

TEAM 10



Predictive Model for the COPD Exacerbations



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전북대학교 병원

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Clinician : 김두환

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SQL Expert : 김정우 (DGIST)

Data Scientist : 국승호 (DIT)

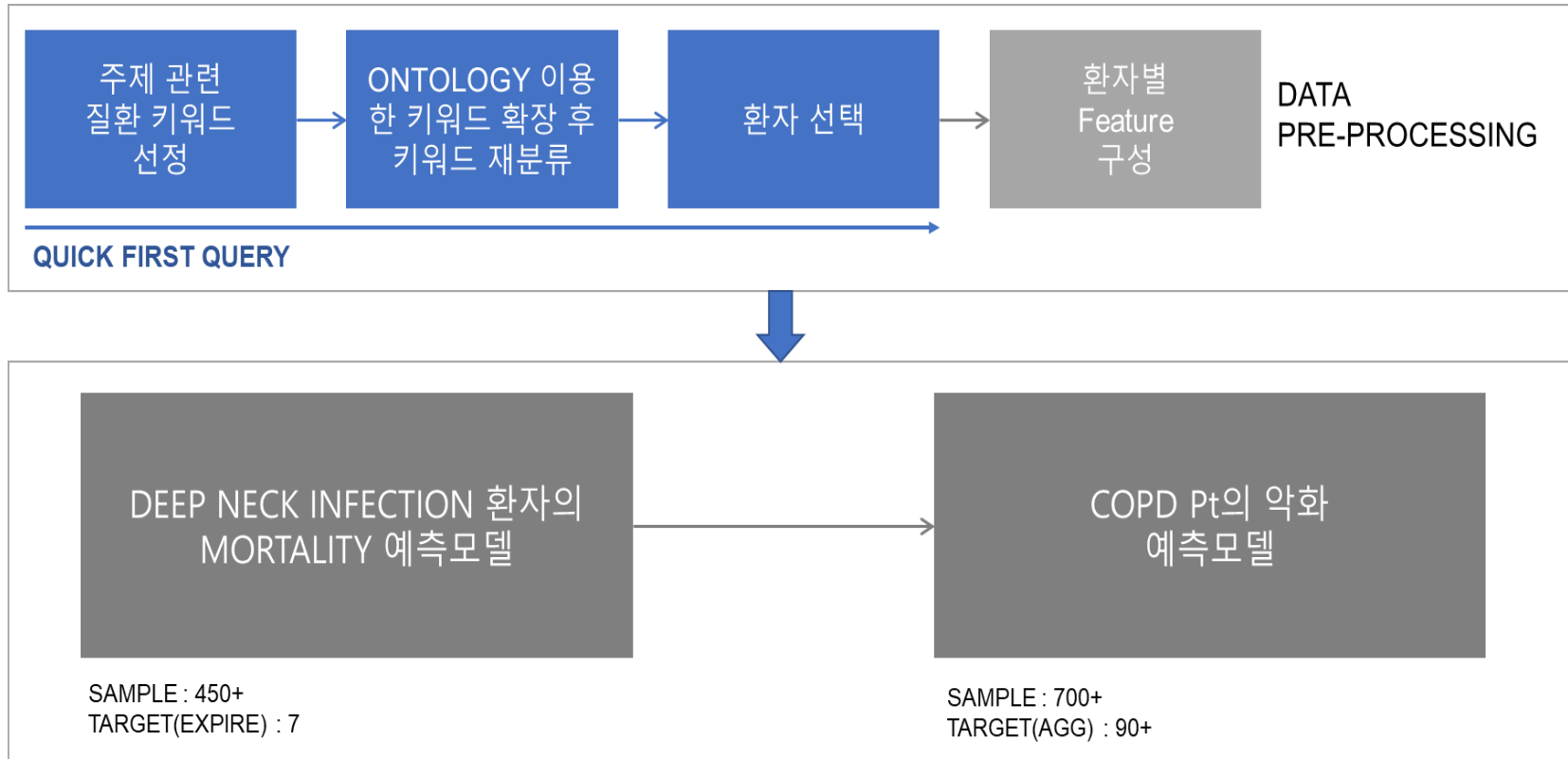
IT Expert : 소재우 (테라젠이텍스)

Student : 왕예진 (University of Central Florida)

Student : 이보람 (방송통신대학교)

