HARINI R S

FINAL PROJECT

INSURANCE INSURANCE COST PREDICTION

AGENDA

PROBLEM STATEMENT

- Insurance companies often need accurate methods to predict insurance charges for potential clients based on various factors such as age, gender, BMI, smoking status, and region.
- Traditional methods may not capture complex patterns in the data, leading to suboptimal predictions.
- Therefore, there's a need for a predictive modeling approach that can accurately estimate insurance charges using modern machine learning techniques.

PROPOSED SYSTEM/SOLUTION

- The proposed system aims to develop an artificial neural network (ANN) model to predict insurance charges based on relevant features provided by insurance applicants.
- By leveraging the power of ANNs, the system can learn complex relationships between input features and insurance charges, leading to more accurate predictions.

SYSTEM DEVELOPMENT APPROACH

1. **Data Collection**: Obtain the insurance dataset containing information about insurance applicants and their charges.
2. **Data Preprocessing**: Perform data cleaning, handle missing values, and encode categorical variables.
3. **Model Development**: Build an ANN model using TensorFlow/Keras to predict insurance charges based on input features.
4. **Model Training:** Train the ANN model on the training data, optimizing for performance metrics such as mean squared error.
5. **Model Evaluation**: Evaluate the trained model on a separate test set to assess its performance.
6. **Model Deployment:** Deploy the trained model in a production environment for real-time predictions.

ALGOROTHMS & DEPLOYMENT

Algorithm:

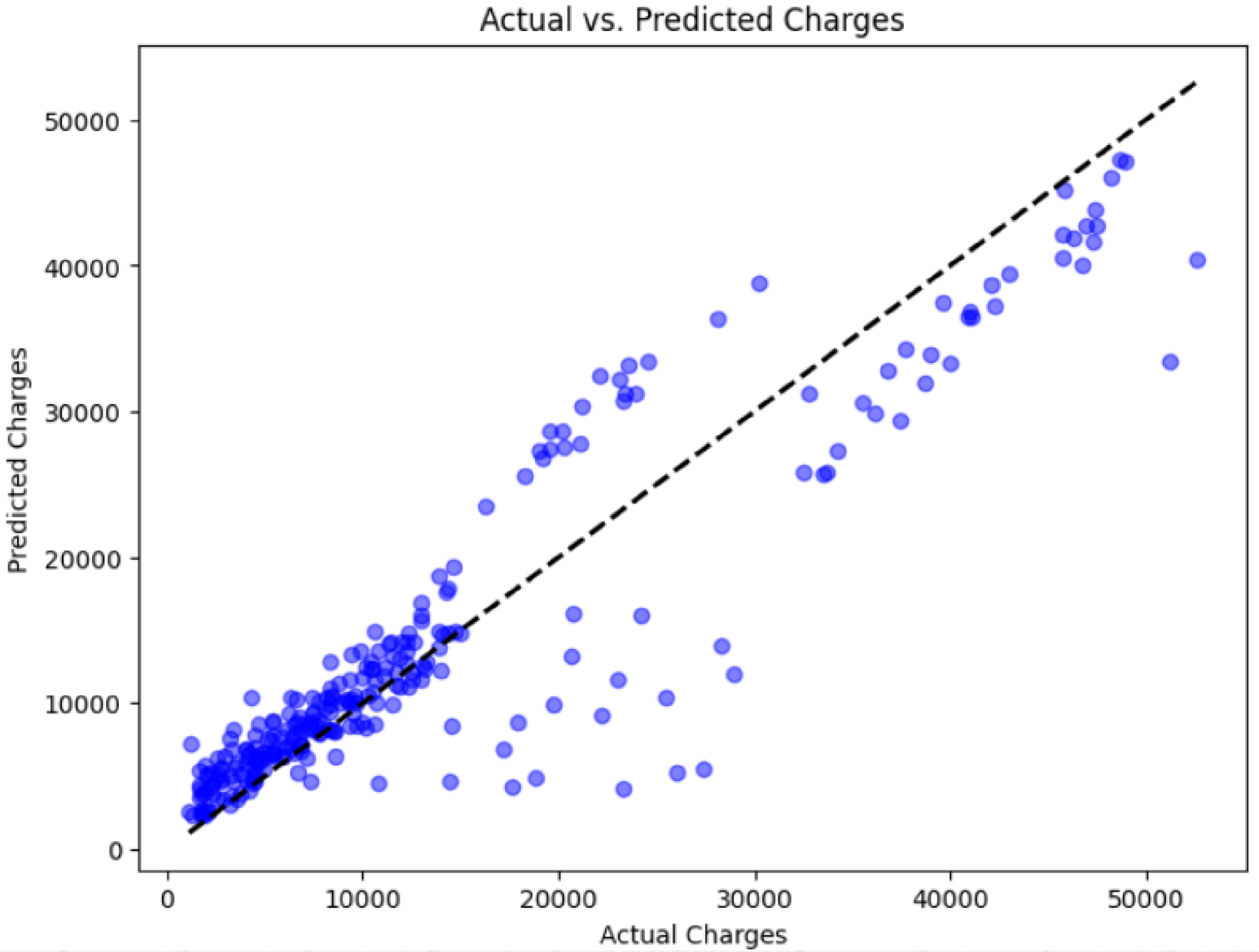
1. Build an artificial neural network (ANN) model using TensorFlow/Keras.
2. Use dense layers with appropriate activation functions for feature transformation.
3. Train the model using an optimization algorithm such as Adam and a suitable loss function (e.g., mean squared error).

Deployment:

1. Deploy the trained model using cloud services like AWS, Google Cloud, or Microsoft Azure.
2. Expose the model through an API endpoint for easy integration with other systems.
3. Monitor model performance and update as needed.

RESULTS

```
Mean Squared Error: 25039090.0
9/9 [==============================] - 0s 1ms/step
```



CONCLUSION

The developed ANN model demonstrates promising performance in predicting insurance charges based on applicant information. By leveraging modern machine learning techniques, the system can provide accurate predictions, helping insurance companies make informed decisions and improve customer satisfaction.

REFERENCES

DATASET:
https://www.kaggle.com/code/annetxu/health-insurance-cost-predicition