Model on FATIGUE RISK CHAIN

Your paragraph text

Quantify Fatigue and pre-determine
Potential hazard

Team

MEMBERS

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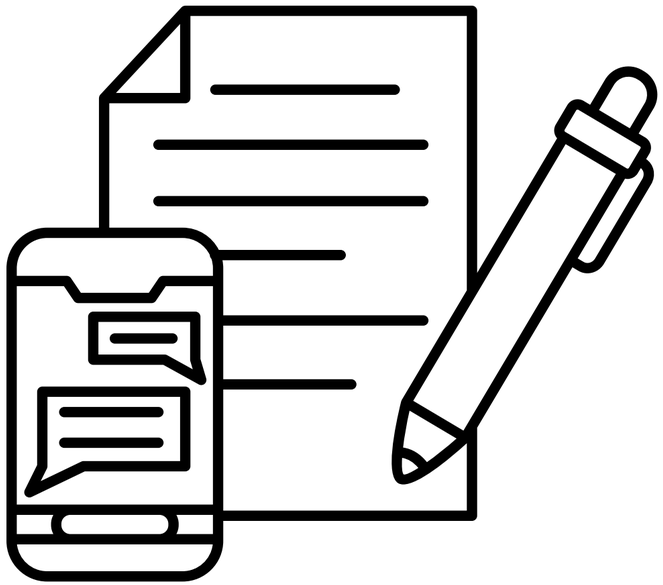
Team
DETAILS

Our Team is group of 4 members who are working together to build a ML model which pre-determines fatigue.

The responsibilities include collecting and cleaning the data, selecting and tuning the appropriate machine learning algorithms, building and testing the model, and deploying it to a production environment.

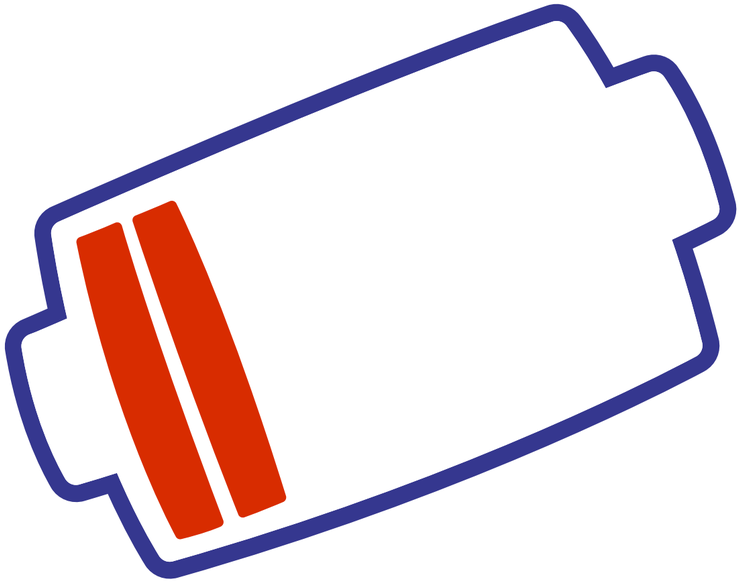
Our goal is to provide accurate predictions for customer behavior and improve customer satisfaction.

LIST OF CONTENTS



PROBLEM STATEMENT

Predictive model that can accurately identify the various factors that contribute to fatigue in different work environments and the chain of events that lead to fatigue-related incidents.