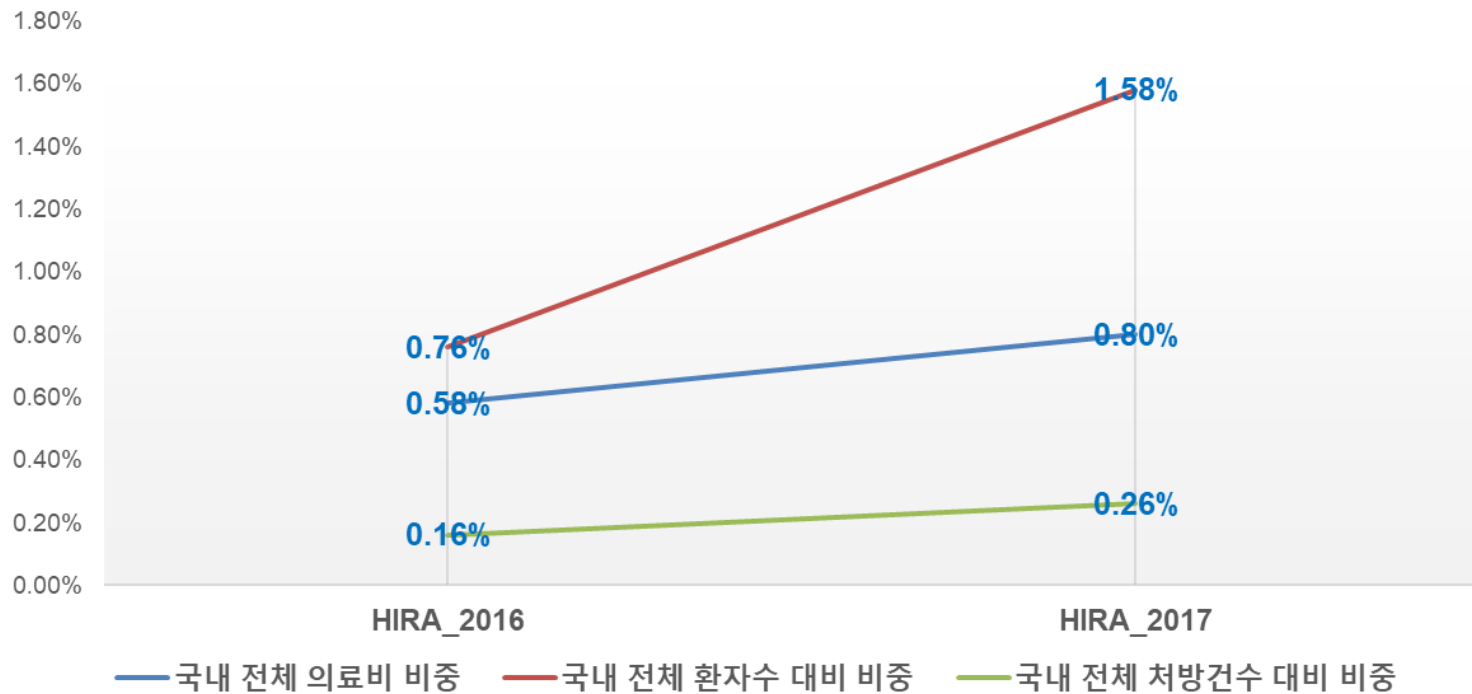
Student : 한기호 (상명대학교)

TOPIC 변경

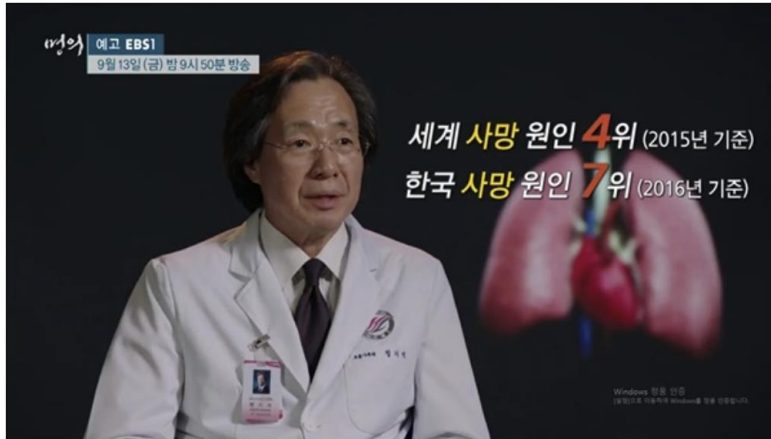


국내 전체 의료비 중 1% 육박..

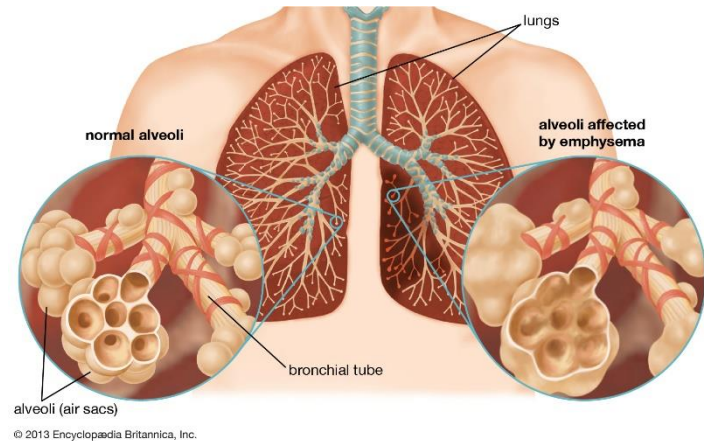
COPD 처방, 환자수, 의료비 비중 (HIRA2016~2017)



Chronic obstructive pulmonary disease (COPD)



EBS 명의, '목숨을 위협하는 숨'



- prevalence of 251 million cases of COPD globally in 2016
- 3.17 million death (5% of all deaths globally in that year)

