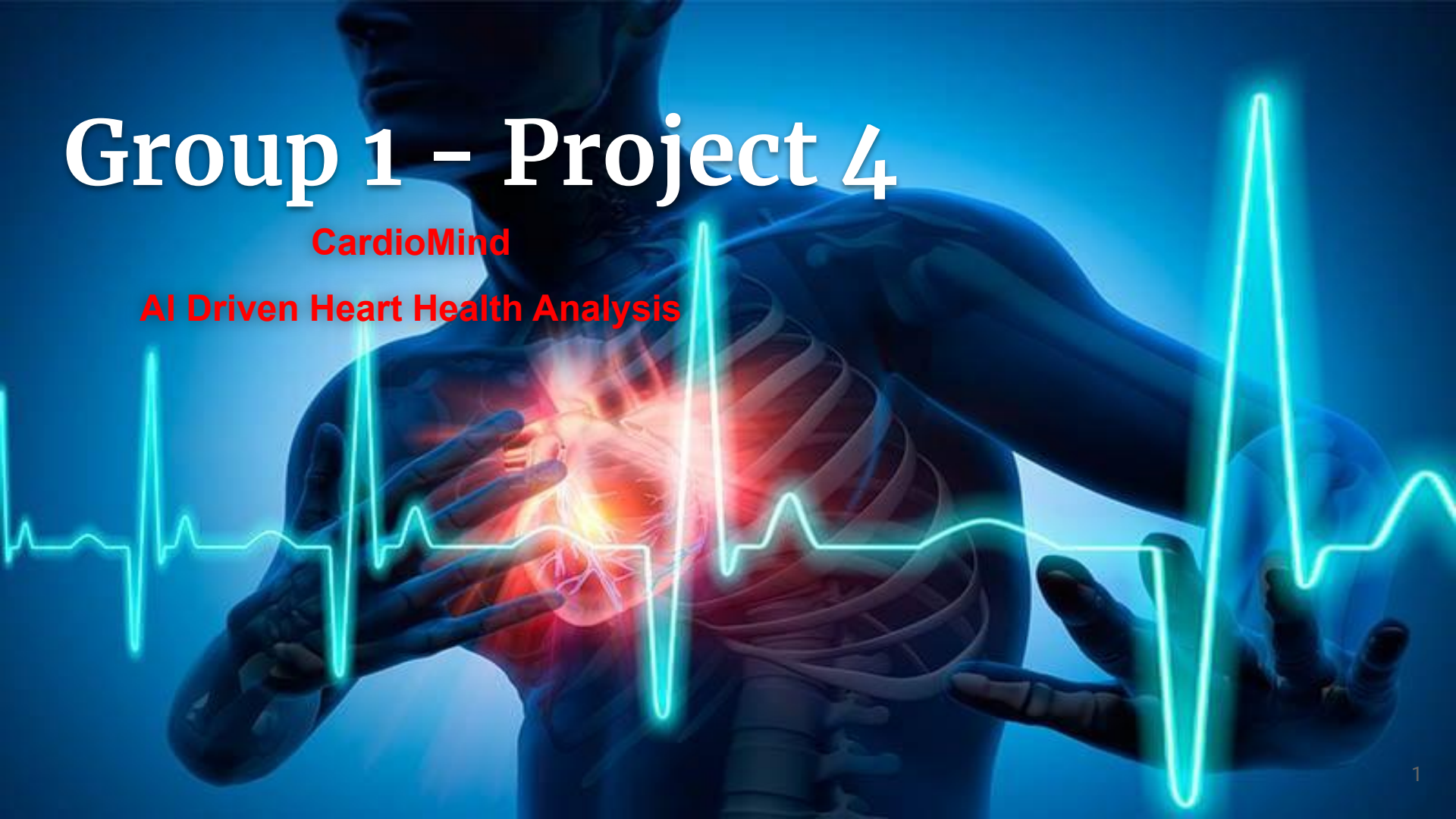


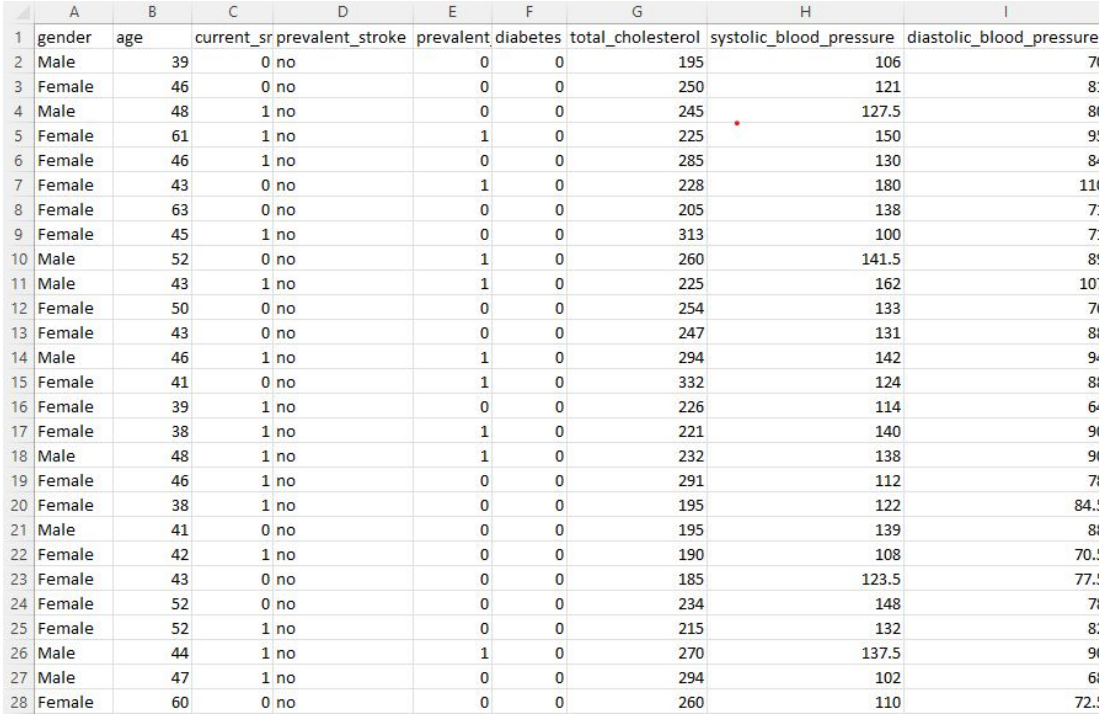
Group 1 – Project 4

CardioMind

AI Driven Heart Health Analysis

Goal

- Our Goal Take data with different health ailments, and predict whether or not person will have a heart attack.
- Using Tableau to explore the data further to get a better breakdown of how it relates to heart failure.



	A	B	C	D	E	F	G	H	I
1	gender	age	current_sr	prevalent_stroke	prevalent	diabetes	total_cholesterol	systolic_blood_pressure	diastolic_blood_pressure
2	Male	39	0	no	0	0	195	106	7
3	Female	46	0	no	0	0	250	121	8
4	Male	48	1	no	0	0	245	127.5	8
5	Female	61	1	no	1	0	225	150	9
6	Female	46	1	no	0	0	285	130	8
7	Female	43	0	no	1	0	228	180	11
8	Female	63	0	no	0	0	205	138	7
9	Female	45	1	no	0	0	313	100	7
10	Male	52	0	no	1	0	260	141.5	8
11	Male	43	1	no	1	0	225	162	10
12	Female	50	0	no	0	0	254	133	7
13	Female	43	0	no	0	0	247	131	8
14	Male	46	1	no	1	0	294	142	9
15	Female	41	0	no	1	0	332	124	8
16	Female	39	1	no	0	0	226	114	6
17	Female	38	1	no	1	0	221	140	9
18	Male	48	1	no	1	0	232	138	9
19	Female	46	1	no	0	0	291	112	7
20	Female	38	1	no	0	0	195	122	84.5
21	Male	41	0	no	0	0	195	139	8
22	Female	42	1	no	0	0	190	108	70.5
23	Female	43	0	no	0	0	185	123.5	77.5
24	Female	52	0	no	0	0	234	148	7
25	Female	52	1	no	0	0	215	132	8
26	Male	44	1	no	1	0	270	137.5	9
27	Male	47	1	no	0	0	294	102	6
28	Female	60	0	no	0	0	260	110	72.5

