

***Project Documentation***

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*WorkItOut* is a platform where users will be able to share project ideas and collaborate with other like-minded individuals. At the core of our website is a filter that uses an algorithm to find and display projects or ideas on a forum built for the user based on their interests. On this forum, users will be able to give each other feedback and communicate with each other about different project ideas. Our main target audience is students looking for research opportunities, professors/independent researchers seeking help with research, or startup companies/freelance software developers seeking to build a team.

Our team looked at many different ways to develop such a platform. Our initial concept was to develop an iOS app using XCode. However, our mentor dissuaded us from this route as it would be too difficult to implement our goals into the final product in such a short period of time. We then decided to build this platform on a webpage using Flask, a micro web framework written in Python. Although we considered using Django, we ultimately decided to use Flask as it provides developers with much more flexibility and control in terms of the components and databases that we would end up using. It allowed us to use a variety of extensions that helped us with many of the features we implemented, namely the filtering algorithm.

The algorithm calculates mean squared error and minimizes this in order to match a user with users interested in the most similar topics or projects they may be interested in. This functions effectively as a k-nearest neighbour algorithm and allows customized content for each user. The algorithm can be run as unbiased where only the most absolutely in common users or posts will be shown. It can also be run as biased, where topics are weighted to include topics in the same scope. For instance, a user interested in mathematics and engineering is likely to be interested in science even if not explicitly stated. The result of this algorithm is a sorted list of users and posts for each individual that will be recommended to connect with. This is finally displayed visually on a ‘suggested’ page on the web application that is accessible through the ribbon.

When the user opens up our webpage, they will be asked to create a profile that will store basic information such as their email, a password, their name, a brief description about themselves, previous experience, etc. Once the user logs in, they will be brought to the homepage, similar to a newsfeed, where posts about projects/opportunities can be viewed. The user will then be able to use a filter to tailor what is displayed on their newsfeed based on their interests. The filter holds variables such as computer science, biology, electrical engineering, chemistry, etc. Whatever the user checks on the filter will determine the posts they see on their newsfeed.

When a user creates a post, they will give it a general title and a brief description about what their project is and what they are looking for from other users. They will then be able to select the filters that the post correlates to. Once it is posted, the user will always have the option to either delete or edit the post as needed. If another user sees a post and is interested in “WorkingItOut” with them, they will be able to either comment on that post to convey their interest in that opportunity or view that users profile.

We intended for this program to have more features such as the ability to private message other users, match other users based on location, a file sharing aspect akin to Google Drive. Although they are currently unavailable, some of these features may be included in the 12/13/2019 build.