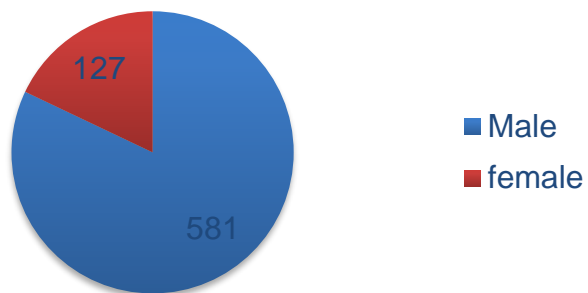
COPD

- 위험인자
 - SMOKING, AIR POLLUTION
- COPD 급성 악화
 - **acute worsening of respiratory symptoms that results in additional therapy**
- COPD 악화 인자
 - 이전 악화 경험
 - 감염
 - 호산구 증가
 - 다른 요인?

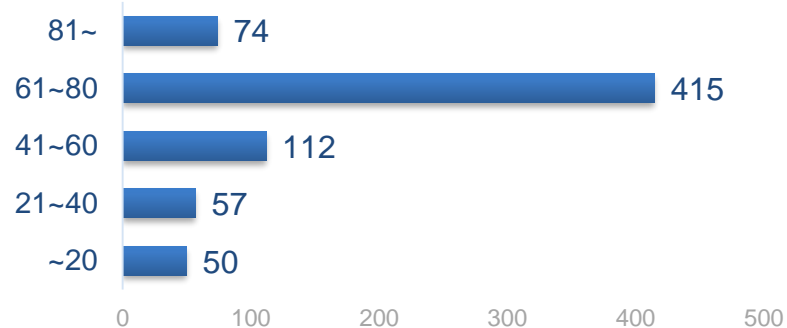
DISTRIBUTION

N = 673

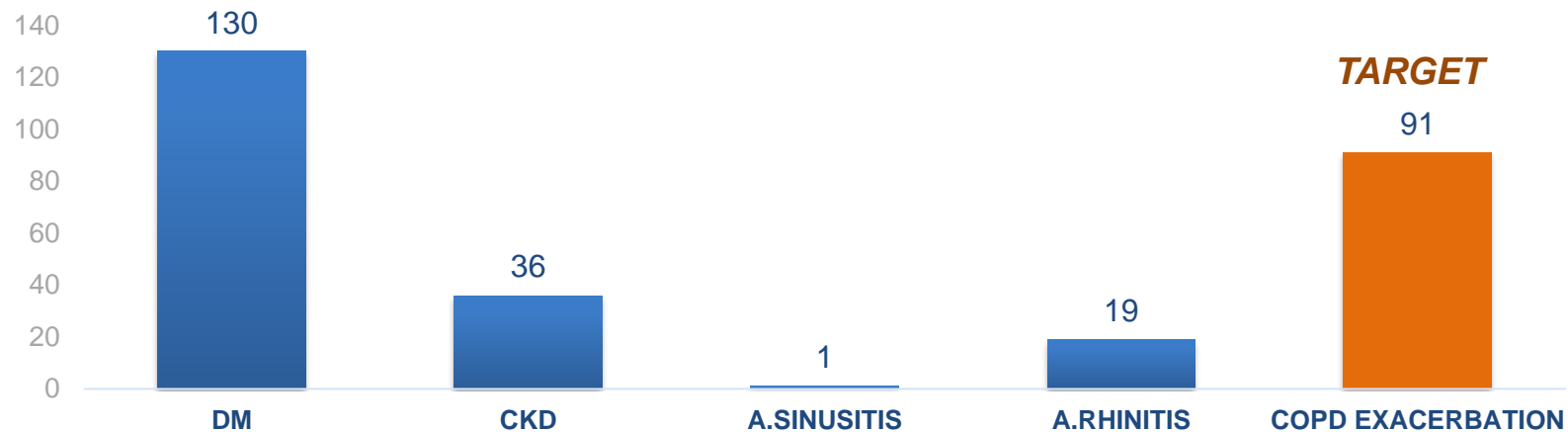
GENDER



AGE



COMORBIDITY



MAIN RISK FACTOR : SMOKING..

