# Project Proposal

## A study on resources recommendation system in personal projects

**—— improving the productivity in software engineering**

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## Introduction

In our midterm papers, we made some comparisons among 9 different programming languages in the aspects of their execution speed, their memory usage, their language productivity as well as their popularity among software developers, which aims at helping those novice developers or even the experienced ones to start their projects with the most appropriate programming languages. The choices of programming languages may partially affect the software developers' productivity, but it may not be the key factor most of the time. According to the survey of our midterm papers, we find that for most developers, when they begin a new project, they may care more about the libraries, the toolboxes as well as the useful packages of their projects rather than the programming languages' execution speeds, memory usage, etc., though programming languages' features are also very important in improving one's productivity. We also find that the developer community is another key factor that developers may consider.

But for the most time, it's always not easy to find the resources that developers care more, which we've mentioned above, from the Internet in a short time. As is known to all, there's an ever-growing variety of open-sourced demos, useful packages & libraries, efficient tools, academic papers, etc. on the Internet. As a result, given such a large amount of possibly useful online resources, it's really difficult for developers to find the most appropriate ones for their projects, which may make them feel really confused. And the process of searching the appropriate resources online may also be pretty time-consuming. Just take us as an example, when we are conducting this project, we have to search on the Internet to find the tools we may possibly need to use in our project. We also need to consider which package is the best fit for our project and whether there exist some useful tutorials, papers, demos or some developer communities that can be used as a reference. It may take us several days to complete the whole searching process. And we believe that most developers may all have similar experiences. As a result, there's a need to build an application to save developers time in doing these research jobs.

In our final project, we try to build a recommendation application to help developers/ students to find these resources in an easier way. Given developers/ students' technology field of their projects as well as the programming languages they will use in their projects, the application we build will provide them some useful resources for their projects, such as: similar projects demos, useful tools, powerful packages & libraries, the link of the developer community, related academic papers & tutorials, etc. With our application, the developers/ students don't need to waste their precious time on searching the resources on the internet before they conduct their projects anymore, which may definitely improve their productivity and help them start their projects in a short time.

## What plan to do

As is mentioned above, in this project, we plan to build a recommendation application to help developers/ students to find the useful resources of their projects in an easier way in order to improve their productivity and work efficiency.

To be more specific, we plan to realize our projects in the following steps.

1. We will conduct a survey to figure out the most popular technology fields (maybe top 5 according to the most popular courses) among the students at Columbia University. And the respondents of our survey will be the students majoring in Computer Science, Computer Engineering, and Electrical Engineering.

2. According to the results we get from our survey, we will try to derive some useful tutorial materials from the relevant Columbia courses to these popular technology fields.

3. Then we will try to extract some useful online public sources (maybe according to the popularity, such as the forks or stars of the projects (demos) on *Github*) from the internet which is related to these popular technology fields. To be more specific, we hope to collect information like the similar projects demos, useful tools, power packages & libraries, the link of the developer community, related academic papers & tutorials, etc. We hope to build a database to store all the useful resources using SQL.

4. After that, we will build a front-end using the flask architecture to show our recommendations. (Probably a web application).

5. When we finish our web application, we will conduct a survey again to get the feedback from the users of our application in order to evaluate our recommendation system and then discuss the future work or possible modification of our system.

## How relevant to software engineering

The project aims at improving students' work efficiency and projects productivity in their software engineering studies. With the help of our resources recommendation system, we hope students can get the most popular and useful documents and tutorials quickly, dig out interesting topic based on good samples or demos, and make rational choices on toolbox and programming languages. In this case, their time spending on researching and collecting public resources will be sharply reduced, and then their productivity and work efficiency will be improved.

## Tools

SQL, flask, Python, R

## How we plan to deliver the code

We will post our code, documentation and other software artifacts for our project in a public or private *Github* repository.