

# Predict Risk of Liver Complications



Prepared By Vaishali Patelia



# Agenda

- 1 Overview
- 2 Data Cleaning
- 3 Data Visualization
- 4 ANN Implementation
- 5 Conclusion

# Dataset Overview

Dataset: Cirrhosis.csv

Input: Patient features (e.g., "cholesterol", "bilirubin", "sex", "ascites").

Output: Classification of patient status (e.g., "stable" "progressive" or "critical") or prediction of survival duration.

Target variable (status) : 0=stable, 1=progressive, 2=critical

Initial Dataset Info:

```
<class 'pandas.core.frame.DataFrame'>
```

RangeIndex: 312 entries, 0 to 311

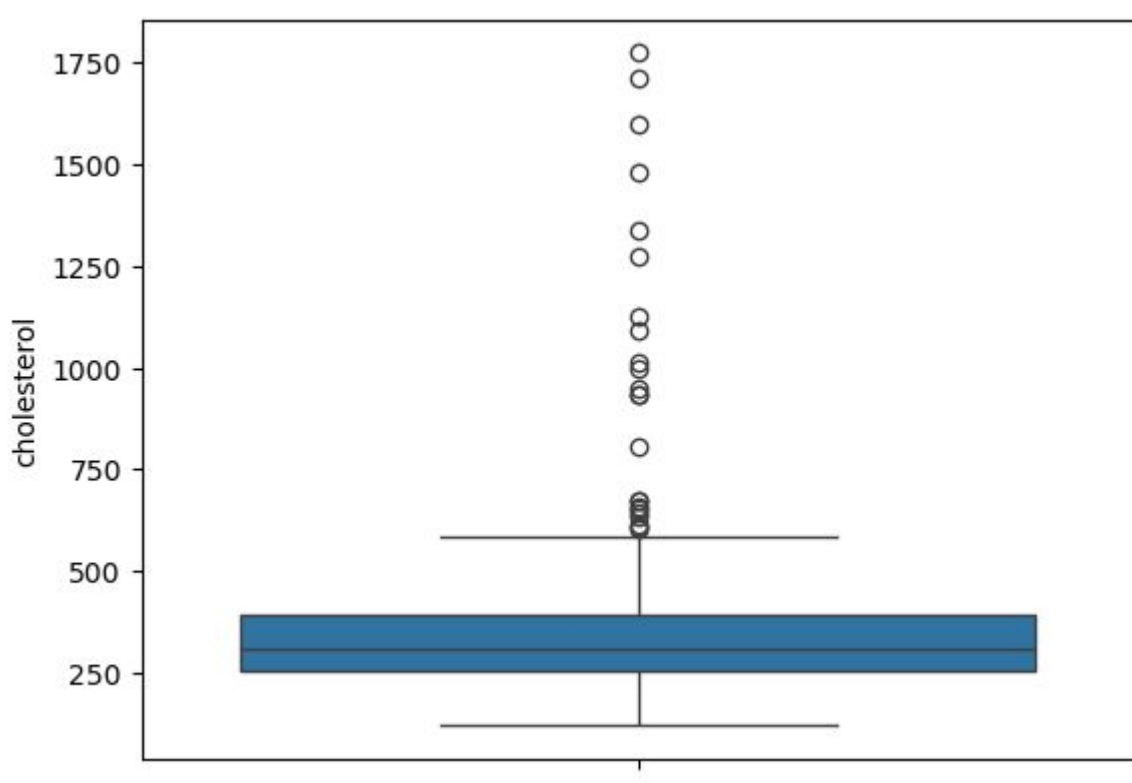
Data columns (total 20 columns):