Only 8 smokers from
total CDM database

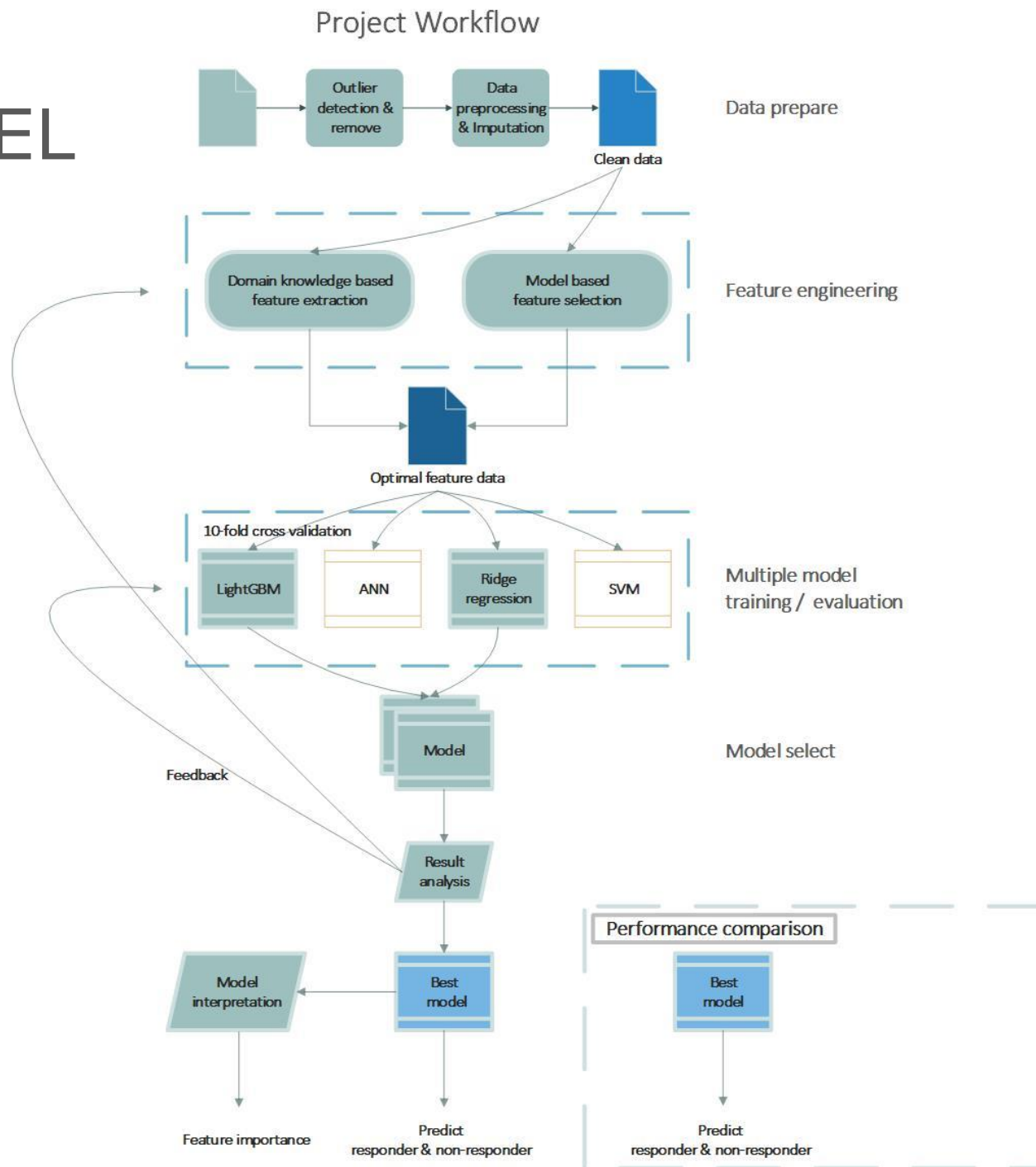
concept_id	concept_name
44056402	AESCULUS HIPPOCASTANUM SEED OIL / cupric acetate / Epinephrine / Ergot Alkaloids / Helleborus extract / Potentilla anserina whole extract / tobacco leaf extract Oral Solution
4232375	Aggressive ex-smoker
40821032	Aggressive ex-smoker
4233854	Aggressive non-smoker
46272621	Assessment of tobacco use
45508251	Asthma trigger - tobacco smoke
44799960	Asthma trigger - tobacco smoke
46308659	BE GONE SMOKING - diffebachia seguin - daphne odora bark - strychnos nux-vomica seed - plantago major - delphinium staphisagria seed - tobacco leaf pellet
46357028	BE GONE SMOKING - diffebachia seguin - daphne odora bark - strychnos nux-vomica seed - plantago major - delphinium staphisagria seed - tobacco leaf pellet
46356204	BE GONE SMOKING - diffebachia seguin - daphne odora bark - strychnos nux-vomica seed - plantago major - delphinium staphisagria seed - tobacco leaf pellet
4044778	Chain smoker
4038735	Chewed tobacco consumption
4219234	Chewing tobacco
45833795	Chewing tobacco, such as Redman [®] , Levi Garrett [®] or Beechnut [®] at least 20 times
4038737	Chews fine cut tobacco
4038736	Chews loose leaf tobacco
4036091	Chews plug tobacco
4038738	Chews products containing tobacco
45464989	Chews tobacco
4218741	Chews tobacco
40565531	Chews tobacco
40562282	Chews tobacco
4043060	Chews twist tobacco
40298676	Cigar smoker
45418475	Cigar smoker
4246415	Cigar smoker
4132133	Cigar smoking tobacco
764104	Cigarette smoker
40329175	Cigarette smoker
40299108	Cigarette smoker
45504873	Cigarette smoker
4276526	Cigarette smoker
764103	Cigarette smoker
4282779	Cigarette smoking tobacco
45502107	Contact with and (suspected) exposure to environmental tobacco smoke (acute) (chronic)
764448	Continuous dependence on chewing tobacco
46272634	Counseling about tobacco use
45861517	Current every day smoker
2617855	Current smokeless tobacco user
2101896	Current smokeless tobacco user (eg, chew, snuff) (Pv)
40664517	Current smokeless tobacco user (eg, chew, snuff) and no exposure to secondhand smoke
40766945	Current smoker
45478365	Current smoker

