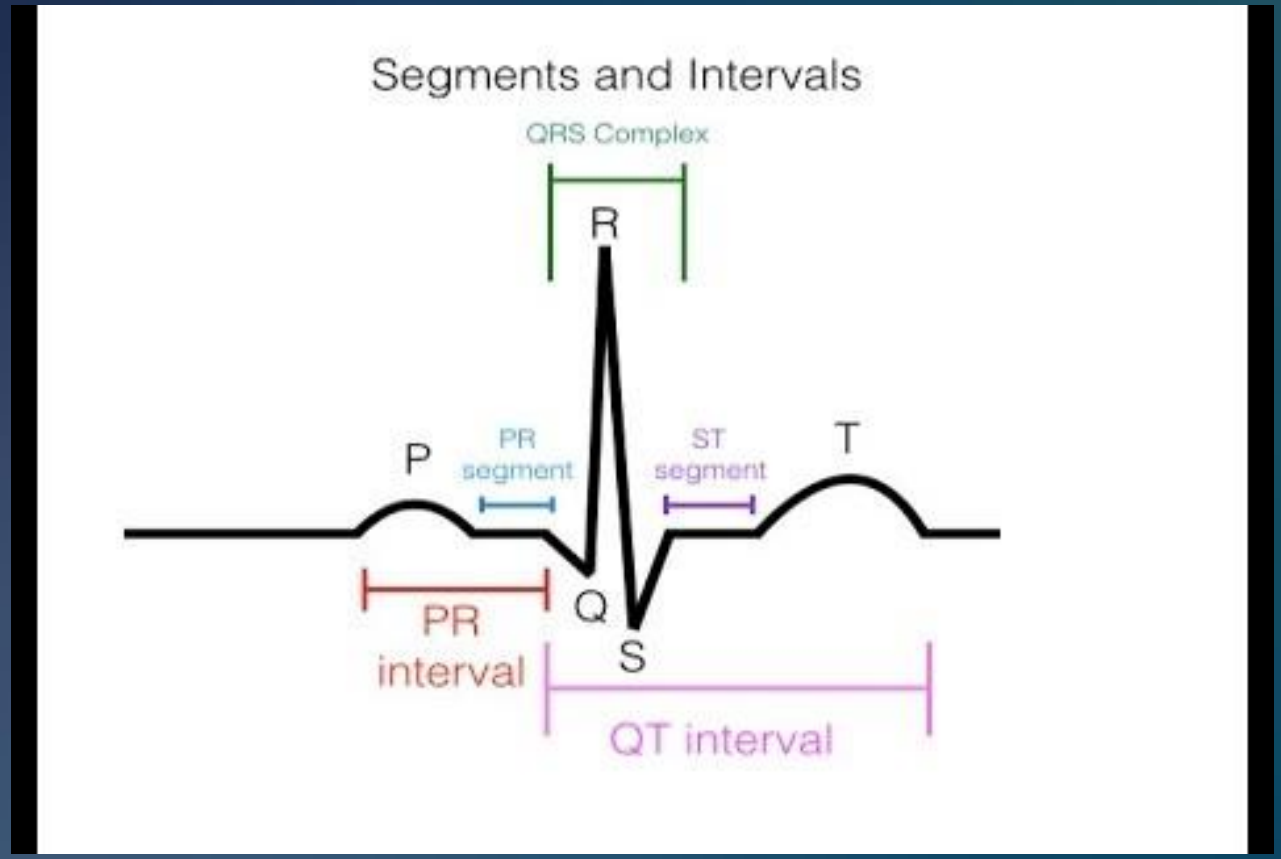