#	Column	Non-Null	Count	Dtype
0	index	312	non-null	int64
1	duration	312	non-null	int64
2	status	312	non-null	int64
3	drug	312	non-null	int64
4	age	312	non-null	int64
5	sex	312	non-null	int64
6	ascites	312	non-null	int64
7	hepatomology	312	non-null	int64
8	spiders	312	non-null	int64
9	edema	312	non-null	float64
10	bilirubin	312	non-null	float64
11	cholesterol	284	non-null	float64
12	albumin	312	non-null	float64
13	copper	310	non-null	float64
14	phosphatase	312	non-null	float64
15	SGOT	312	non-null	float64
16	triglycerides	282	non-null	float64
17	platelets	308	non-null	float64
18	prothrombin	312	non-null	float64
19	stage	312	non-null	int64

dtypes: float64(10), int64(10)

memory usage: 48.9 KB

# Data Cleaning

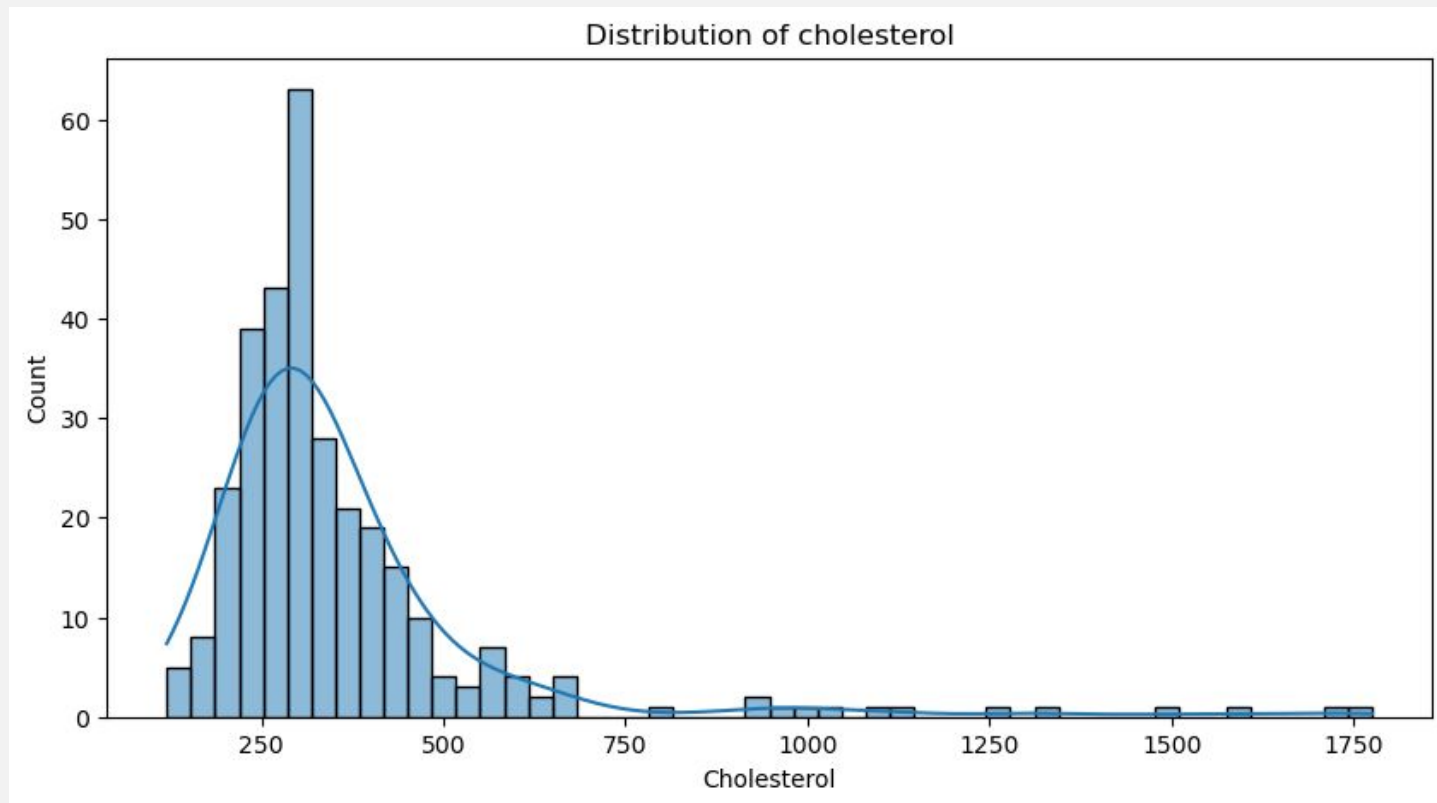


Replace null values with median

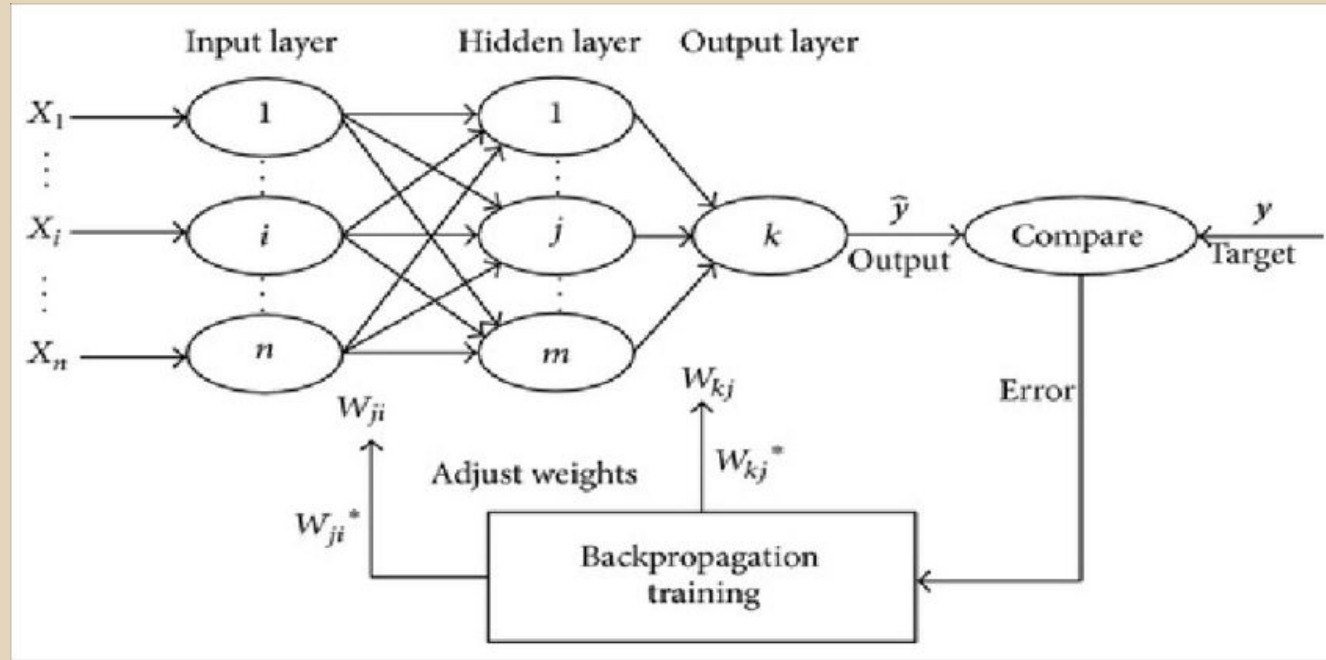
Column: cholesterol, triglicerides, copper, platelets

