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SOFTWARE ENGINEERING – COURSE 2022-23
Final Project Statements
Sep 2022

The following ideas have been selected as candidates for the final project. **Each group must select ONE of the options**.

The selected ideas will have a bonus of 1 point.

OPTION 1: AmpAlert (Amplify Alert)

As we age, we become more and more susceptible to hearing loss. Approximately one in three people between the ages of 65 and 74 has hearing loss, and nearly half of those older than 75 have difficulty hearing. Despite being so commonly needed, hearing aids can cost between 900€ and 3000€. This sudden expense puts a burden on one of our most vulnerable populations. Our app aims to alleviate that burden.

Our app's most fundamental function will take the microphone input from the user's phone or earphones and amplify it into their headphones. The user will have far more options, as we will use machine learning to (optionally) cut background noise for the user and a text recognition feature for the users to rehear any sentence that could remain unclear replayed by an AI (Artificial Intelligence) voice. In addition, as safety is a key worry, the app will monitor its audio output level to check for potentially damaging sound levels. If the user keeps trying to set the app beyond its limits, it will notify the user that they need hearing aids imminently. In this way, the app allows these users to get assistance for a few months while they save up for their hearing aids. It is not the permanent hearing solution for severe cases, but a strategy to reduce the worry of a sudden cost.

Remark. – This project proposal is based on the ideas of the group 89-C.

OPTION 2: SOLumens

SOLumens is a startup whose main purpose is to provide renewable electricity through photovoltaic solar energy to homes and companies meeting their demands and guarantee their energy independence. To reach this major objective, SOLumens is required to be a competitive and innovative company in the energy market. That is why, we pretend to implement a computer system that allows customers to manage their installed solar panels.

The computer system shall allow each client to conveniently manage and view all the information about their solar panels in real time providing a cost-effective method for management. Therefore, to guarantee comfort, the system shall be available both as a free mobile application and as a web application. Both will be operational for a year with a maximum of 2 hours of system downtime.

Before accessing the functionalities of the application, the system shall require user identification and there will be two methods: one for new users and another for existing users. The provision of services of the application shall begin after the first time that a user has been verified as a client and shall have an unlimited duration as long as the user continues within the system.

In the case of new users, the verification shall be carried out using a verifying a code, provided by the company. Afterwards, the system shall register the user asking for a username and a password.

One of the main features offered by the system is displaying information on the status of solar panels. This includes a unique name or identifier for each panel, customizable; the size; the geolocation; the status of data synchronization (yes/no); the state of connection (yes/no) to an electrical installation; the instantaneous energy produced by each of them and that produced together; and economic savings compared to non-renewable energy consumption. These last data items shall be expressed directly or, at the user's choice, in the form of statistics that reflect their evolution over time and the option of choosing one between different physical magnitudes and their multiples and sub-multiples for their representation shall also be displayed.

Another functionality shall be the visualization of information on the future state of the solar panels, studying the atmospheric climate and its impact on the energy production (performance) of each panel and as a whole installation. This information shall be also displayed in some statistical format selecting the proper magnitudes and multiples and sub-multiples.

And the last functionality of the system is the notification of anomalies in the operation of the solar panels. The system shall notify the user as soon as possible if a panel faces a performance drop abruptly and unexpectedly.

The system shall also include an option to contact a SOLumens operator to request technical service, to report issues in the operation of their solar panels and to obtain any additional information.".

Remark. – This project proposal is partially based on the ideas of the group **80-01**.

OPTION 3: Banki

Studies today show that about 60% of the students lack financial literacy. Banki provides a curated experience for students to help them make better financial decisions and start their investment journey from as low as 5€ per week.

Our application also allows the students to set their own specific financial goals, for example, if a student wants to save 5000€ for a car in two years, then our AI-powered (Artificial Intelligence) algorithm provides them with the investment plan that best suits their needs.

Our Smart-Expenses feature also analyzes the student's expense history and shows them how the money that they spent before could have been put into better use, this inculcates habits of cautious spending.

For example, the 12€ that you spent on those beers last Friday, could have been invested into a 2-year mutual fund plan that would give you a 15% return on investment. So, join Banki today and start your journey towards a financially secure future.

Remark. – This project proposal is based on the ideas of the group 89-F.