AI Enabled Order Management System

INDUSTRIAL TRAINING REPORT

PURVAV PUNYANI

1805231

HIGH RADIUS
WINTER INTERNSHIP
CAPSTONE PROJECT

DURATION: January 2021 to March 2021

SCHOOL OF COMPUTER ENGINEERING
KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY
DEEMED TO BE UNIVERSITY
BHUBANESWAR,

ODISHA 2020-21

Abstract

HighRadius works on the account receivables side of the transaction process between the client and buyer. HighRadius empowers corporations to modernize receivables in order to lower Days Sales Outstanding (DSO), minimize write-offs, and reduce operating expenses. High Radius products like Receivables Cloud and Payments Cloud helps corporations by providing filtered data and proper information about the payments.

ORDER MANAGEMENT is the method by which companies track and pay supplier invoices. At its most simple, the process involves receiving an invoice from a third party, validating it as legitimate, paying the supplier, and noting the payment in company records. Smart companies look for ways to cut out two things: Firstly, Manual data entry, which is always time-consuming and can lead to lots of errors. Secondly, Double-handling and excess communication.

Thus, this project builds a user-friendly application which aims to provide accurate output results even in case of large number of clients. Complex technologies and elaborated framework have been used to build a diverse end to end application which stands out in the market due to its use of modern technologies like Artificial Intelligence, ReactJS, ML models, Java Applets etc. The application is two-fold consisting of an extensive Data Science & ML Model and Application Design and UI development model.

INTERNSHIP DETAILS

Name of the student: Purvav Punyani

Semester: 7th **Branch: CSE**

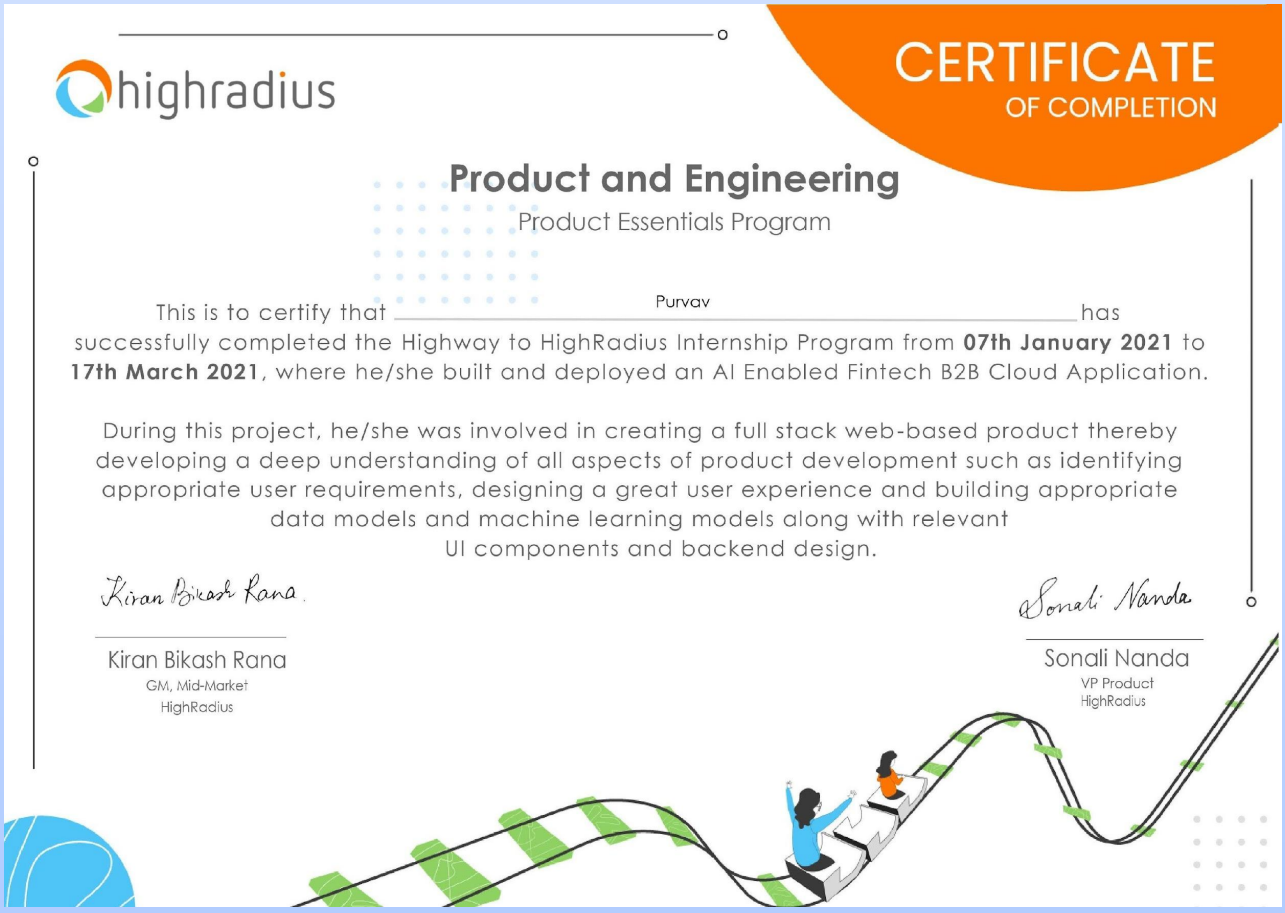
Internship Organization: HighRadius Corporation

