Employment Demographics
For Disabled Professionals

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Abstract— **The aim of this paper is to collect and analyze the employment dataset for disabled people from the year 2009 to 2016 and predict the job percent increase or decrease for different professions and use the website to showcase the Employment Demographics for disabled people.**
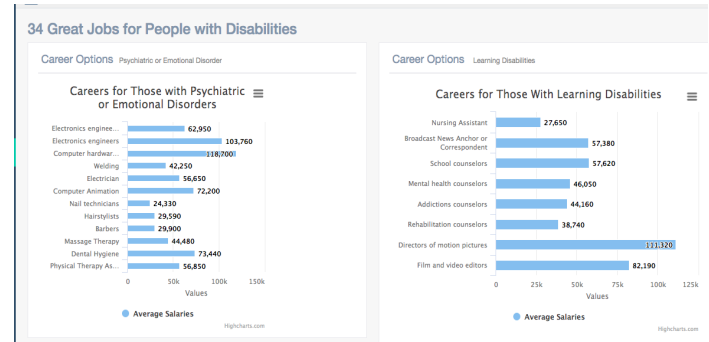
Keywords – Machine Learning, Linear Regression Algorithm, Highcharts API[4], Amazon AWS Cloud, Nodejs, Expressjs

I. Introduction

This paper provides the detail of the website that showcases disabled professional demographics in simple and straightforward manner using the power of highcharts[4]. Moreover, the website also shows the employment rate in different states and professions during past years. It also uses machine learning algorithm to predict percentage of jobs for the year 2017, by using 9 years of data from 2008-2016.
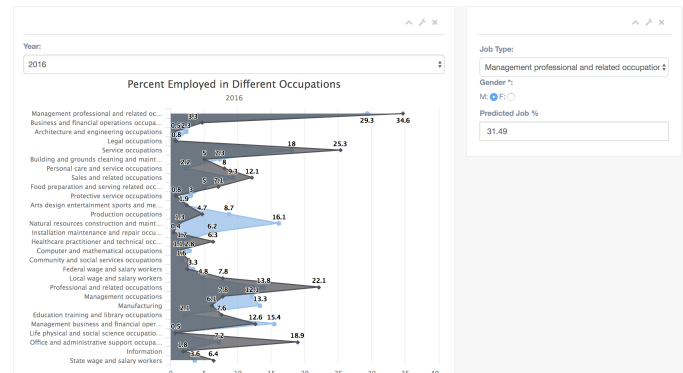
II. Data Graphs

This is an infographic website for disabled people to view different types of data. It helps them to target different professions available, average salaries offered for that profession and predicted job opportunities in different kinds of profession. This project takes the data from government website-data.gov.bls[1] and plots that using highcharts[4] in simple and understandable way.
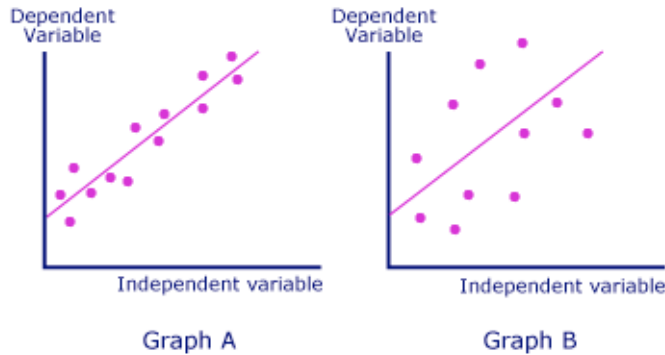
III. Job Prediction

The project also provides the job prediction facility for different professions. Project uses linear regression algorithm to predict the value on the basis of gender and professions. The linear regression model is based on 80-20 rule, i.e. model is trained with 80% of data and tested with 20%.

IV. Building the Linear Regression Model

Building the mathematical model for job prediction is real challenging job. Accurate job prediction is not possible due to continuous policy and economic changes. This project takes into account few factors like gender and different professions to predict the potential job percentage next years. In this project, we took 9 years of data for 28 different professions, both

male and female to predict employment rate for next year. The algorithm is trained using 80-20 rule, i.e. trained with 80% of data and tested with 20% of data.

Graph A   **Graph B**

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \varepsilon$$

X values for algorithm are Gender and Professions
Y (prediction) is % of jobs next year.

V. Technologies

Nodejs:

Node.js is an open-source, cross-stage JavaScript run-time condition for executing JavaScript code server-side. Truly, JavaScript was utilized principally for customer side scripting, in which contents written in JavaScript are installed in a page's HTML, to be run customer side by a JavaScript motor in the client's web program. Node.js empowers JavaScript to be utilized for server-side scripting, and runs contents server-side to create dynamic website page content before the page is sent to the client's web program. Subsequently, Node.js has turned out to be one of the foundational components of the "JavaScript all over" paradigm, permitting web application advancement to bring together around a solitary programming dialect, instead of depend on an alternate dialect for composing server side contents.