Learnings with:

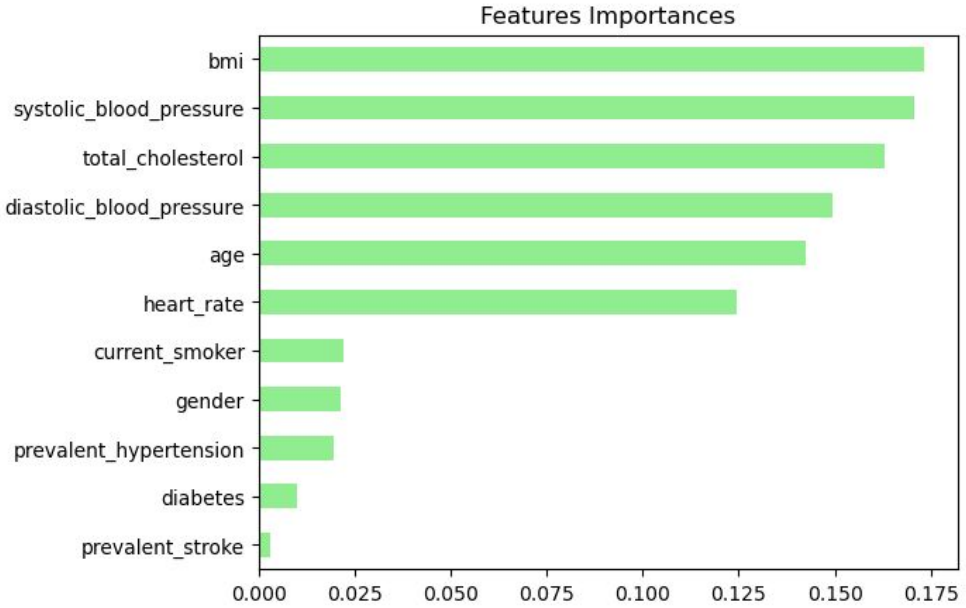
scikits learn

machine learning in Python

Accuracy Score : 0.7545541706615532

Classification Report

	precision	recall	f1-score	support
0	0.88	0.82	0.85	885
1	0.27	0.36	0.31	158
accuracy			0.75	1043
macro avg	0.57	0.59	0.58	1043
weighted avg	0.79	0.75	0.77	1043



Differences Between the models:

VS.

XGBoost:

- Works with data – it makes a series of guesses (trees) and learns from its mistakes to make better guesses.
- Focuses on correcting its previous mistakes, like taking small steps towards the right answer. It pays a lot of attention to where it went wrong before and tries to improve.
- It uses a special formula to figure out how to make better guesses each time, considering both its mistakes and the good things it did.
- Likes to keep things in check by using special rules to prevent it from making guesses that are too extreme.

Random Forests:

- Random Forests use a similar idea with lots of mini-decisions (trees). Each tree looks at a part of the data and makes its own choice. Then, all the trees vote, and the choice with the most votes becomes the final decision.
- Also like to mix things up by considering only some of the options (features) when making each mini-decision. This helps prevent any one tree from becoming too bossy.

XGBoost focuses on learning from its mistakes to make better guesses, while Random Forests gather opinions from a group of mini-decisions to make a final choice.

Learnings with:

XGBoost

Accuracy: 0.842925659472422
Classification Report:

	precision	recall	f1-score	support
0	0.86	0.97	0.91	708
1	0.43	0.13	0.20	126
accuracy			0.84	834
macro avg	0.65	0.55	0.55	834
weighted avg	0.80	0.84	0.80	834