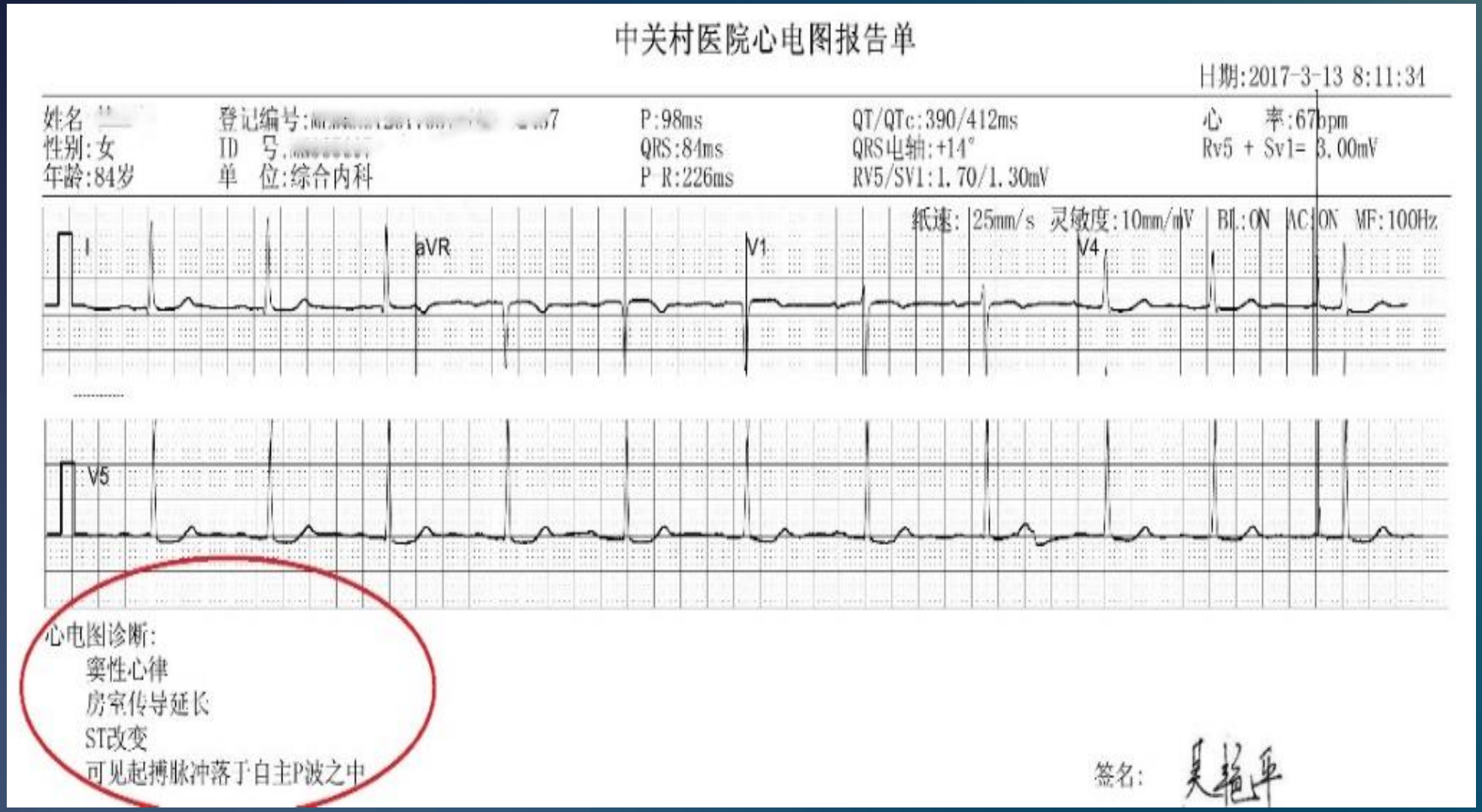
Research about ECG dataset

