VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI – 590018, Karnataka

INTERNSHIP REPORT

ON

"MACHINE LEARNING ALGORITHMS FOR PREDICTING THE RISKS OF CHRONIC DISEASES-ICS "

Submitted in partial fulfilment for the award of degree(21CSI85)

BACHELOR OF ENGINEERING IN COMPUTER SCIENCE

Submitted by:

DHODDARE DDY JATHIN REDDY

1MV21CS031

Conducted at

ICsoln

SIR M VISVESVARAYYA INSTITUTE OF TECHNOLOGY

Department of CSE

Accredited by NBA, New Delhi

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Krishnadevaraya Nagar, Hunasamaranahalli, International Airport Road, Bangalore - 562157

CERTIFICATE

This is to certify that the Internship titled **"**MACHINE LEARNING ALGORITHMS FOR PREDICTING THE RISKS OF CHRONIC DISEASES-ICS**"** carried out by **Mr.DHODDAREDDY JATHIN REDDY,** a bonafide student of Sir M Visvesvarayya Institute of Technology, in partial fulfillment for the award of **Bachelor of Engineering**, in CSE **BRANCH** under Visvesvaraya Technological University,Belagavi, during the year 2022-2023. It is certified that all corrections/suggestions indicated have been incorporated in the report.

The project report has been approved as it satisfies the academic requirements in respect of Internship prescribed for the course Internship / Professional Practice (21CSI85)

Signature of Guide **Signature of HOD** **Signature of Principal**

External Viva:

Name of the Examiner Signature with Date

1)_____

_____

2)_____

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D E C L A R A T I O N

I, **DHODDAREDDY JATHIN REDDY**, first year student of CSE Branch, - 560 082, declare that the Internship has been successfully completed, in **ICsoln** . This report is submitted in partial fulfillment of the requirements for award of Bachelor Degree in Branch name, during the academic year 2022-2023.

Date :16-11-2022 :

Place : BANGLORE

USN :1MV21CS031

NAME : DHODDAREDDY JATHIN REDDY

A C K N O W L E D G E M E N T

This Internship is a result of accumulated guidance, direction and support of several important persons. We take this opportunity to express our gratitude to all who have helped us to complete the Internship.

We express our sincere thanks to our Principal, for providing usadequate facilities to undertake this Internship.

We would like to thank our Head of Dept – branch code, for providing us an opportunity to carry out Internship and for his valuable guidance and support.

We would like to thank our (Lab assistant name) Software Services for guiding us during the period of internship.

We express our deep and profound gratitude to our guide, Guide name, Assistant/Associate Prof, for her keen interest and encouragement at every step in completing the Internship.

We would like to thank all the faculty members of our department for the support extended during the course of Internship.

We would like to thank the non-teaching members of our dept, for helping us during the Internship.

Last but not the least, we would like to thank our parents and friends without whose constant help, the completion of Internship would have not been possible.

DHODDAREDDY
JATHIN REDDY
1MV21CS031

ABSTRACT

In the field of biomedical and healthcare communities the accurate prediction plays the major role to find out the risk of the disease in the patient . The prediction gives the benefits of early disease detection. However the analysis accuracy as the relationship with the condition of the medical data, thus the poor condition of the medical data leads to less accuracy of prediction. Here we use a certain machine learning algorithm to state the rate of disease. Prediction process is done using the dataset provided online from certain hospitals, the entire dataset will be preprocessed and the missing values will be reconstructed. Compared to several types of prediction algorithms, the RNN algorithm gives the highest accuracy of prediction around 77.6% with a convergence speed.

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CHAPTER 1

COMPANY PROFILE

1. COMPANY PROFILE

A Brief History of ICsoln

ICsoln, was incorporated with a goal ”To provide high quality and optimal Technological Solutions to business requirements of our clients”. Every business is a different and has a unique business model and so are the technological requirements. They understand this and hence the solutions provided to these requirements are different as well. They focus on clients requirements and provide them with tailor made technological solutions.They also understand that Reach of their Product to its targeted market or the automation of the existing process into e-client and simple process are the key features that our clients desire from Technological Solution they are looking for and these are the features that we focus on while designing the solutions for their clients.