Period of Internship: 3 Months (from January 2021 to March 2021)

No. of days absent: 0

School of Computer Engineering
KIIT Deemed to be University, Bhubaneswar
Odisha, 751024, India.

Certificate



highradius

CERTIFICATE
OF COMPLETION

Product and Engineering

Product Essentials Program

This is to certify that Purvav has successfully completed the Highway to HighRadius Internship Program from **07th January 2021** to **17th March 2021**, where he/she built and deployed an AI Enabled Fintech B2B Cloud Application.

During this project, he/she was involved in creating a full stack web-based product thereby developing a deep understanding of all aspects of product development such as identifying appropriate user requirements, designing a great user experience and building appropriate data models and machine learning models along with relevant UI components and backend design.

Kiran Bikash Rana
GM, Mid-Market
HighRadius

Sonali Nanda
VP Product
HighRadius

Week wise progress report

Week 1: Getting the Business overview along with the basic understanding of python and its commonly used DS. Data manipulation and Analysis - Using NumPy and pandas, Understanding and Implementation of Conditional Statements, Getting familiar with Data Frames. Data manipulation and Analysis - Using NumPy and pandas. Understanding basic pre-processing. Learning Data Filtering, Duplicate/Constant columns removal, Identification of target column. From the given dataset, a final test set is created where the field containing clearing date of invoices is empty, i.e., to be predicted. The remaining part of the dataset undergoes various pre-processing steps to obtain clean data before it undergoes train-test-split.

Week 2: Learning Data splitting and Understand EDA, Train-Test-Val Set. Numerical and Categorical Columns. Measure of Central Tendency (mean, median, mode). Outlier Detection and Treatment. Data Visualization and Pattern Analysis. Learning Feature Engineering which involved Date Columns Manipulation, Normalization, and Standardization - Scaling techniques. For train-set-split the entire dataset is sorted according to the date when the invoices have been documented. This is done to have a systematic arrangement of data row wise. The data is divided into 3 sections: i) Train set ii) Validation Set iii)

Temporary test set. The train set undergoes EDA (Exploratory Data Analysis) where graphical and visualization analysis of the data takes places. From performing EDA, we have an idea about the new features that can be derived/generated for feature engineering.

Week 3: Learning Feature Selection and engineering which involved Filter Method (Correlation, covariance, quasi constant, id columns, date columns). Wrapper Method (Backward Elimination and Exhaustive Feature Selection). Embedded Method (Lasso and Ridge Regression, Tree based Algorithms). Different types of Model & Flask Integration Machine learning Models (Supervised and Unsupervised). Some Basic Supervised ML algorithms and Techniques Along with Flask Integration. Next step is feature selection where we use filter methods and wrapper methods to select those columns which will be further used for modelling.

Week 4-5: The final week of phase 1 involved training our machine learning model on the historical dataset provided by the organization by implementing all machine learning algorithms and procedures learned during the training period. Only those features/columns are selected which are not constant, does not result in data leakage and are highly correlated to the target variable. Once final features are selected the x and y parameters are set for modelling and prediction

purposes. First the model is trained and tested on the validation data. Based on accuracy and prediction, the validation data again the train data is modified (fine tuning) to get better results. After the validation data gives good performance the train set is also tested on the temporary test set to check if the results were not too biased towards the validation data. Once the results come out good the final test is used to make the final prediction results.

