

# PID139: Career Dendrogram

**Team ID: TM003053**

**Department/office/Industry Name : Tribal Development Department**

**Problem ID : PID139**

**Problem Statement : Career Dendrogram**

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## **Team Details**

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**Problem ID: PID139**

**Name of the Department/Office/Industry: Tribal Development Department**

**Type of Department/Office/Industry: Tribal Development Department**

**Problem Statement: Career Predictor**

**Synopsis Abstract:**

In today's evolving world it is necessary to have an optimal career for professional growth and happiness. According to the survey conducted by the Council of Scientific and Industrial Research's (CSIR), about 40% of students are confused about their career options. But it is challenging to find the best career path for most people due to various reasons. To overcome this issue we are building a career prediction website to help people choose the best careers for them based on their skills and certifications.

**Our approach to solve the problem**

Our aim is to create a full stack web application which provides accurate career predictions for the user based on the Naive-Bayes algorithm. The website will have an authentication system for the privacy of the user. The user has to fill up a form related to their education and the system shall predict a career path based on their inputs. The system will also give a roadmap for this particular career path for the user to follow to obtain optimal results. To boost the skills for the particular career the website will use web scraping to search and display certifications related to the career. If users have any doubts regarding the career provided on the website they can use the chatbot on the website to clear their doubts.

**Literature Review/Existing Innovation-technology to address related to problem:**

Machine Learning has been used extensively in career prediction algorithms all over the world. There are various websites and web apps over the internet which helps students to know their suitable career path. But most of those systems only used personality traits as the only factor to predict the career, which might result in incorrect results. Similarly, there are few sites that suggest careers based on the interests of students. The systems do not take into consideration the capacity of the students to know whether they would be able to survive in that field or not. The paper by [1] Beth Dietz-Uhler & Janet E. Hurn suggests the importance of learning analytics in predicting and improving the student's performance which enlightens the importance of student's interest, ability, strengths etc. in their performance. According to the paper by [2] Lokesh Katore , Bhakti Ratnaparkhi , Jayant Umale , the career prediction accuracy was determined using 12 attributes of students and different classifiers with c4.5 having the highest accuracy of 86%. [3] Another paper by Roshani Ade, P.R.Deshmukh suggested an incremental ensemble of classifiers in which the hypothesis from the number of classifiers were experimented and by using 'Majority voting rule', the final results were determined. The proposed ensemble algorithm gave an accuracy of 90.8%.

**Challenges/Risk in implementing Final prototype**

**Changes in the market:**

Today's careers are highly volatile and can completely change within a couple of days. Thus, prediction of a result may be different for different use cases.

**Accuracy of data by user:**

For an optimal career prediction it is essential that the user enters accurate data about himself or the system might predict inaccurate results.