HTML/CSS:

Hypertext Markup Language (HTML) is the standard markup dialect for making site pages and web applications. With Cascading Style Sheets (CSS) and JavaScript it frames a set of three of foundation advancements for the World Wide Web. Web programs get HTML reports from a web server or from nearby capacity and render them into mixed media site pages. HTML portrays the structure of a website page semantically and initially included signs for the presence of the archive

Expressjs:

Express.js, or basically Express, is a web application structure for Node.js, discharged as free and open-source programming under the MIT License. It is intended for building web applications and APIs. It is in reality the standard server structure for Node.js.

RESTful APIs:

Representational State Transfer(REST) or RESTful web administrations are a method for giving interoperability between PC frameworks on the Internet. REST-agreeable Web administrations permit asking for frameworks to get to and control printed portrayals of Web assets utilizing a uniform and predefined set of stateless operations. Different types of Web administrations exist which uncover their own particular discretionary arrangements of operations, for example, WSDL and SOAP.

Python:

Python is a broadly utilized abnormal state programming dialect for universally useful programming, made by Guido van Rossum and first discharged in 1991. A translated dialect, Python has an outline reasoning that underscores code comprehensibility (strikingly utilizing whitespace space to delimit code squares instead of wavy sections or watchwords), and a sentence structure that enables software engineers to express ideas in less lines of code than may be utilized as a part of dialects, for example, C++ or Java. It gives develops that empower clear programming on both little and huge scales

JavaScript:

JavaScript, regularly shortened as JS, is an abnormal state, dynamic, pitifully wrote, model based, multi-worldview, and deciphered programming dialect. It is utilized to make pages intelligent and give online projects, including computer games. The larger part of sites utilizes it, and all advanced web programs bolster it without the requirement for modules by methods for an implicit JavaScript motor. Each of the

numerous JavaScript motors speak to an alternate execution of JavaScript, all in light of the ECMAScript determination, with a few motors not supporting the spec completely, and with numerous motors supporting extra highlights past ECMA.
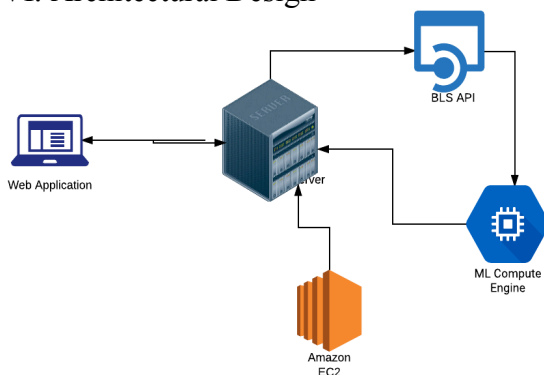
Bootstrap:

Bootstrap is a free and open-source front-end web structure for planning sites and web applications. It contains HTML-and CSS-based plan layouts for typography, shapes, catches, route and other interface parts, and also discretionary JavaScript augmentations. Not at all like many web systems, it worries about front-end improvement as it were.

Amazon AWS:

Amazon Web Services (AWS) is a backup of Amazon.com that gives on-request distributed computing stages to people, organizations and governments, on a paid membership premise with a complementary plan choice accessible for a year. The innovation enables endorsers of have available to them an undeniable virtual group of PCs, accessible constantly, through the Internet. Each AWS framework additionally virtualizes its reassure I/O (console, show, and mouse), enabling AWS endorsers of interface with their AWS framework utilizing an advanced program. The program goes about as a window into the virtual PC, giving supporters a chance to sign in, design and utilize their virtual frameworks similarly as they would a genuine physical PC. They can send their AWS frameworks to give web based administrations to their own particular and their clients' advantage.

VI. Architectural Design

VII. Training and Tested Datasets

We have taken 9 years of annual data for percent employed in 28 different professions along with the genders to train the algorithm to predict the future job percent in those professions. Variance Score of our algorithm is .84 and Mean Squared error is 7.24 which means that efficiency of our algorithm is 84%. The efficiency is of algorithm would increase, if given more amount of data.

VIII. Conclusion

Finally, the project was able to predict the percent of job opportunities next year and display the data useful for disabled looking to work in different professions. The website shows the list of companies with 80, 90 and 100 % disability index along with different professions and salaries for different types of disabilities.

References

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[6]https://en.wikipedia.org/wiki/Node.js
[7]https://en.wikipedia.org/wiki/HTML
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