Week 6: Introduction to JAVA Exception Handling in Java Object Oriented Programming Concepts Java File I-O Collections and JDBC. We learned about data types, flow control, exception handling and concepts like OOPs, Java file I/O, and JDBC. The use of JDBC is to connect with a database server using java

Week 7: HTML, CSS, CSS Standards, responsiveness. Starting with the front end we first learned the basics of HTML and Responsiveness followed by workspace setup

Week 8: Introduction to JavaScript Math, Switch, For, Events JavaScript ES6 and Arrays. In JavaScript, we mainly learned about the functionalities of ES6. This is what we mainly did in our front end part.

Week 9: Implementing Servlet React Overview Understanding the Folder Structure Introduction to Components Props and States, Introduction to Lifecycle Components , Lifecycle Methods and Hooks. Core concepts of React that would help us to build our app responsive and user friendly. Concepts like HOC, state, and props, redux, data flow, folder structure, etc.

Week 10: Redux concepts:- Data flow in Redux, Redux DevTools, How To work with HTTP Method. Axios concepts:- How to work with Async - Await How to handle Promises. Introduction to Material UI- V4, Debouncing and throttling. Debouncing and throttling Styling and the use of Theme in react. Styling in React CSS.

Week 11: The final week involved developing a fully functional web app using concepts of ReactJS, Redux, JDBC, SQL and integrate the web app with our ML model developed in phase 1 using Flask. The web app had functionalities like a responsive Receivables Dashboard, able to visualize Data in the form of grids perform Searching operations on the invoices. Edit data in the editable fields of the grid & download data of selected rows in predefined templates.

Conclusion

During the tenure of my training at High Radius I had the exposure towards various technical languages which helped in shaping my analytical and problem-solving skills as well as provide knowledge which could be applicable in real-time projects as well. This AI enabled full stack ORDER MANAGEMENT application can finds its application in various multinationals dealing with clients and projects in large numbers. The use of optimized and modern techniques like AI makes the application precise, fast and efficient. This product is solely designed and build for the Account Receivables department to handle invoices more efficiently.

References

1. https://highradius.com/
2. https://www.tutorialspoint.com/servlets/index.htm
3. https://www.w3schools.com/react/showreact.asp?filename=demo2_react_test
4. https://www.javatpoint.com/machine-learning
5. https://www.javascripttutorial.net/
6. https://openliberty.io/guides/rest-client-reactjs.html

M a c h i n e Learning

With Churn Prediction Project-
Internshala Training

TRAINING REPORT

PURVAV
PUNYANI

1805231

DURATION: 1st July 20 to 24th August 20

Abstract

The machine learning field, which can be briefly defined as enabling computers make successful predictions using past experiences, has exhibited an impressive development recently with the help of the rapid increase in the storage capacity and processing power of computers. Together with many other disciplines, machine learning methods have been widely employed in bioinformatics. The difficulties and cost of biological analyses have led to the development of sophisticated machine learning approaches for this application area. In this chapter, we first review the fundamental concepts of machine learning such as feature assessment, unsupervised versus supervised learning and types of classification. Then, we point out the main issues of designing machine learning experiments and their performance evaluation. Finally, we introduce some supervised learning methods.