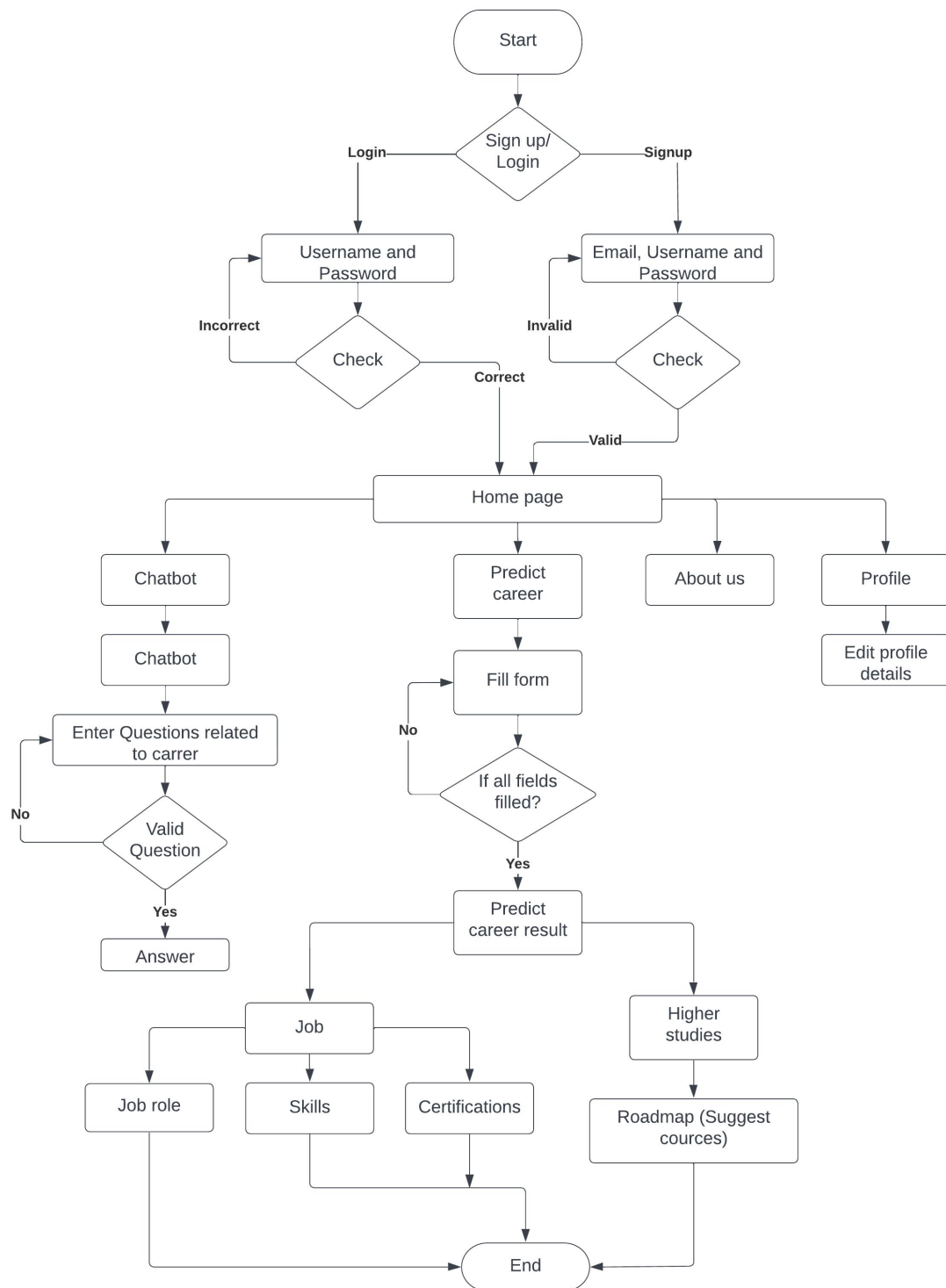
**Possible outcome of our work**

This project is aimed to help users make informed decisions about their careers which makes it helpful for the users as well as the community as a whole because capable people would occupy the position that suits them. This would increase the overall skill set of people in a particular field and benefit the company or organisations in that field.