ABSTRACT

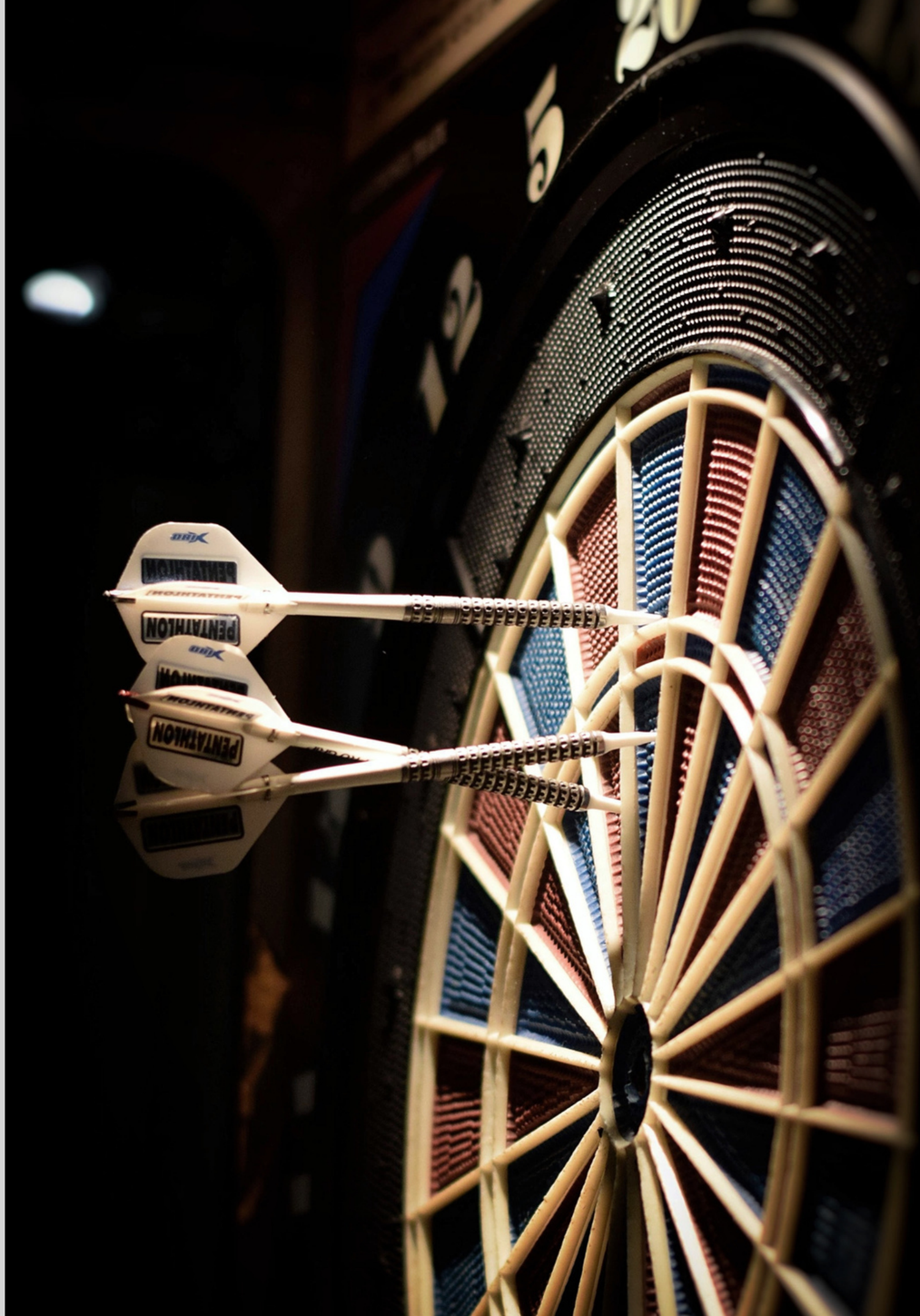
- This is a fatigue detection model that uses machine learning algorithms to identify fatigue in individuals. The model takes input in the form of vitals and uses this data to predict the likelihood of fatigue.

- The model has been trained on a large dataset collected from individuals in various contexts through smartwatches /fitbits or publically available datasets.

- The accuracy of the model can be validated through extensive testing, to show it's effectiveness .

OBJECTIVE

- To conduct comparative study along with statistical anomaly using heart rate, sleep pattern and other symptoms of a peron during active hours and rest hours.
- To conider enviornmental and atmospheric factors and analyse how it contributes to the fatigue cycle.
- Classify the fatigue into levels and implement scoring based on risk.(such as level 1,2,3 etc.)