40298672 Ex-smoker - amount unknown
 40329167 Ex-smoker - amount unknown
 45424956 Ex-smoker - amount unknown
 45476485 Ex-smoker annual review
 45489734 Ex-smoker annual review - enhanced services administration
 44802869 Ex-smoker annual review - enhanced services administration
 42536346 Ex-smoker for less than 1 year
 46270534 Ex-smoker for more than 1 year
 45468387 Ex-tobacco chewer
 4043059 Ex-tobacco chewer
 45765917 Ex-tobacco user
 4148415 Ex-trivial cigarette smoker
 40298663 Ex-trivial cigarette smoker (<1/day)
 45518252 Ex-trivial smoker (<1/day)
 40329158 Ex-trivial smoker (<1/day)
 4038733 Ex-user of moist powdered tobacco
 4141784 Ex-very heavy cigarette smoker
 40298668 Ex-very heavy cigarette smoker (40+/day)
 45485034 Ex-very heavy smoker (40+/day)
 40329163 Ex-very heavy smoker (40+/day)
 45508173 Exposed to tobacco smoke at home
 4038739 Exposed to tobacco smoke at home
 4036562 Exposed to tobacco smoke at work
 4036563 Exposed to tobacco smoke in public places
 45568046 Exposure to (parental) (environmental) tobacco smoke in the perinatal period
 35225194 Exposure to environmental tobacco smoke (acute) (chronic)
 37109031 Exposure to second hand tobacco smoke
 45595530 Exposure to tobacco smoke
 4036088 Finding relating to moist tobacco use
 4043058 Finding relating to tobacco chewing
 4041511 Heavy cigarette smoker
 4052947 Heavy cigarette smoker
 40298661 Heavy cigarette smoker (20-39 cigs/day)
 4209006 Heavy smoker
 45498248 Heavy smoker - 20-39 cigs/day
 45884038 Heavy tobacco smoker
 762499 Heavy tobacco smoker
 42538564 History of exposure to tobacco smoke in perinatal period
 43530634 History of tobacco use
 37018636 History of tobacco use in remission less than 12 months
 44784248 Hookah pipe smoker
 42868908 I smoke cigarettes or other tobacco products in the past 7days [FACIT]
 4237385 Intolerant ex-smoker
 44786669 Lifetime tobacco use
 4042037 Light cigarette smoker

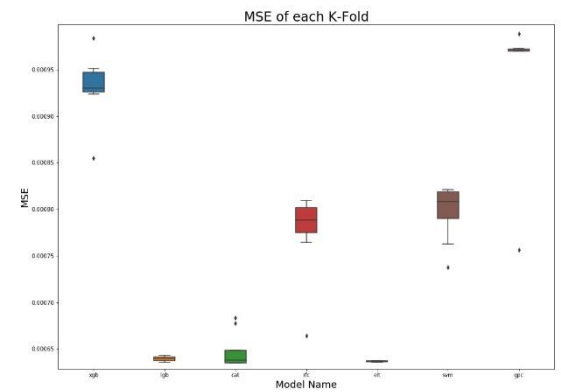
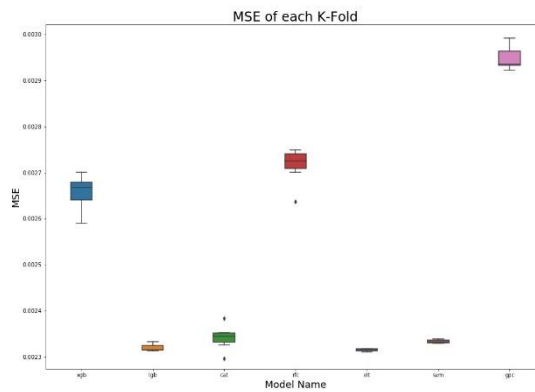
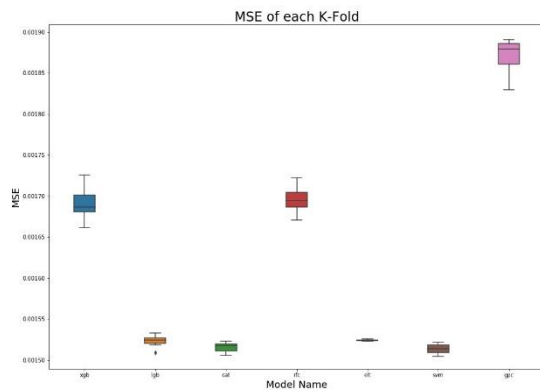
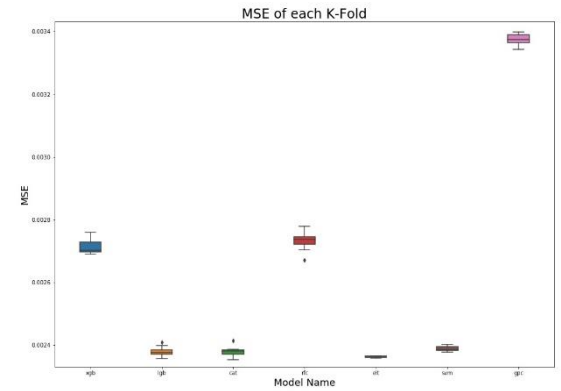
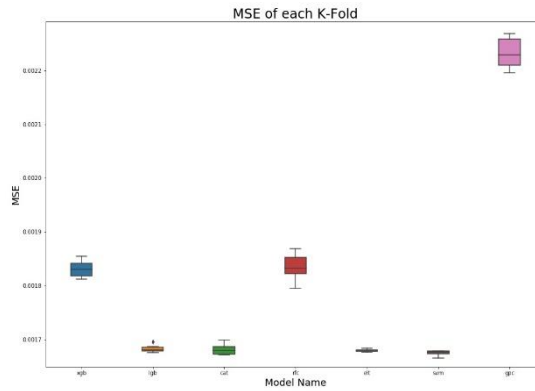
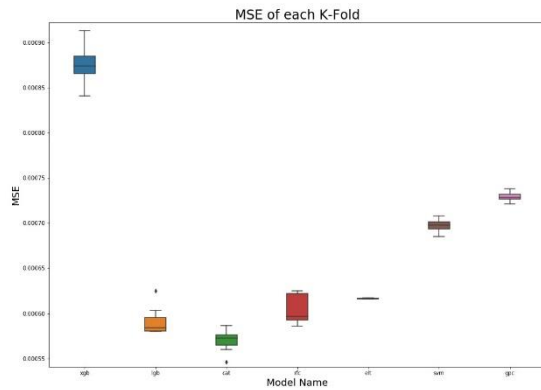
FEATURE SELECTION in aggravation of COPD