Chuankai_Luo

Brief introduce about ecg data

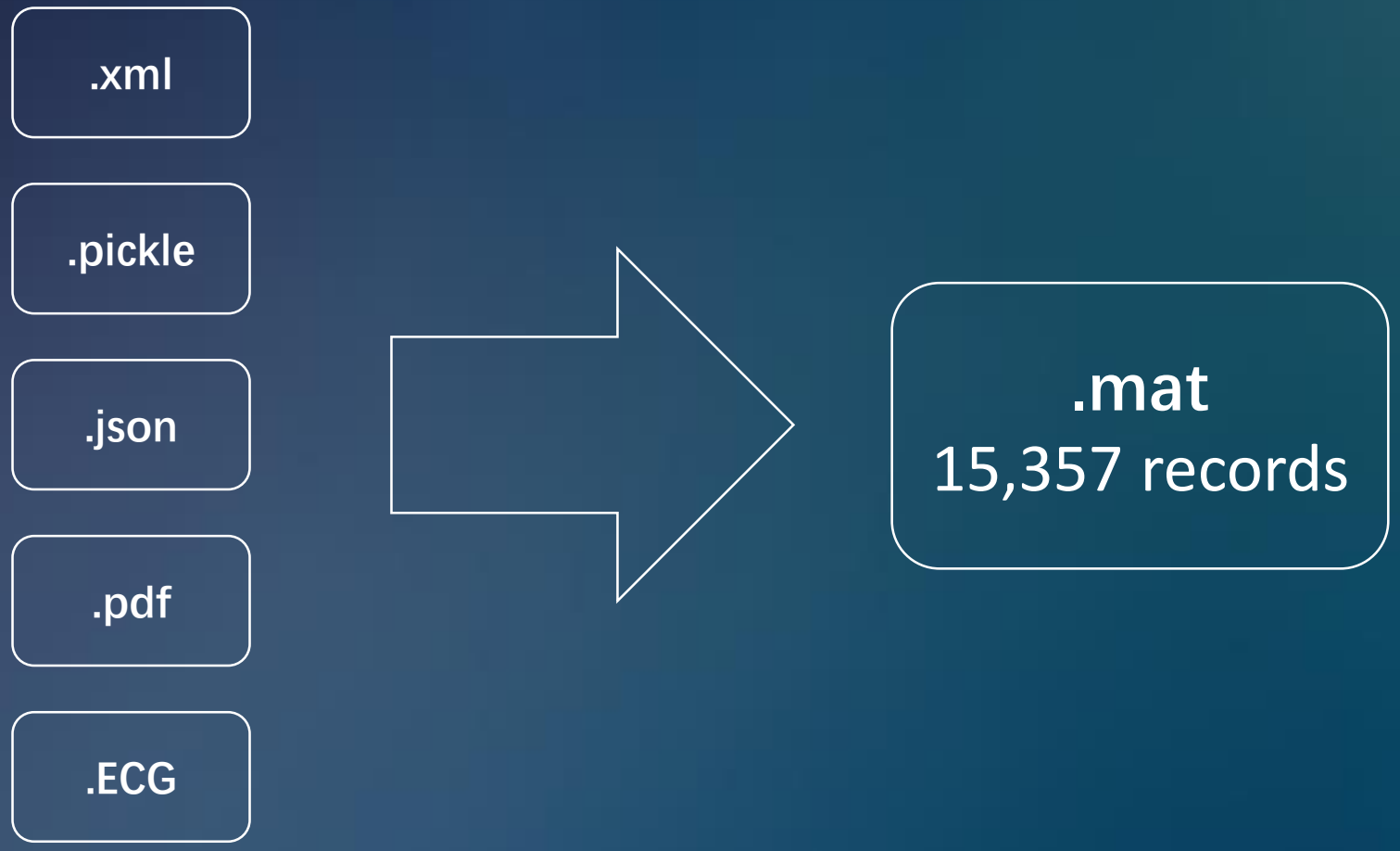


Brief introduce about ecg data



Brief introduce about ecg data

China ECG AI Contest (CEAC) 2019



Question 1

label distribution in this dataset

Question 2

Correlation between various diseases and gender and age