# Data Visualization

Distribution of cholesterol in dataset



# Artificial Neural Network

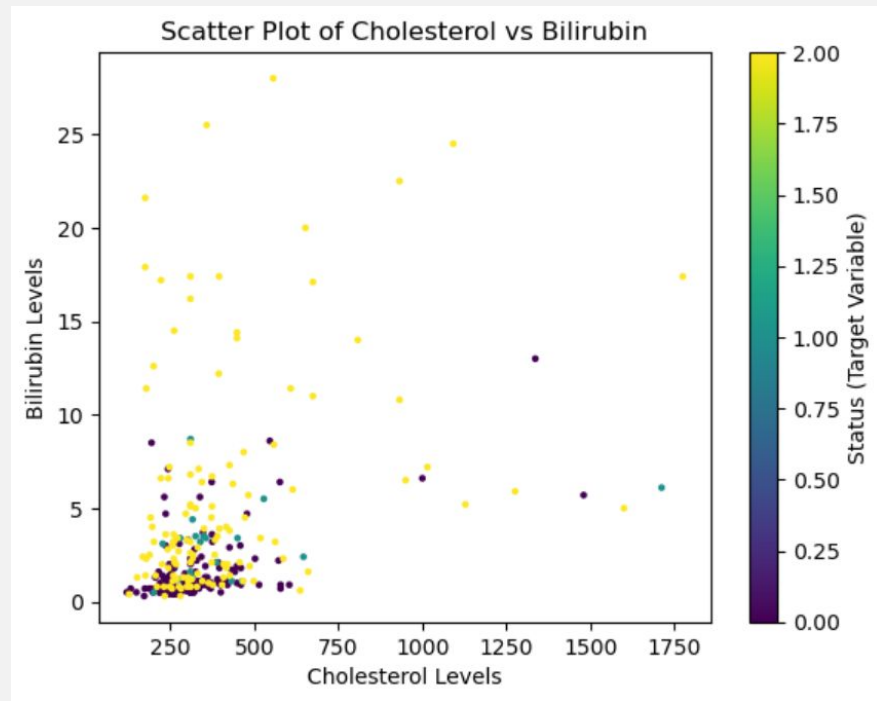
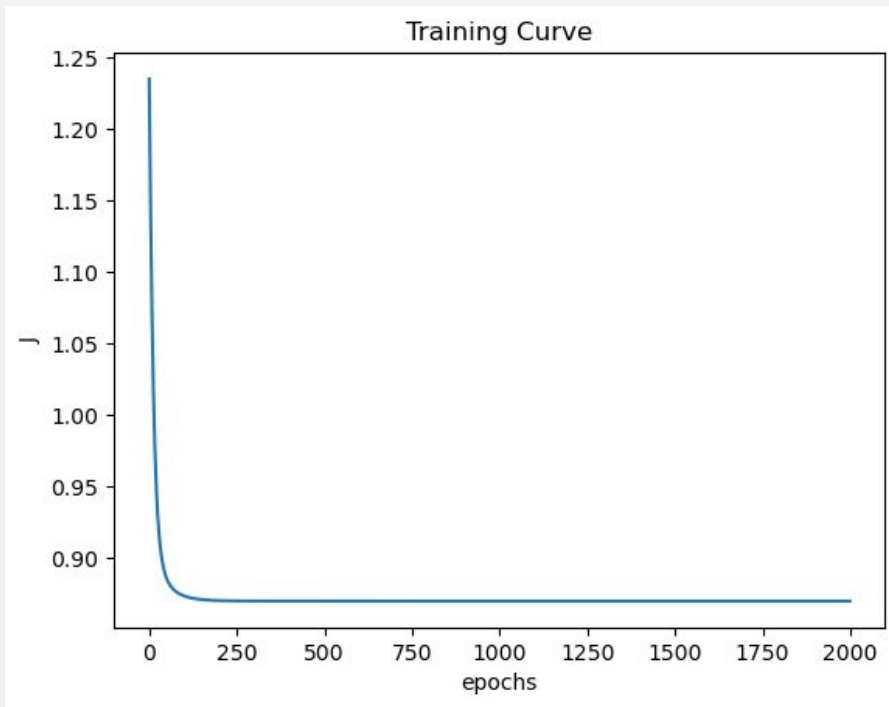


Feed forward and back propagation neural network structure.