Sarvamoola Software Services. is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Sarvamoola Software Services. specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements.

ICsoln, strive to be the front runner in creativity and innovation in software development through their well-researched expertise and establish it as an out of the box software development company in Bangalore, India. As a software development company, they translate this software development expertise into value for their customers through their professional solutions.

They understand that the best desired output can be achieved only by understanding the clients demand better. ICsoln work with their clients and help them todefiine their exact solution requirement. Sometimes even they wonder that they have completely redefined their solution or new application requirement during the brainstorming session, and here they position themselves as an IT solutions consulting group comprising of high caliber consultants.

They believe that Technology when used properly can help any business to scale and achieve new heights of success. It helps Improve its efficiency, profitability, reliability; to put itin one sentence ” Technology helps you to Delight your Customers” and that is what we wantto achieve.

CHAPTER 2

ABOUT THE COMPANY

2. ABOUT THE COMPANY

ICsoln is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, ICsoln specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements. The organization where they have a right mix of professionals as a stakeholders to help us serve our clients with best of our capability and with at par industry standards.They have young, enthusiastic, passionate and creative Professionals to develop technologicalinnovations in the field of Mobile technologies, Web applications as well as Business and Enterprise solution. Motto of our organization is to "Collaborate with our clients to provide them with best Technological solution hence creating Good Present and Better Future for our client which will bring a cascading a positive effect in their business shape as well". Providing a Complete suite of technical solutions is not just our tag line, it is Our Vision for Our Clients and for Us, We strive hard to achieve it.

Products of ICsoln.

Android Apps

It is the process by which new applications are created for devices running the Android operating system. Applications are usually developed in Java (and/or Kotlin; or other such option) programming language using the Android software development kit (SDK), but other development environments are also available, some such as Kotlin support the exact same Android APIs (and bytecode), while others such as Go have restricted API access.

The Android software development kit includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and zutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, and Windows 7 or later. As of March 2015, the SDK is not available on Android itself, but softwaredevelopment is possible by using specialized Android applications.

Web Application

It is a client–server computer program in which the client (including the user interface and

client- side logic) runs in a web browser. Common web applications include web mail, online

retail sales, online auctions, wikis, instant messaging services and many other functions. web applications use web documents written in a standard format such as HTML and JavaScript,which are supported by a variety of web browsers. Web applications can be considered as a specifific variant of client–server software where the client software is downloaded to the client machine when visiting the relevant web page, using standard procedures such as HTTP. The Client web software updates may happen each time the web page is visited. During the session, the web browser interprets and displays the pages, and acts as the universal client for any web application. The use of web application frameworks can often reduce the number of errors in a program, both by making the code simpler, and by allowing one team to concentrate on the framework while another focuses on a specifified use case. In applications which are exposed to constant hacking attempts on the Internet, security-related problems can be caused by errors in the program.

Frameworks can also promote the use of best practices such as GET after POST. There are some who view a web application as a two-tier architecture. This can be a “smart” client that performs all the work and queries a “dumb” server, or a “dumb” client that relies on a “smart” server. The client would handle the presentation tier, the server would have the database (storage tier), and the business logic (application tier) would be on one of them or on both. While this increases the scalability of the applications and separates the display and the database, it still doesn’t allow for true specialization of layers, so most applications will outgrow this model. An emerging strategy for application software companies is to provide web access to software previously distributed as local applications. Depending on the type of application, it may require the development of an entirely different browser-based interface, or merely adapting an existing application to use different presentation technology. These programs allow the user to pay a monthly or yearly fee for use of a software application without having to install it on a local hard drive. A company which follows this strategy is known as an application service provider (ASP), and ASPs are currently receiving much attention in the software industry.