Question 3

Correlation between various diseases and diseases

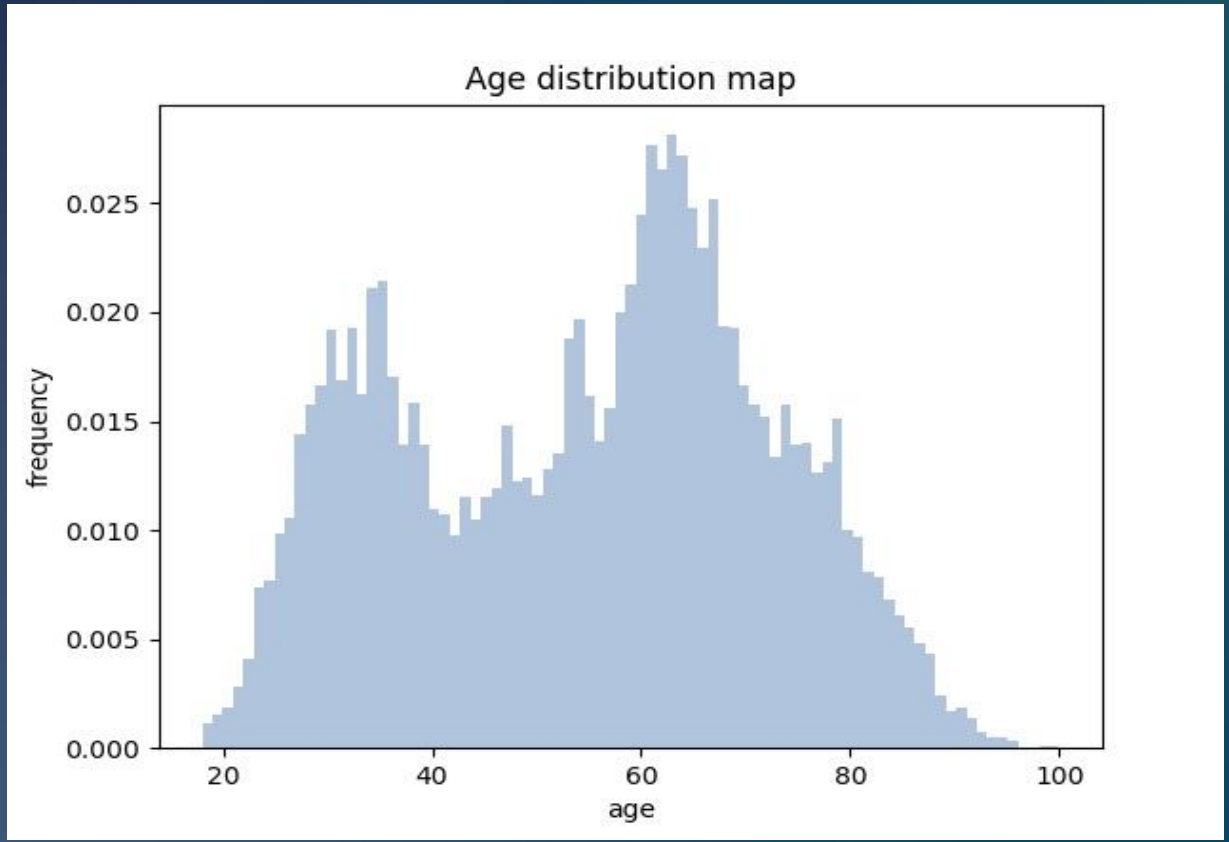
Question 4

Algorithm that suit for this dataset to make classification

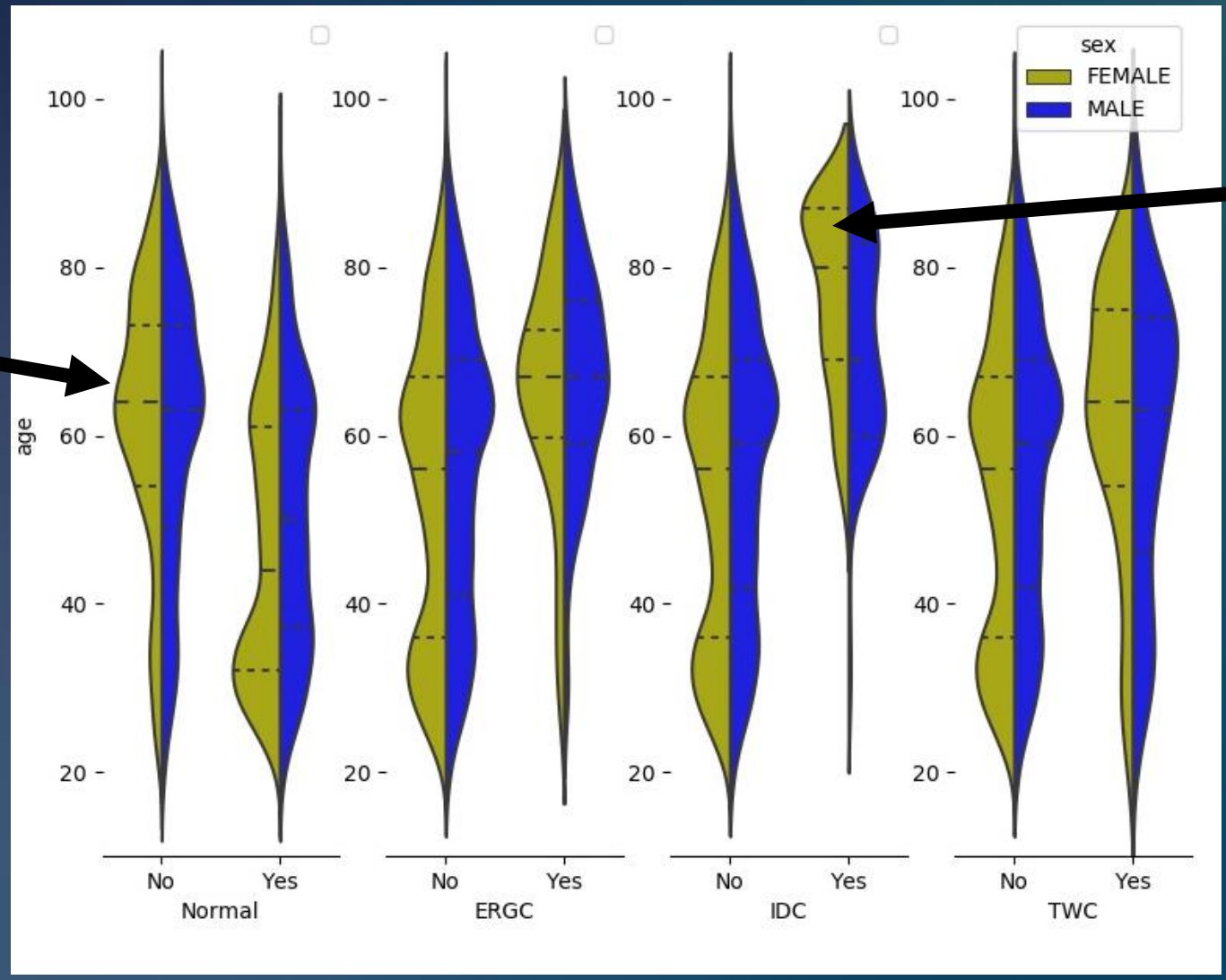
Question 1 label distribution in this dataset