Required SKILLS

1. Knowledge in Ml./DL concepts (multi-variate regression and classification).
2. Pytorch and scikit learn
3. Data Analytical tools such as Numpy,pandas.
4. Big Data Handling.
5. Data analytics and statistics.

Motivation

- The motivation behind this project is to understand and mitigate the risks associated with fatigue , which is created by workload,schedules, thus affecting sleep patterns and healthy functioning of the body .

- A fatigue risk model would be useful for organizations in ensuring the safety and well-being of their employees.

- Fatigue contributes heavily towards workplace accidents, injuries and hazardous situations and quantifying it can give insight into a person's stress levels and help pre-determine a potential hazard and can prevent it from happening.

PROJECT PHASES

1 - Data collection and cleaning

choosing/creating a apt Data Set

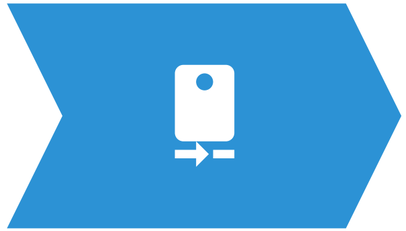
2 - Data Analysis

perform statistical analysis and deviation from ideal value mean deviation .

3 - Multivariate Regression

apply ML algorithm and create a prediction model.

4-Model Development



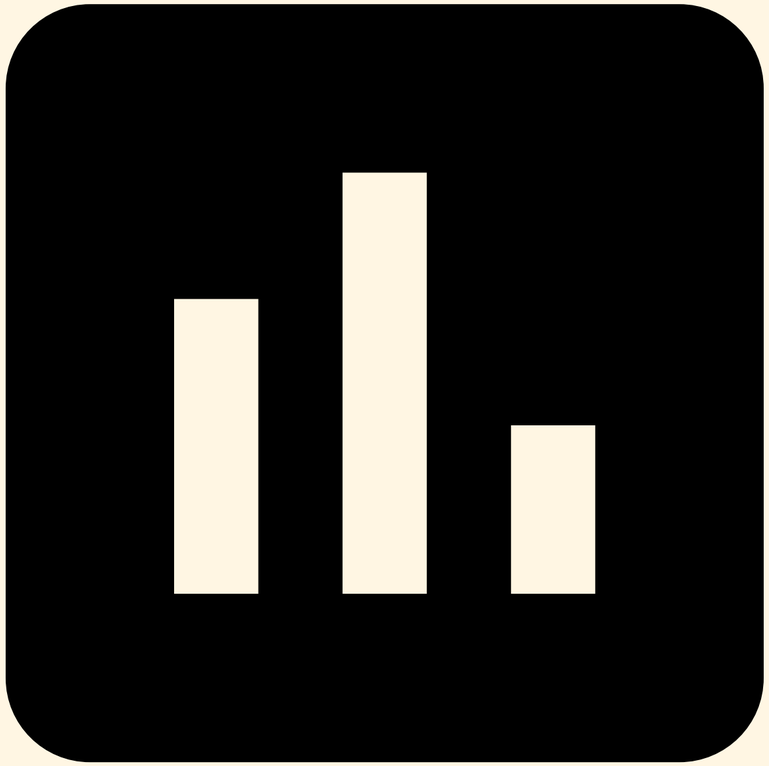
Build logical model that fits data set correctly.

5 - Evaluation and Optimisation

Optimize it by reducing noise and evaluate with test data set.

NEED FOR THIS MODEL

Quantifying fatigue gives an insight into a person's stress levels and will help to pre-determine a potential hazard and generate risk profile for each person.



Fatigue-related incidents are often the result of a sequence of events where failures at lower levels accumulate until a fatigue-related incident occurs.

Source: Wong et al. 2019, adapted from Dawson and McCulloch 2005.

LITERATURE REVIEW

METHODOLOGY

- Mean standard deviation
- calculation of a threshold parameter
- comparative study
- statistical anomaly

SCOPE FOR RESEARCH

Collecting and recording data based on external factors such as temparature and other enviornmental factors needs to be explored more and incorporated to develop a well oriented model.

THANK YOU