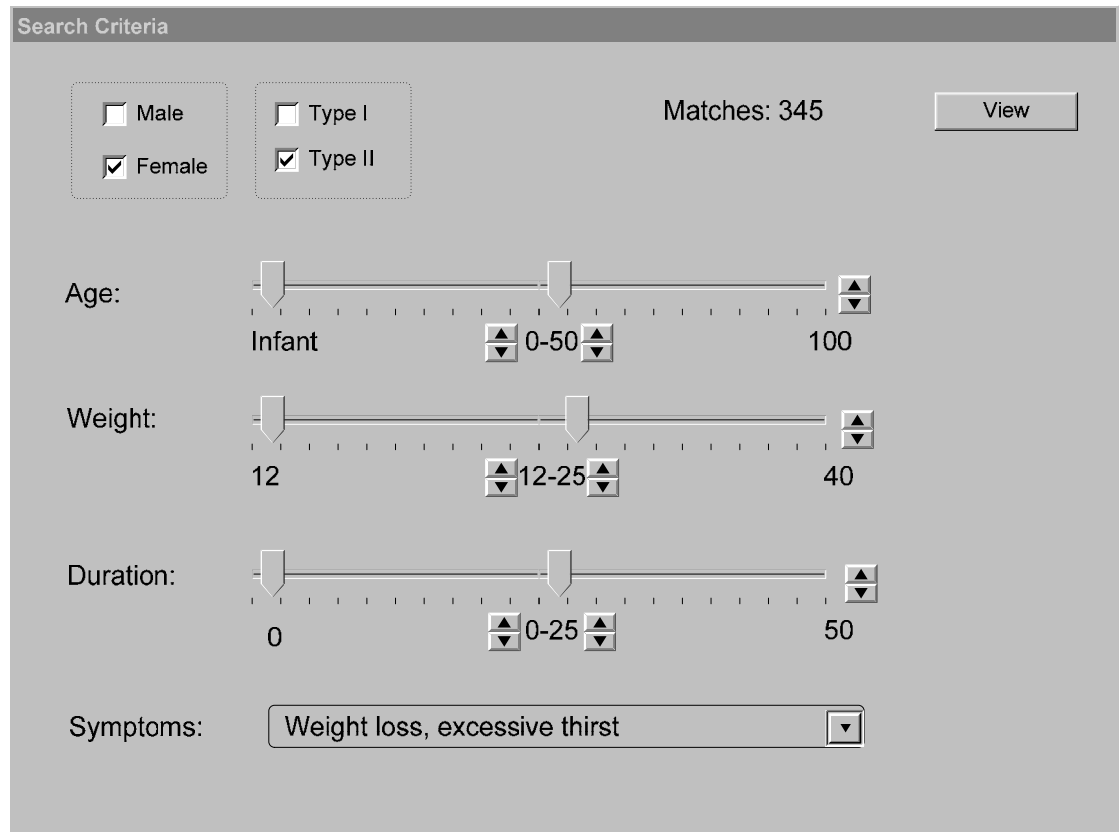


Figure 2: Sample Partial User Interface

B. The Web-Based Application – Database Aspects

The application will be able to store the following information for each patient: age, gender, weight (including history), ethnic background, educational attainment, family history as it relates to diabetes, treatments prescribed, fasting glucose levels (including history), hemoglobin A1C test results (including history), other heart risk factors such as cholesterol and blood pressure, information about patient compliance with prescribed treatments (as determined by doctor), and other information that doctors deem important in this context.

C. Research Aspects

The team will research artificial intelligence-based reasoning, including case-based reasoning, and experimentally build “smart” tools into the application that allow medical staff or researchers to run queries to find patients similar to a given patient without specifying attribute values to be sought.

D. Community Contact & Collaboration

The team will meet with medical professionals to discuss the possible usefulness of this type of application, as well as any concerns the medical community may

have about the product. Specific to the Research Aspects, the team will seek to ascertain whether the product as designed might have a research application.