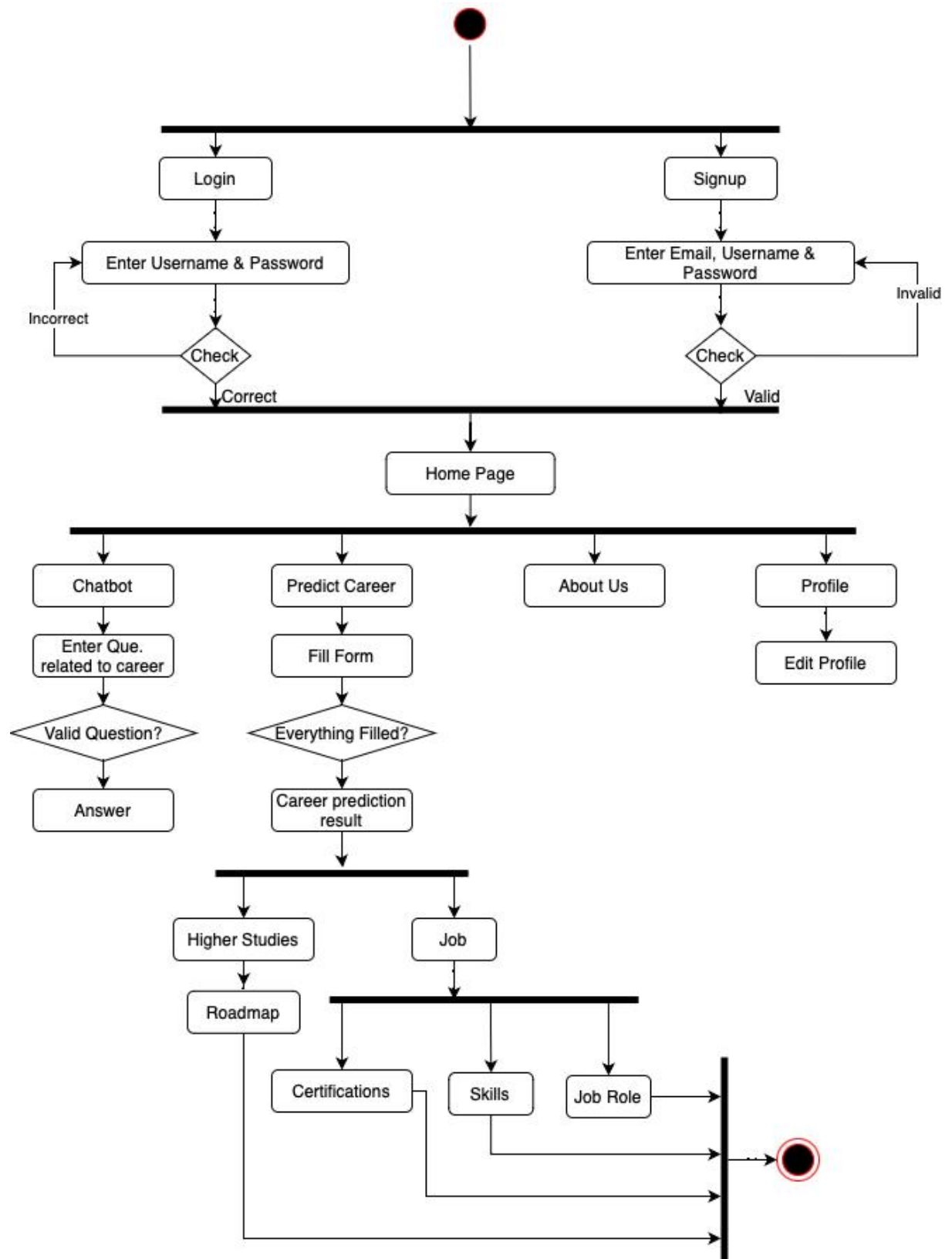
**Work done till date**

Firstly, we have completed the connection to the database and the implementation of the authentication system. We also have implemented the career prediction system and the career roadmap system which form the core crux of the website. Both of the above features are created using React js and the Naive-Bayes algorithm of machine learning is used for career predictions and roadmap.

## Road map/Flow diagram to develop final solution



## UML Activity Diagram



## Tools and technologies to be used to solve the problem

### Tools:


- **Figma:** Figma is a collaborative web application for interface design, with additional offline features enabled by desktop applications for macOS and Windows
- **Visual Studio Code:** Visual Studio Code, also commonly referred to as VS Code, is a source-code editor made by Microsoft with the Electron Framework, for Windows, Linux, and macOS. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git
- **Anaconda Navigator:** Anaconda Navigator is a desktop graphical user interface included in Anaconda that allows you to launch applications and easily manage conda packages, environments, and channels without the need to use command line commands.
- **JupyterLab:** JupyterLab is the latest web-based interactive development environment for notebooks, code, and data. Its flexible interface allows users to configure and arrange workflows in data science, scientific computing, computational journalism, and machine learning. A modular design invites extensions to expand and enrich functionality.
- **Kaggle:** Kaggle is an online community platform for data scientists and machine learning enthusiasts. Kaggle allows users to collaborate, find and publish datasets, use GPU-integrated notebooks, and compete with other data scientists to solve data science challenges.
- **Git:** Git is free and open source software for distributed version control: tracking changes in any set of files, usually used for coordinating work among programmers collaboratively developing source code during software development.
- **GitHub:** GitHub, Inc., is an Internet hosting service for software development and version control using Git. It provides the distributed version control of Git plus access control, bug tracking, software feature requests, task management, continuous integration, and wikis for every project.

## Technologies:

- **ReactJS:** React is a free and open-source front-end JavaScript library for building user interfaces based on UI components. It is maintained by Meta and a community of individual developers and companies.
- **Python:** Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured, object-oriented, and functional programming.
- **Machine learning:** Machine learning (ML) is a type of artificial intelligence (AI) that allows software applications to become more accurate at predicting outcomes without being explicitly programmed to do so. Machine learning algorithms use historical data as input to predict new output values.
- **Naïve bayes:** Naïve Bayes is a simple learning algorithm that utilizes Bayes rule together with a strong assumption that the attributes are conditionally independent, given the class. While this independence assumption is often violated in practice, naïve Bayes nonetheless often delivers competitive classification accuracy.
- **Preprocessing:** Data preprocessing in Machine Learning refers to the technique of preparing (cleaning and organizing) the raw data to make it suitable for a building and training Machine Learning models.
- **Node js:** Node.js is an open source, cross-platform runtime environment for developing server-side and networking applications. Node.js applications are written in JavaScript, and can be run within the Node.js runtime on OS X, Microsoft Windows, and Linux.

Sign-up

Sign-in



# Sign-in

Email

Enter Email




Password

Enter Password

Forgot Password?