# Feed-Forward Neural Net

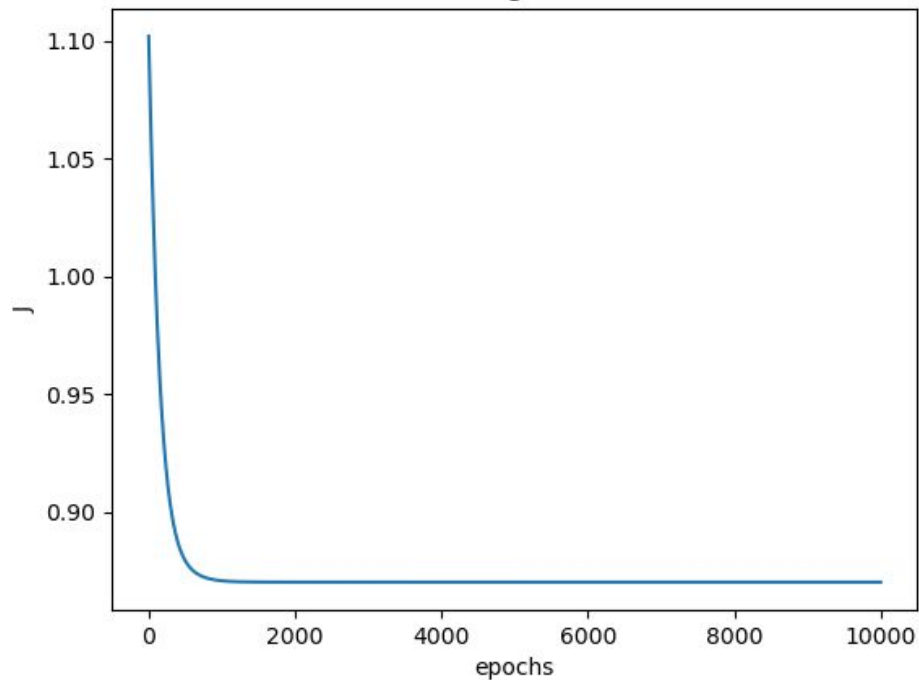
Accuracy: 0.5384



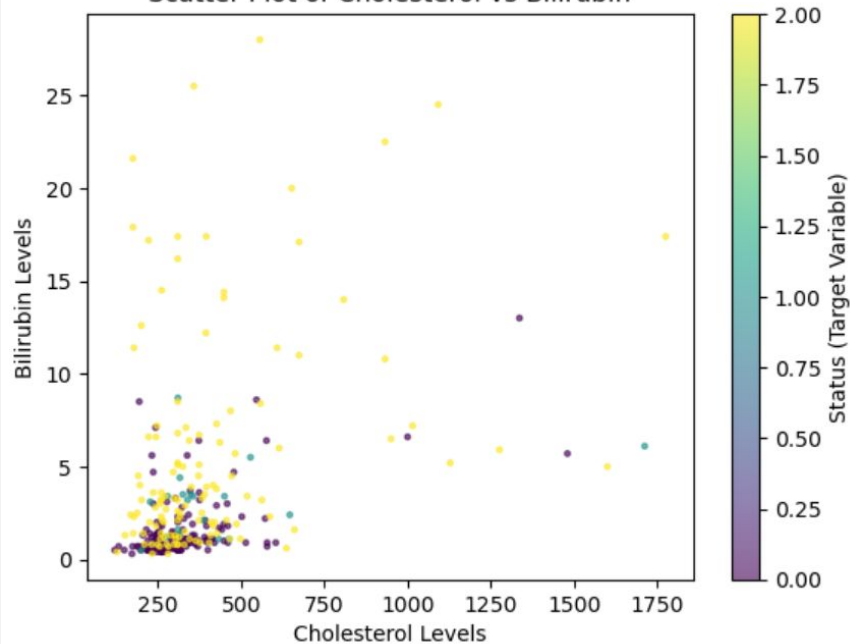
# Back Propagation

Accuracy: 0.5385

Training Curve



Scatter Plot of Cholesterol vs Bilirubin





# Applications

This predictive approach could assist clinicians in early detection and prioritization of high-risk patients, improving treatment outcomes.

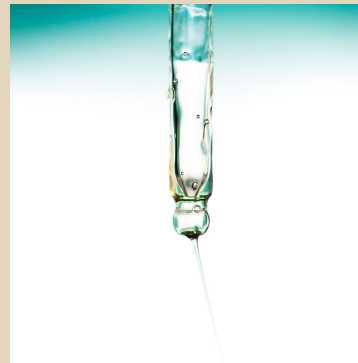
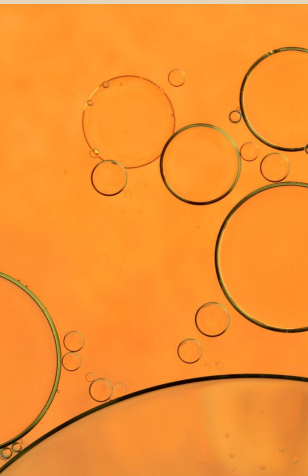
Integrating this model into healthcare systems could optimize patient management through personalized medicine.



# Conclusion

The ANN model achieved an accuracy of approximately 53.8% (as observed in the feed-forward and backpropagation evaluations).

Cholesterol levels were shown to be an important predictor when combined with other features.



# THANK YOU!