Demographic factor	Age	Lab	WBC
	sex		Eosinophil
	BMI		Cr
	weight		ESR
	height		CRP
COMORBIDITY	DM	ABGA	lactate
	CKD		Ig E
	Acute sinusitis		HbA1c
	Allergic rhinitis		pH
PFT	FEV1	ABGA	SpO2
	FEV1/FVC		HCO3
			pCO2

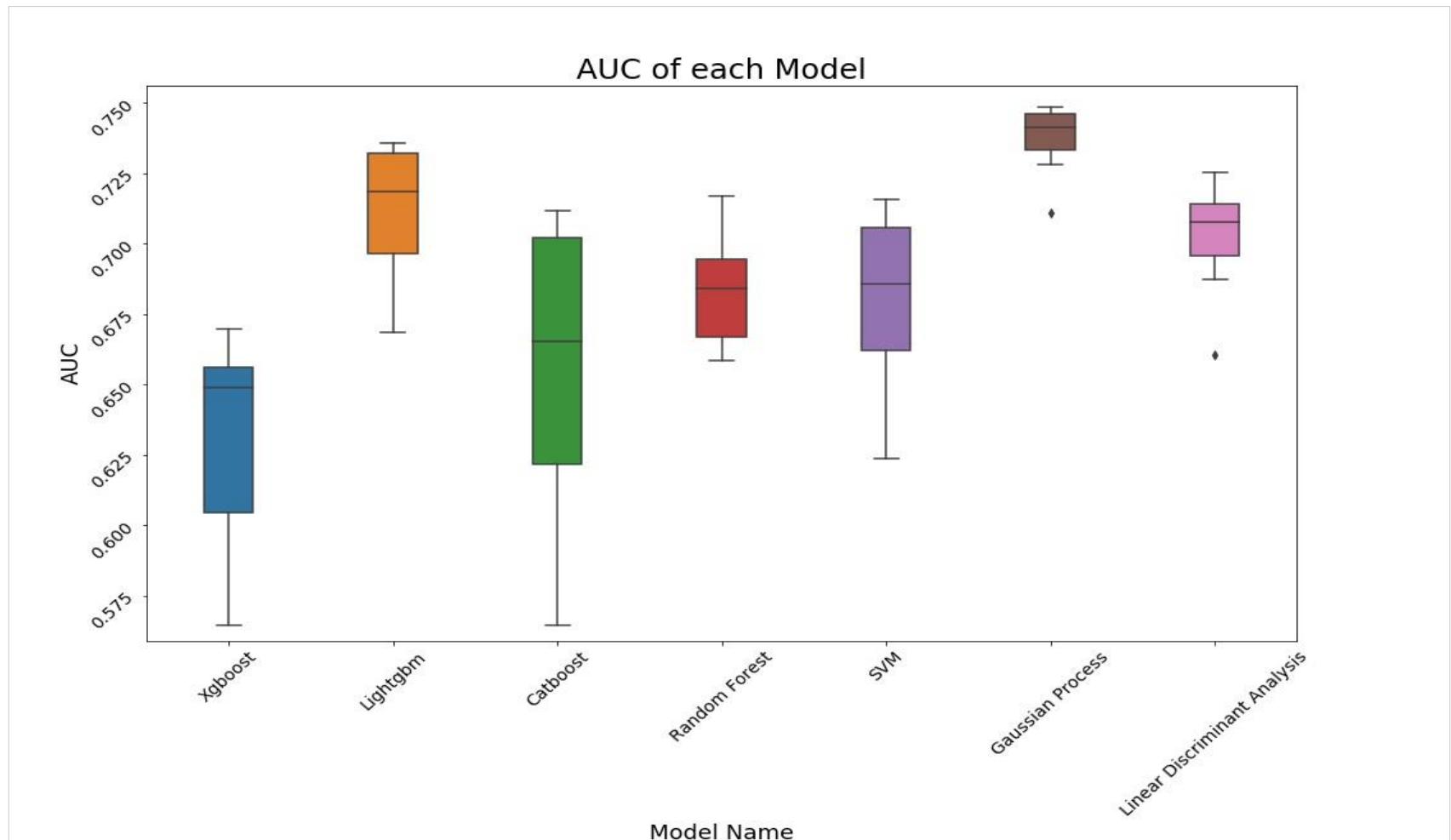
MODEL