Sign-in

[SignIn Page]




## Profile

Username

Nishita Kansagra

Profile Photo



Upload Photo

View Profile

## Reset Password

Old Password

Password

New Password

Password

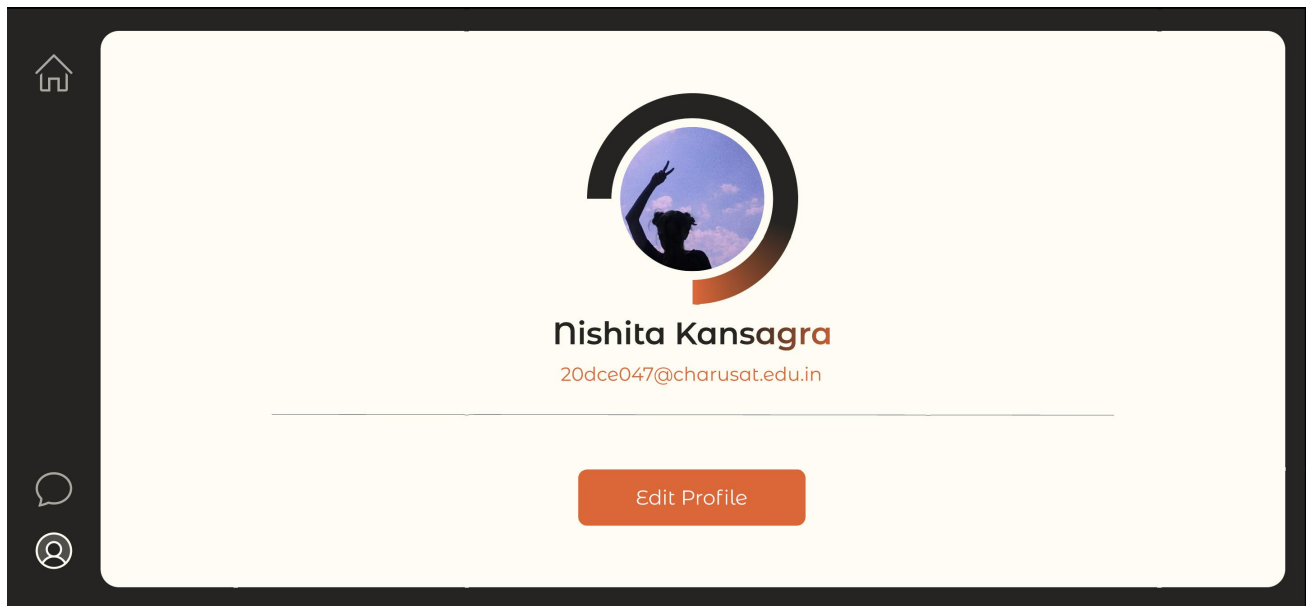
Confirm Password

Password

Save Changes

[Edit Profile]

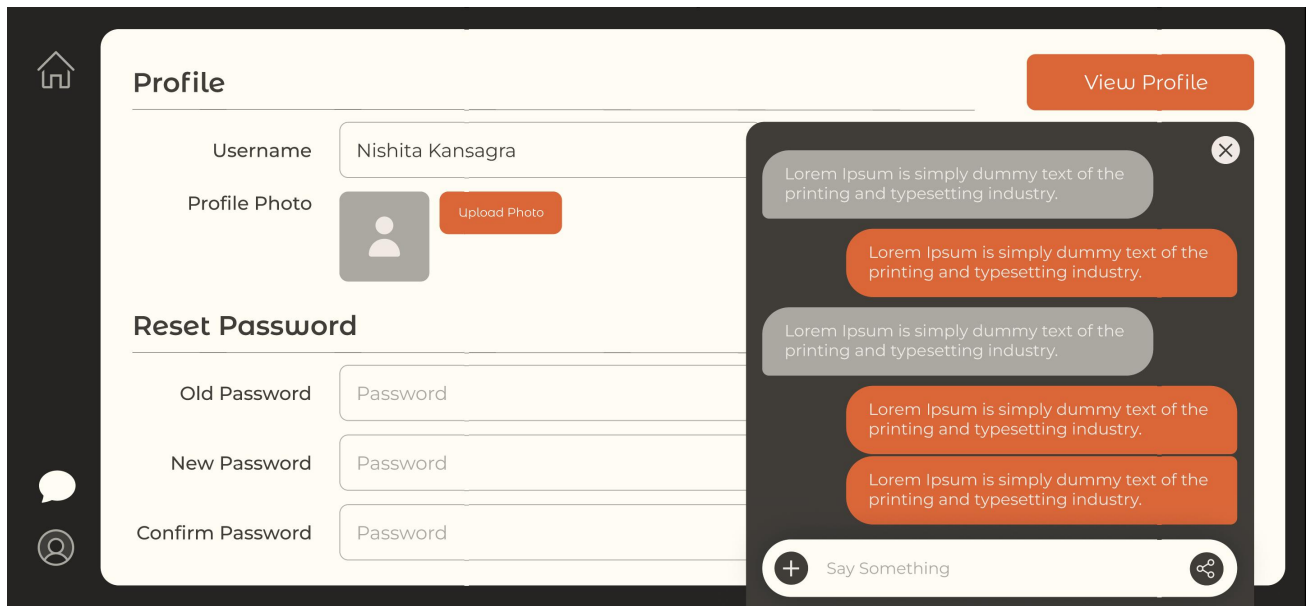




[Profile Page]



[Home Page]



[ChatBot]