Security breaches on these kinds of applications are a major concern because it can involve both enterprise information and private customer data. Protecting these assets is an important part of any web application and there are some key operational areas that must be included in the development process. This includes processes for authentication, authorization, asset handling, input, and logging and auditing. Building security into the applications from the beginning can be more effective and less disruptive in the long run.

Web design

It is encompasses many different skills and disciplines in the production and maintenance of

websites. The different areas of web design include web graphic design; interface design; authoring, including standardized code and proprietary software; user experience design; ansearch engine optimization. The term web design is normally used to describe the design process relating to the front-end (client side) design of a website including writing mark up. Web design partially overlaps web engineering in the broader scope of web development. Web designers are expected to have an awareness of usability and if their role involves creating mark up then they are also expected to be up to date with web accessibility guidelines. Web design partially overlaps web engineering in the broader scope of web development.

Departments and services offered

ICsoln plays an essential role as an institute, the level of education, development of student's skills are based on their trainers. If you do not have a good mentor then you may lag in many things from others and that is why we at ICsoln gives you the facility of skilled employees so that you do not feel unsecured aboutthe academics. Personality development and academic status are some of those things which lie on mentor's hands. If you are trained well then you can do well in your future and knowing its importance of ICsoln always tries to give you the best.

They have a great team of skilled mentors who are always ready to direct their trainees in the best possible way they can and to ensure the skills of mentors we held many skill development programs as well so that each and every mentor can develop their own skills with the demands of the companies so that they can prepare a complete packaged trainee.

Services provided by ICsoln.

• Core Java and Advanced Java

• Web services and development

• Dot Net Framework

• Python

• Selenium Testing

• Conference / Event Management Service

• Academic Project Guidance

• On The Job Training

• Software Training

CHAPTER 3

INTRODUCTION

3. INTRODUCTION

Introduction to ML

Machine learning (ML) is a branch of artificial intelligence (AI) that enables computers to "self-learn" from training data and improve over time, without being explicitly programmed. Machine learning algorithms are able to detect patterns in data and learn from them, in order to make their own predictions.

Problem Statement

In this project we have developed a ML system called online health prediction system using data analysis technique, which is used to simplify the task of predicting chronic diseases. While developing this system we combined the structured and unstructured data collected from the healthcare field which let us to assess the risk of disease before it effects.

CHAPTER 4

SYSTEM ANALYSIS

4. SYSTEM ANALYSIS

1. Existing System

Although the current system is manual and file based one. We realize that the system we are going to build that must give the solutions for wastage of time and space which affects the efficiency of daily activities performed at the hospital. Everyone is a patient for sometime's and we all want good medical care. Assume that the doctors are medical experts and there exists good research behind every decision. But to predict the diseases before the person get affected by the disease. The doctor's needs in-depth research beyond the scope of a physician's work

2. Proposed System

In this project we have developed a ML system called online health prediction system using data analysis technique, which is used to simplify the task of predicting chronic diseases. While developing this system we combined the structured and unstructured data collected from the healthcare field which let us to assess the risk of disease before it effects.

3. Objective of the System

The advantage of the proposed system is the use of both structured and unstructured data from real life for data set preparation, which lacks in many of the existing approaches. In this paper, the performance of the proposed model is compared with other algorithms such as Naïve Bayes, decision tree, and logistic regression algorithms. The results show that the proposed system provides an accuracy of 95% that is higher than that of the other two algorithms. It is highly believed that the proposed system can reduce the risk of chronic diseases by diagnosing them earlier and also reduces the cost for diagnosis, treatment, and doctor consultation.

CHAPTER 5

REQUIREMENT ANALYSIS

5. REQUIREMENT ANALYSIS

Hardware Requirement Specification

Pentium 200-MHz computer with a minimum of 64 MB of RAM (128 MB of RAM recommended).