TRAINING DETAILS

Name of the student: Purvav Punyani

Semester: 7th **Branch: CSE**

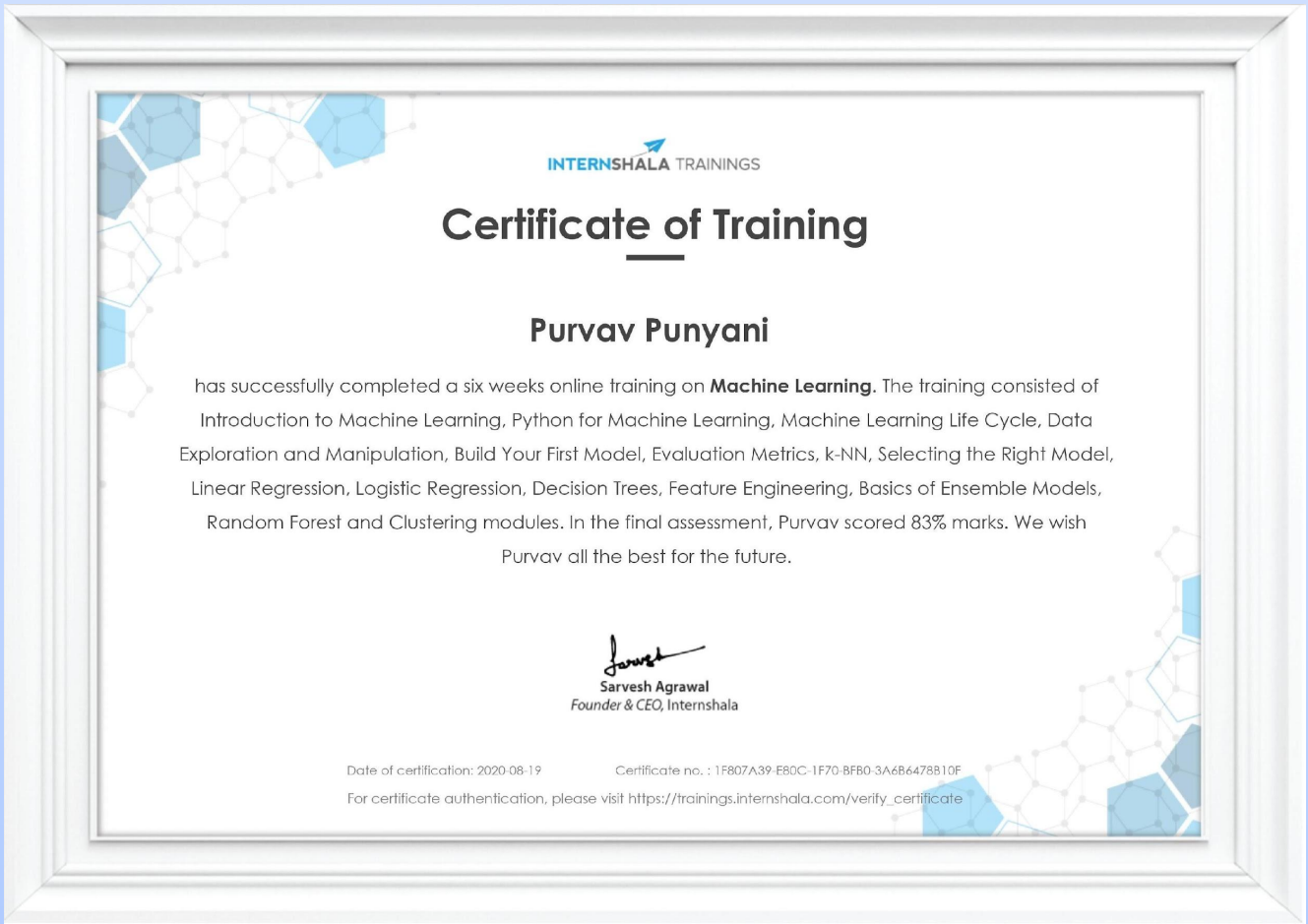
Training Organization: Internshala

Period of Training: 6 Weeks (from July 2020 to August 2020)

No. of days absent: 0

School of Computer Engineering
KIIT Deemed to be University, Bhubaneswar
Odisha, 751024, India.

Certificate



INTERNSHALA TRAININGS

Certificate of Training

Purvav Punyani

has successfully completed a six weeks online training on **Machine Learning.** The training consisted of Introduction to Machine Learning, Python for Machine Learning, Machine Learning Life Cycle, Data Exploration and Manipulation, Build Your First Model, Evaluation Metrics, k-NN, Selecting the Right Model, Linear Regression, Logistic Regression, Decision Trees, Feature Engineering, Basics of Ensemble Models, Random Forest and Clustering modules. In the final assessment, Purvav scored 83% marks. We wish Purvav all the best for the future.

Sarvesh Agrawal
Founder & CEO, Internshala

Date of certification: 2020-08-19 Certificate no. : 1F807A39-E80C-1F70-BFB0-3A6B64788B10F

For certificate authentication, please visit https://trainings.internshala.com/verify_certificate

Week wise progress report

Week 1: Introduction to machine learning, application in real life, basic of python needed for machine learning. Setting up workspace for machine learning. Learning about numPy, Pandas and importing projects in Jupyter notebooks.

