

Web-Based Tools that Support People with Diabetes and Educate Others

Objectives:

The purpose of IPRO 315 was help users with/without diabetes understand the essentials of the disease, make them aware of the implications of eating different kinds of foods by indicating resulting glucose levels in various parts of the body, the risk factors and ways to prevent it.

In order to achieve the above, the website ~~modeling of~~ the GlucoSim software, a web-based educational simulation package for ~~g~~Glucose-~~i~~nsulin levels in the human body ~~had to be~~was made more user-friendly and informative to eliminate any complexities the users would face if they intended to use the software for educational purposes. In addition, the Nutrition website ~~had to be~~was redesigned to provide information on meal planning.

Organization:

The IPRO 315 team was split into four main groups for the semester. These included the Nutrition team, the Glycemic Index team, the GlucoSim team, and the Software Team. Other short-~~t~~ term groups were created to work on the Abstract, Final Report, IPRO Day Poster, and IPRO Day Power~~P~~point presentation.

Accomplishments:

The website ~~modeling of~~ the GlucoSim software was required to provide information on ~~d~~Diabetes as well as tutorials on how to use the software. In order to meet the first requirement, a document addressing frequently asked questions about diabetes was framed. To complement textual information, visuals in the form of a power-point presentation and an animation explaining the details of the interaction of key players like glucose ~~and~~& insulin in healthy ~~persons~~ and ~~people with~~ diabetes~~ie people~~ were completed. Moreover, an interview by a health professional, addressing questions like what is diabetes, its causes, symptoms and types, cure and risk factors was recorded. In order to meet our second requirement, a ~~Power~~Point ~~presentation~~ as well as a video tutorial on how to use GlucoSim and analyze its results were completed. In addition, the GlucoSim web page was redesigned to make it look more user-friendly and organized.

The website ~~modeling of~~ the Nutrition software was enhanced by making it more user-friendly and adding the meal planning capability of the software. The group first surveyed different individuals with diverse backgrounds on how to improve the Nutritional site. Based on feedback from 30 surveys, the group redesigned the site to make it more organized and user-friendly. This met the first requirement. In order to meet the second requirement, the group addressed

several issues with the meal planning software. Sample meals were added to the site to guide the user towards planning his/her healthy meal. A body mass index (BMI) was added to help the user assess his/her obesity level.

In addition, information to the webpage about new nutrient data information was added by adding an additional 1500 entries of glycemic index values. Since the previous software relied only on carbohydrate content, a literature review on the clinical utility of glycemic index was conducted. Moreover, a reference document for different kinds of [patients with diabetes](#) ~~patients~~, clarifying confusing terms, and elucidating previously esoteric concepts was compiled.

Most obstacles faced by the IPRO team were related to software. The team had difficulties posting the information in the right format. Also, the team had to learn new software [and programming tools](#) to make animations and encode the videos to make their size smaller.

Overall, it is hoped that the sites will assist [people with diabetes](#), [people on the borderline to become diabetics](#), and healthy persons in planning their meals and nutrition, in hopes of maintaining or preventing diabetes ~~status~~. The websites provide crucial information on the nature and treatment of diabetes, with the aspect of meal planning available through the website's database of several thousand foods and automatic caloric calculator. It is further hoped that use of this website and similar ones on the world wide web will instill in people an awareness in their diet and a tendency to make healthier food choices.

Similarly, the GlucoSim website is designed to assist the healthy and diabetic patients in understanding the glucose and insulin interaction in the body. The website provides a virtual experimental environment to the user, where he/she can simulate blood glucose concentration in response to external variations such as food consumption and insulin injection.

Teams	Team Members			Advisors
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<i>Nutrition</i>	David Zaboli	Elizabeth Bauer	Salman Mohiuddin	Emmanuel Opara
<i>Glycemic Index</i>	Benson Okeiyi	Tina Chiu	Russell Derrick	Emmanuel Opara
<i>Software</i>	Shailvi Tyagi	Byung Kim	Jung Kim	Ray Trygstad
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