Software Requirement Specification

- Linux 7.1 or Windows xp/7/8/10 or any operating system
- Any IDE(VS Code recommended)

CHAPTER 6

DESIGN ANALYSIS

6. DESIGN & ANALYSIS

Techniques are often applicable for selected datasets to diagnose specific disease with a limited set of attributes. In this paper, chronic diseases are predicted using an augmented artificial neural network based approach. The accuracy of the proposed model is improved using the particle swarm optimization (PSO) feature selection algorithm. This is shown to eliminate irrelevant features and assign weights to the most contributing features. Our proposed approach performs predictions more effectively and efficiently than other state-of-the-art models.
up to two datasets for each chronic disease are further used to apply our proposed model on different attributes. Results showed that our proposed approach outperformed other models.
optimizing essential features can be beneficial for medical purposes to reduce patients' data attributes.
The classification performance is found to depend significantly on the data features used for outcome prediction. The unstructured data comprises patient's disease symptoms and the information about the interrogation with doctors in text format. The unstructured data is an added advantage of the prediction task to get a more accurate results.

CHAPTER 7

IMPLEMENTATION

7. IMPLEMENTATION

Implementation is the stage where the theoretical design is turned into a working system. The most crucial stage in achieving a new successful system and in giving confidence on the new system for the users that it will work efficiently and effectively.

The system can be implemented only after thorough testing is done and if it is found to work according to the specification. It involves careful planning, investigation of the current system and it constraints on implementation, design of methods to achieve the change over and an evaluation of change over methods a part from planning.

Two major tasks of preparing the implementation are education and training of the users and testing of the system. The more complex the system being implemented, the more involved will be the system analysis and design effort required just for implementation.

The implementation phase comprises of several activities. The required hardware and software acquisition is carried out. The system may require some software to be developed. For this, programs are written and tested. The user then changes over to his new fully tested system and the old system is discontinued.

TESTING

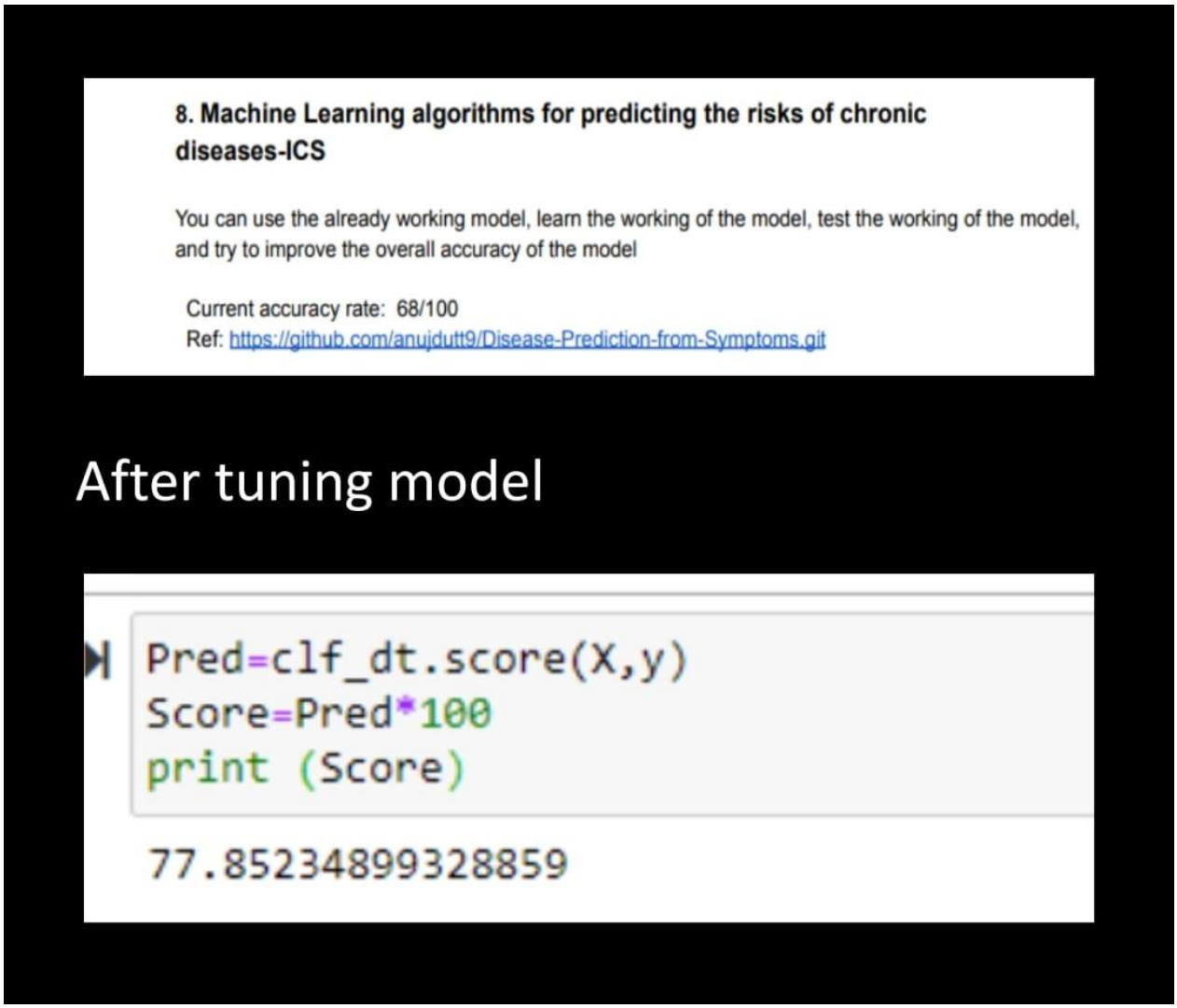
The testing phase is an important part of software development. It is the Information zed system will help in automate process of finding errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied. Software testing is carried out in three steps:

1. The first includes unit testing, where in each module is tested to provide its correctness, validity and also determine any missing operations and to verify whether theobjectives have been met. Errors are noted down and corrected immediately.
2. Unit testing is the important and major part of the project. So errors are rectified easily in particular module and program clarity is increased. In this project entire system is divided into several modules and is developed individually. So unit testing is conducted to individual modules.
3. The second step includes Integration testing. It need not be the case, the software whose modules when run individually and showing perfect results, will also show perfect results when run as a whole.

CHAPTER 8

SNAPSHOTS

8. SNAPSHOTS


8. Machine Learning algorithms for predicting the risks of chronic diseases-ICS
You can use the already working model, learn the working of the model, test the working of the model, and try to improve the overall accuracy of the model
Current accuracy rate: 68/100
Ref: https://github.com/anujdutt9/Disease-Prediction-from-Symptoms.git
After tuning model
Pred=clf_dt.score(X,y)
Score=Pred*100
print (Score)
77.85234899328859


jupyter Predicting the risks of chronic diseases-ICS Last Checkpoint: 6 hours ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3
Run
Code
from sklearn.tree import DecisionTreeClassifier
from sklearn.ensemble import RandomForestClassifier
In [75]:
Train Test Split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=101)
In [116]:
len(X_train), len(y_train)
Out[116]:
(119, 119)
In [77]:
len(X_test), len(y_test)
Out[77]:
(30, 30)
In [134]:
dt = RandomForestClassifier()
clf_dt=dt.fit(X_train,y_train)
In [137]:
Pred=clf_dt.score(X,y)
Score=Pred*100
print (Score)
77.85234899328859

CHAPTER 9

CONCLUTION

9. CONCLUTION

The package was designed in such a way that future modifications can be done easily. The following conclusions can be deduced from the development of the project:

- Automation of the entire system improves the efficiency
- It provides a friendly graphical user interface which proves to be better when compared to the existing system.
- It gives appropriate access to the authorized users depending on their permissions.
- It effectively overcomes the delay in communications.
- Updating of information becomes so easier
- System security, data security and reliability are the striking features.
- The System has adequate scope for modification in future if it is necessary.

10. REFERENCE

www.google.com
www.wikipedia.com
www.youtube.com
www.geeksforgeeks.org
github.com