Full name	abbreviation	Amount
Normal	Normal	9788
Early repolarization graphic change	ERGC	584
Indoor differential conduction	IDC	90
T wave change	TWC	5676
FirstdegreeA-Vblock	I-AVB	805
Atrial fibrillation	AFI	772
Premature atrial contraction	PAC	769
Complete right bundle branch block	CRBBB	963
Ventricular premature beat	VPB	844
Left anterior branch block	LAFB	343
Atrial flutter	AFL	163
Incomplete right bundle branch block	IRBBB	639

Question 1 label distribution in this dataset

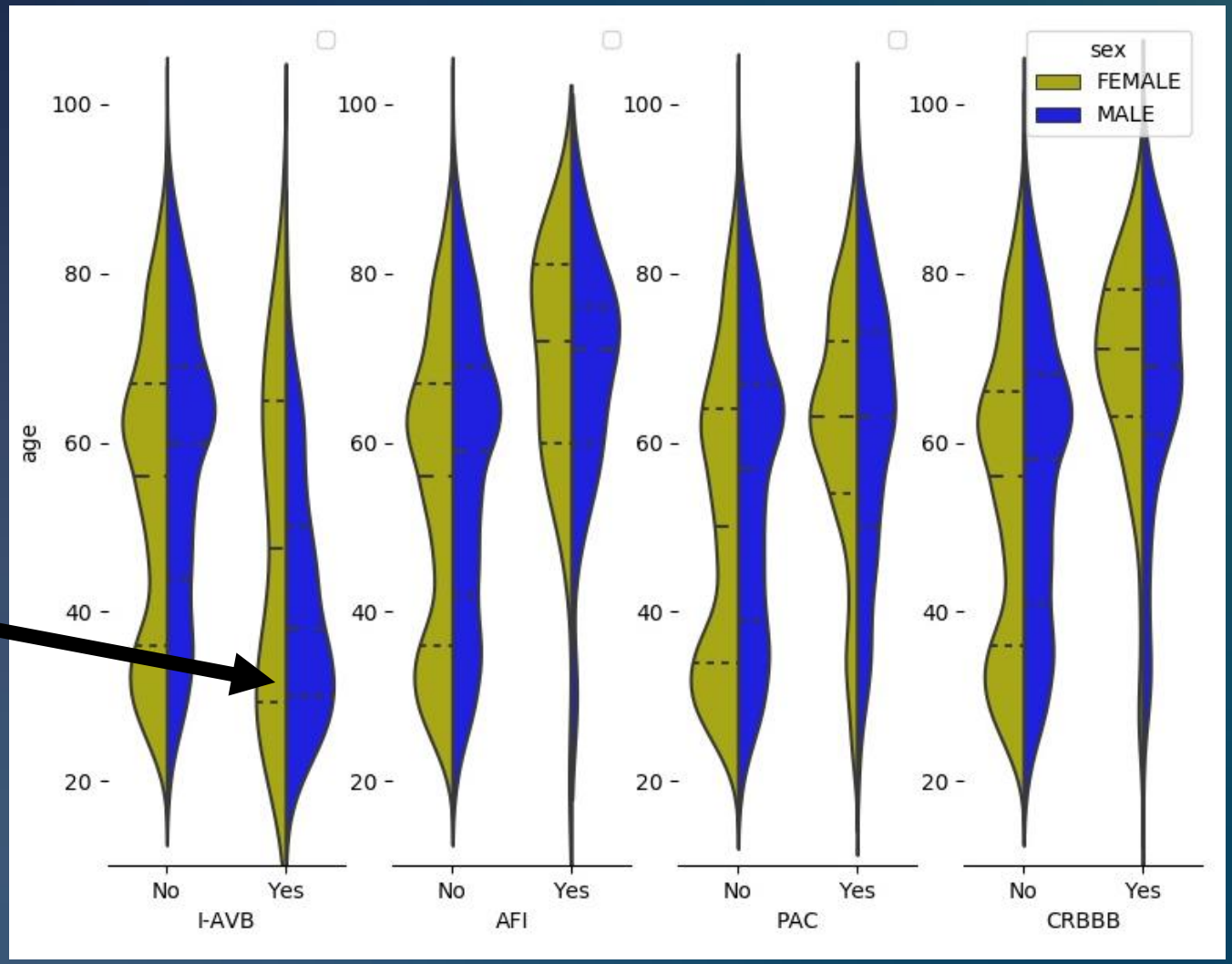


Question 2　Correlation between various diseases and gender and age



Question 2　Correlation between various diseases and gender and age

③



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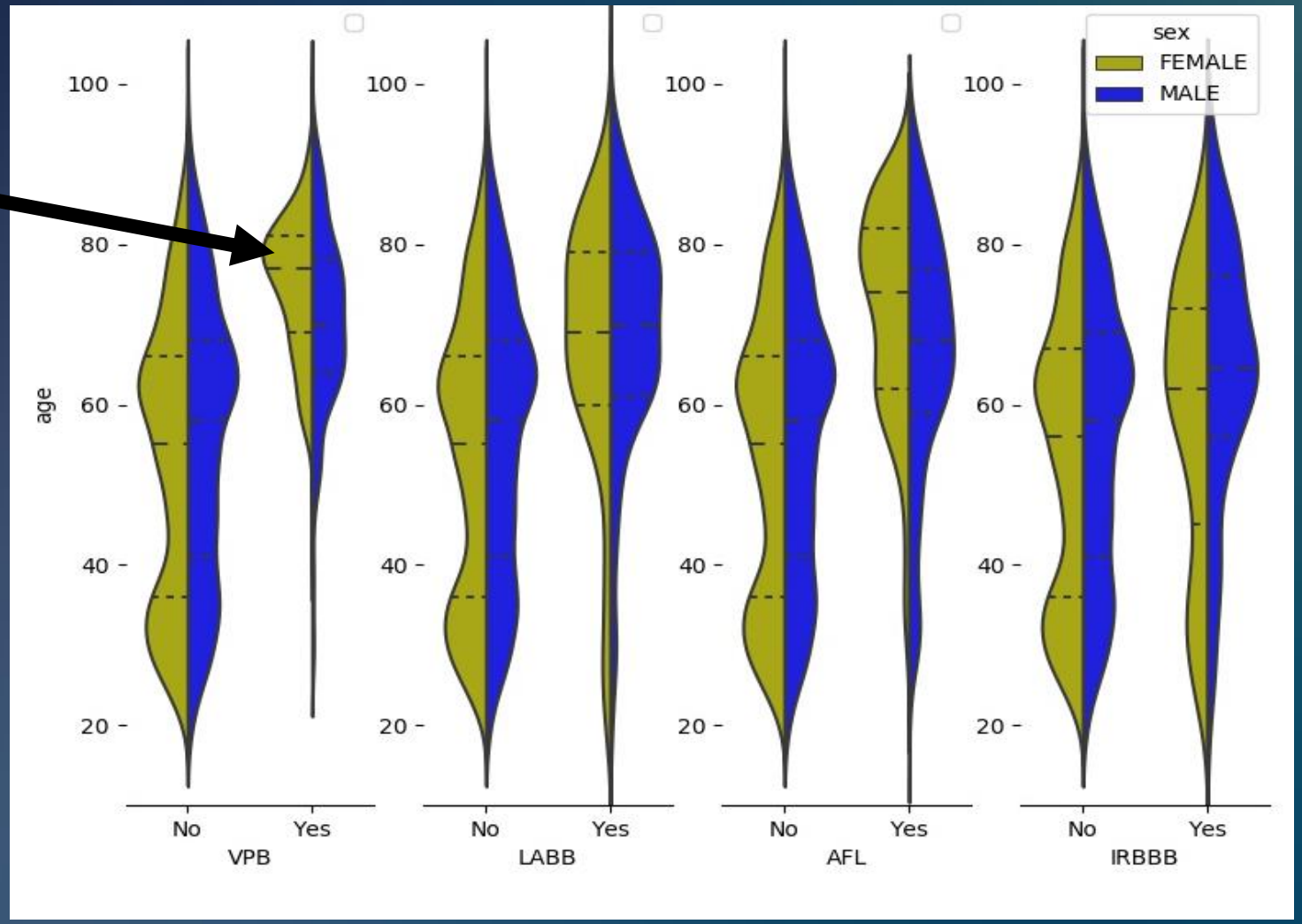
④