Week 2: Learning about the lifecycle of a machine learning project- Data preparation, data preparation, data wrangling(cleaning the dataset), analyzing data(Univariate Analysis, Multivariate Analysis), train the model, test the model. Learning different methods of data exploration and manipulation- Missing values, Identifying outliers, variable transformation and creation- Min Max Scaler, Log Transformation.

Week 3: Building the first model using the titanic dataset and classification model and Housing problem for Regression problem. Learning evaluation metrics for both regression and classification to

optimize and increase accuracy of the model-Accuracy Precision and Recall

		Actual	
		Positive	Negative
Predicted	Positive	True Positive	False Positive
	Negative	False Negative	True Negative

Accuracy = (TP+TN)/(TP+FP+FN+TN)

Precision = (TP)/(TP+FP)

Recall = (TP)/(TP+FN)

$$F_1 = 2 * \frac{precision * recall}{precision + recall}$$

F1 Score

Log Loss/Binary CrossEntropy

$$-(y \log(p) + (1-y) \log(1-p))$$

Categorical CrossEntropy

$$LogarithmicLoss = \frac{-1}{N} \sum_{i=1}^{N} \sum_{j=1}^{M} y_{ij} * \log(p_{ij})$$

Week 4: Learning about k-NN(k Nearest Neighbors)- regression and classification. How to read the dataset and understand the requirement and deciding the right model to choose for building the model. Learning the concept of linear regression along the formula and the implementation in the Housing Problem in Chennai dataset.

Learning the concept of Logistic Regression(Classification) and implementation on Titanic dataset.

Week 5: Introduction to Decision Trees and Random Forest algorithms for machine learning, implementation of Decision Trees on a school grading system. Introduction to Feature Engineering to create more variables and check their impact on the model to help increase accuracy of the model, introduction to concepts of overfitting and underfitting of the model.

Week 6: Introduction to basic of ensemble models along with the implementation of Random Forest on the Titanic Database. Introduction to unsupervised learning models and basic concepts of Clustering. Implementation of K-means on a news articles. Final Test including all the concepts learnt in the past 6 weeks along with the final project of Churn Prediction.

Conclusion

During the tenure of my training at at this online portal, I had the opportunity to learn the basic concepts of Python needed in the Machine Leaning along with multiple algorithms and methods to manipulate data, increase efficiency on real life datasets.

References

1. https://trainings.internshala.com/
2. https://www.javatpoint.com/machine-learning
3. https://www.analyticsvidhya.com

IMAGE TRAINING, TESTING AND SCRAPPING

INDUSTRIAL TRAINING REPORT

PURVAV PUNYANI

1805231

GRROOM INTERNSHIP

DURATION: January 2021 to March 2021

Abstract

YOLO is an algorithm that uses neural networks to provide real-time object detection. This algorithm is popular because of its speed and accuracy. It has been used in various applications to detect traffic signals, people, parking meters, and animals. YOLO algorithm employs convolutional neural networks (CNN) to detect objects in real-time. As the name suggests, the algorithm requires only a single forward propagation through a neural network to detect objects. This means that prediction in the entire image is done in a single algorithm run. The CNN is used to predict various class probabilities and bounding boxes simultaneously.

Grroom is a startup by IIT Bombay and it is World's first AI Based Styling Application. Grroom recognizes Apparels and what goes best with what. With excess training and testing of images using Yolo. They have furthered partnered with multiple known clothing and fashion brands and helps the user find the best for their wardrobe.

INTERNSHIP DETAILS

Name of the student: Purvav Punyani

Semester: 7th **Branch: CSE**

Internship Organization: Grroom

Period of Internship: 1 Months (from January 2021 to February 2021)

No. of days absent: 0

School of Computer Engineering
KIIT Deemed to be University, Bhubaneswar
Odisha, 751024, India.

Certificate

GRROOM

Date : 21/02/2021

To Whomsoever It May Concern

Internship Letter

This is to certify that Mr. Purvav Punyani has been associated with Grroom as a Machine Learning Intern from 21/01/2021 to 21/02/2021. His attendance was 100% during the internship.

During his tenure with us for the above period, we found him to be sincere, reliable, efficient, open to challenges and a team player. His character and conduct were good.

Sincerely,
Venkatesh Pugalia
Founder

+91 9004661666
WWW.GRROOM.IN
FASHION@GRROOM.IN

219, ARUS CHAMBERS,
BEHIND MAHINDRA
TOWERS, WORLI, MUMBAI
400018

THANK YOU