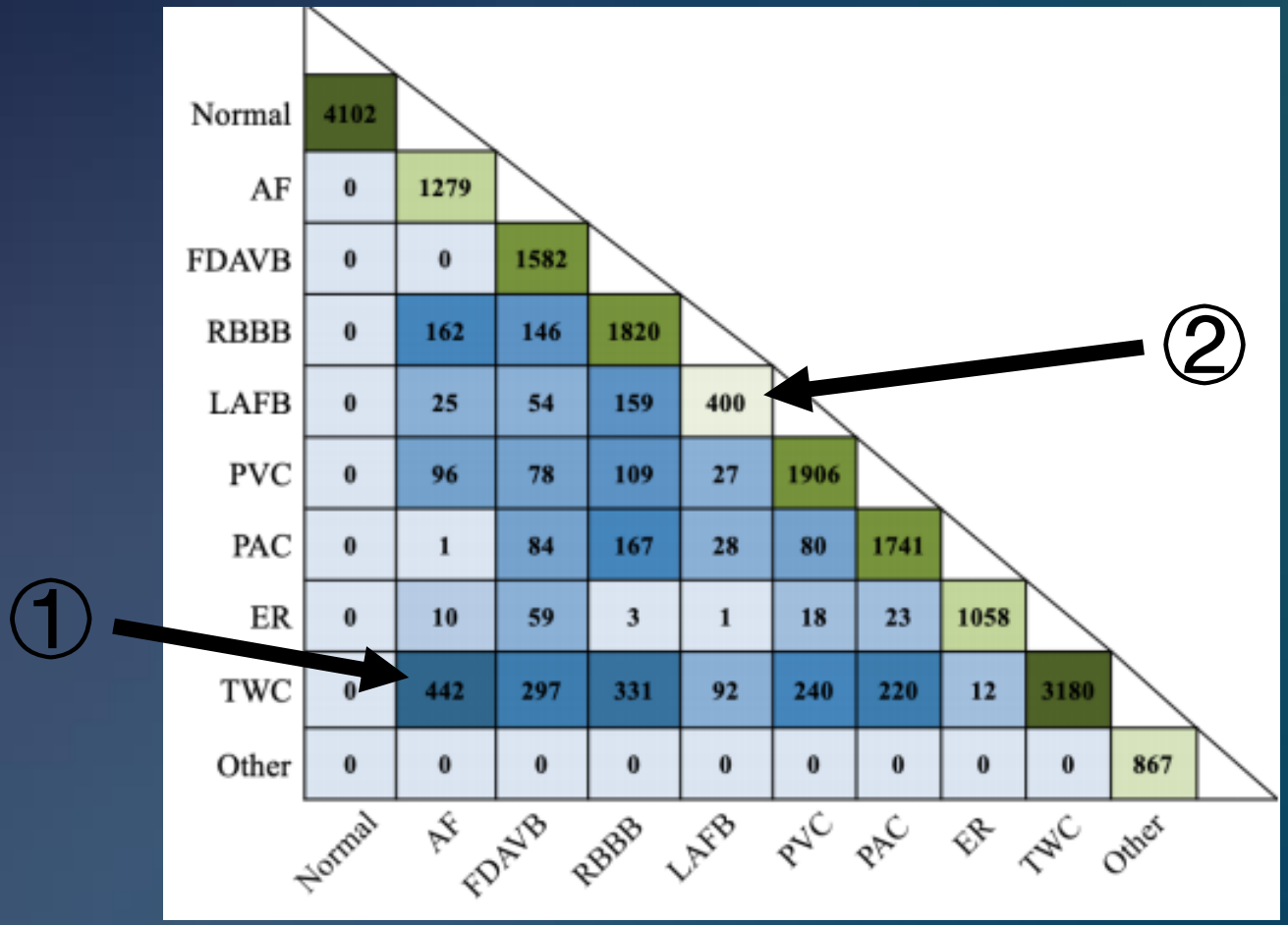


Question 3 Correlation between various diseases and diseases

	age	Normal	ERGC	IDC	TWC	I-AVB	AFI	PAC	CRBBB	VPB	LABB	AFL	IRBBB
age	1	-0.3671	0.08809	0.09346	0.06186	-0.12884	0.05298	0.23097	0.15809	0.20367	0.15112	0.16878	0.07699
Normal	-0.3671	1	-0.13357	-0.09165	-0.18374	-0.1754	-0.06798	-0.63919	-0.20714	-0.20267	-0.20226	-0.22751	-0.21231
ERGC	0.08809	-0.13357	1	0.00918	0.02586	-0.02342	0.01394	-0.02357	0.02724	0.00894	-0.00095	0.10824	0.0004
IDC	0.09346	-0.09165	0.00918	1	0.0148	-0.01607	0.01039	0.03932	-0.01898	-0.01857	-0.01853	0.03374	-0.01392
TWC	0.06186	-0.18374	0.02586	0.0148	1	-0.02884	0.00451	-0.04074	0.00249	0.04401	-0.00164	-0.04179	0.00205
I-AVB	-0.12884	-0.1754	-0.02342	-0.01607	-0.02884	1	-0.01192	-0.10744	-0.00608	-0.03245	-0.02619	-0.03989	-0.02836
AFI	0.05298	-0.06798	0.01394	0.01039	0.00451	-0.01192	1	-0.00183	-0.01408	0.16082	0.11064	-0.00499	-0.01071
PAC	0.23097	-0.63919	-0.02357	0.03932	-0.04074	-0.10744	-0.00183	1	-0.02463	0.06023	-0.03883	-0.05532	-0.04088
CRBBB	0.15809	-0.20714	0.02724	-0.01898	0.00249	-0.00608	-0.01408	-0.02463	1	-0.04197	-0.00613	0.02307	0.00796
VPB	0.20367	-0.20267	0.00894	-0.01857	0.04401	-0.03245	0.16082	0.06023	-0.04197	1	-0.04098	0.03522	0.00092
LABB	0.15112	-0.20226	-0.00095	-0.01853	-0.00164	-0.02619	0.11064	-0.03883	-0.00613	-0.04098	1	0.0233	-0.00409
AFL	0.16878	-0.22751	0.10824	0.03374	-0.04179	-0.03989	-0.00499	-0.05532	0.02307	0.03522	0.0233	1	-0.01457
IRBBB	0.07699	-0.21231	0.0004	-0.01392	0.00205	-0.02836	-0.01071	-0.04088	0.00796	0.00092	-0.00409	-0.01457	1

Spearman Correlation Coefficient

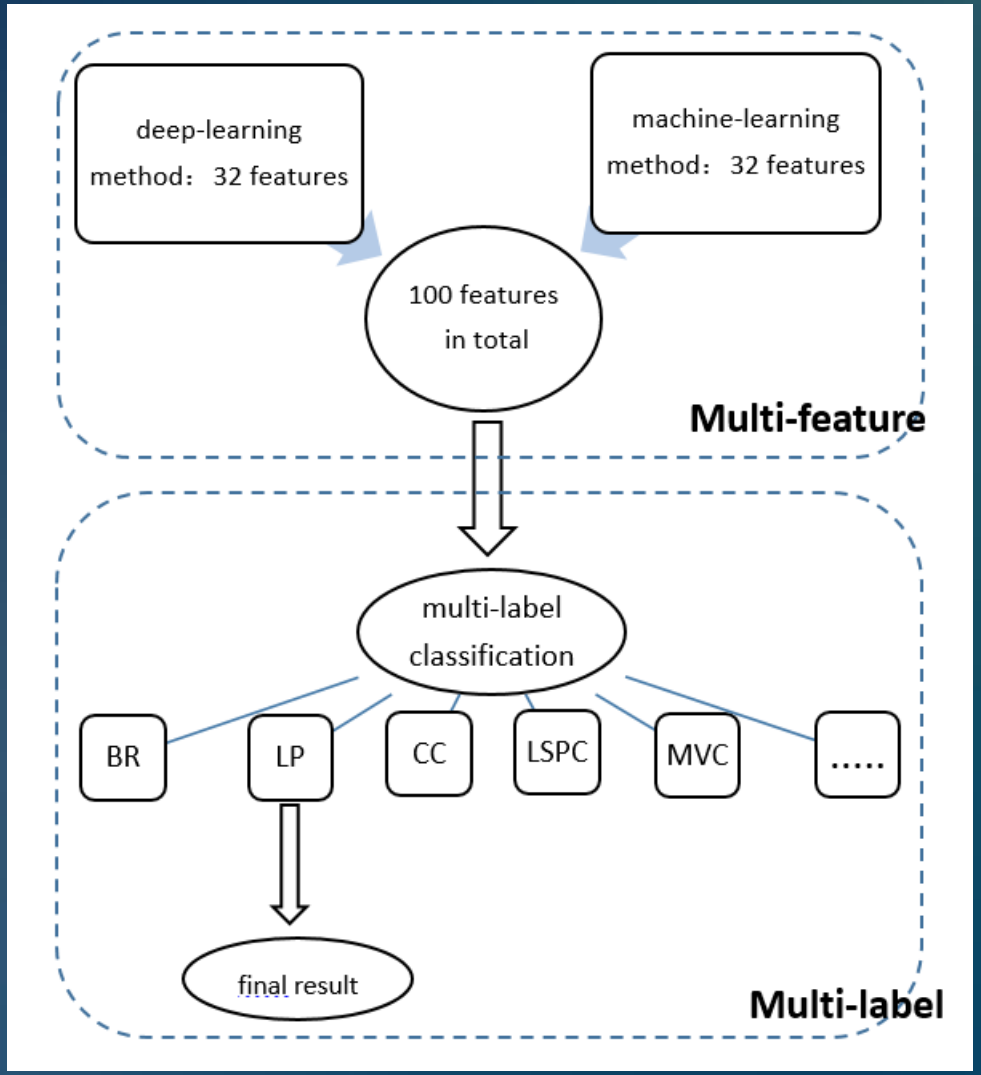
Question 3　Correlation between various diseases and diseases



Question 4　algorithm that suit for this dataset to make classification

Multi-Feature Multi-Label algorithm

（MFML）



F1 score: 0.86

F1 = 2 * tp / (2 * tp + fp + fn)

Thank you!

Chuankai Luo