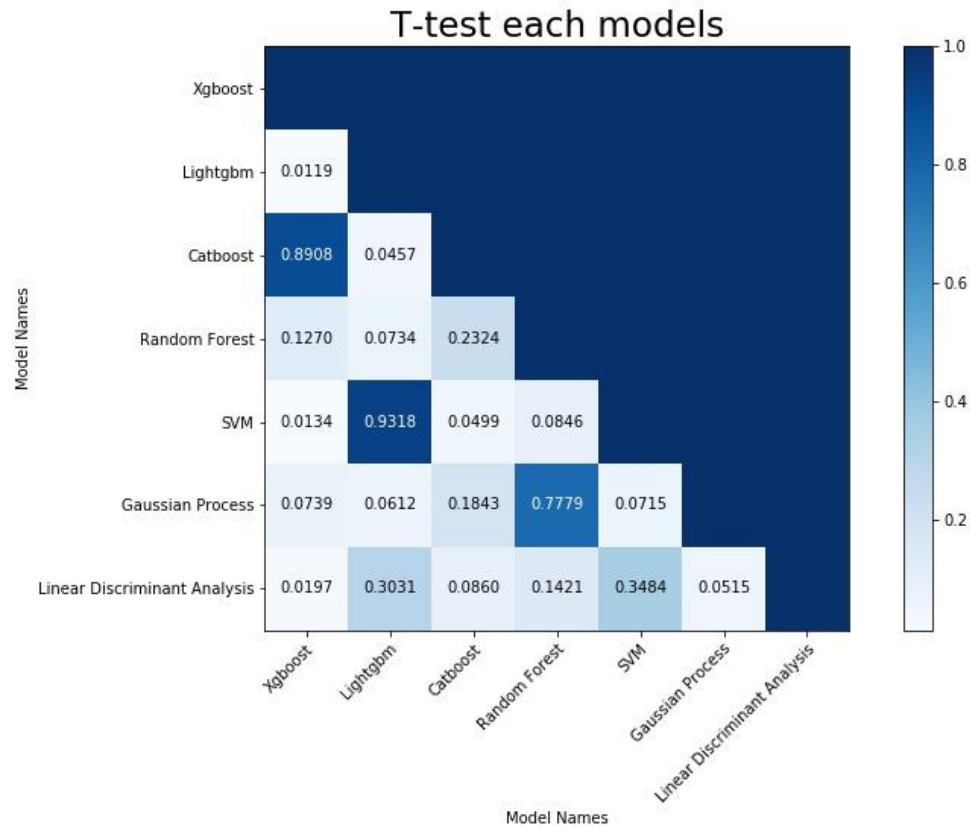
결측치 처리



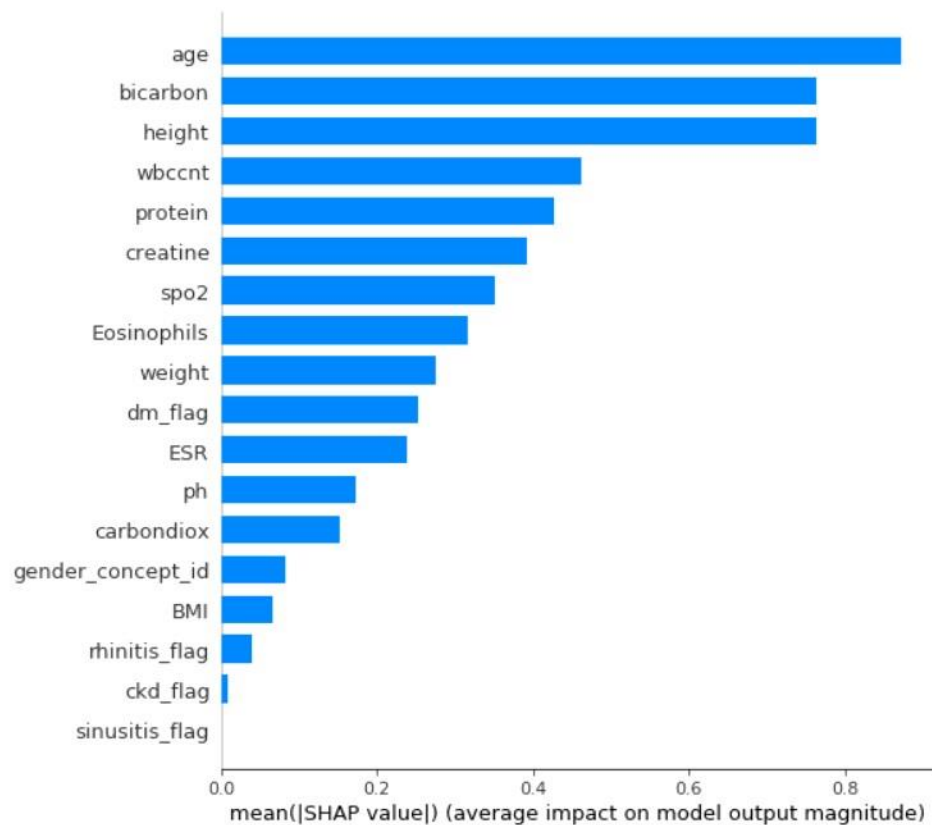
RESULT I



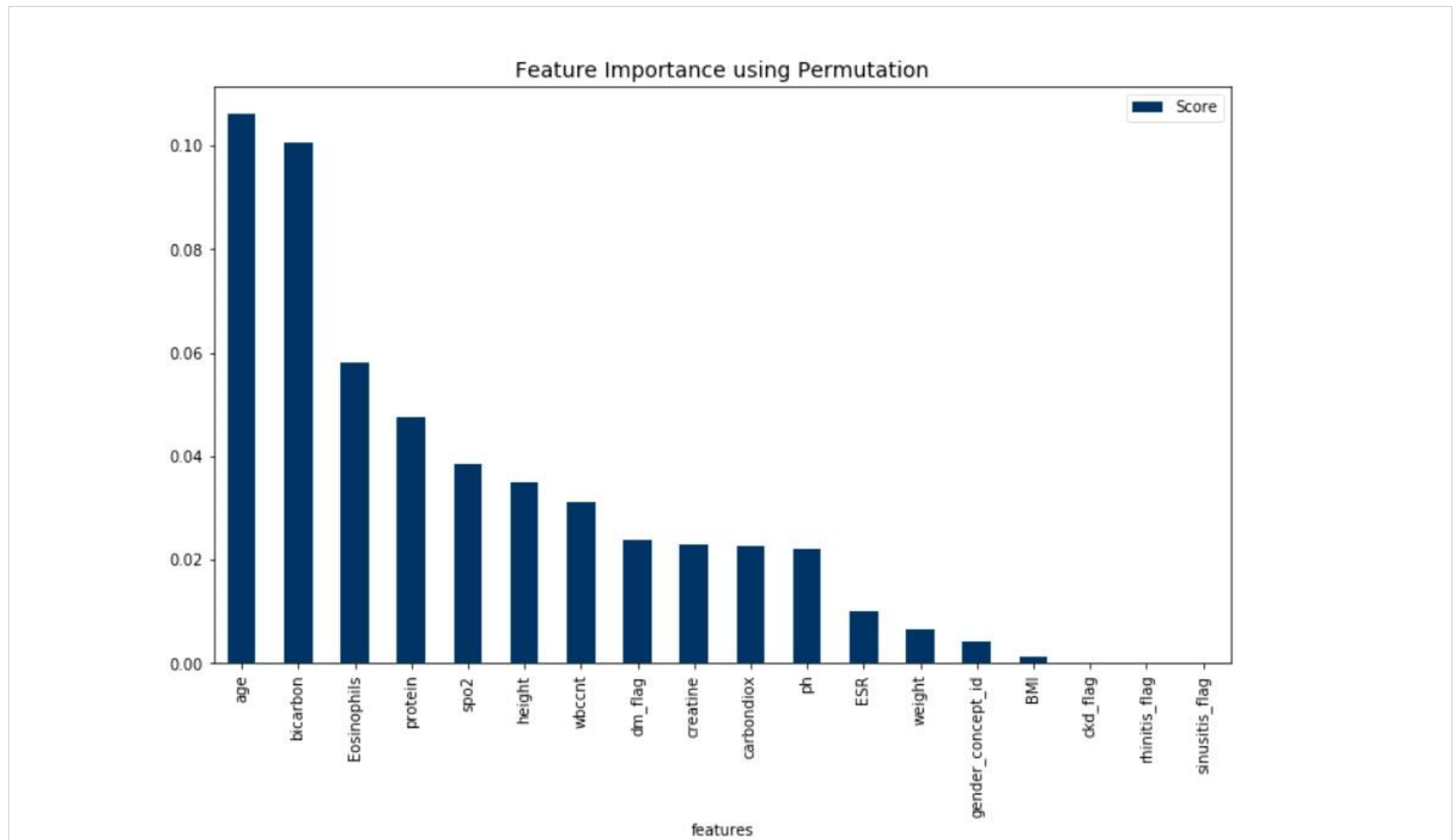
RESULT II



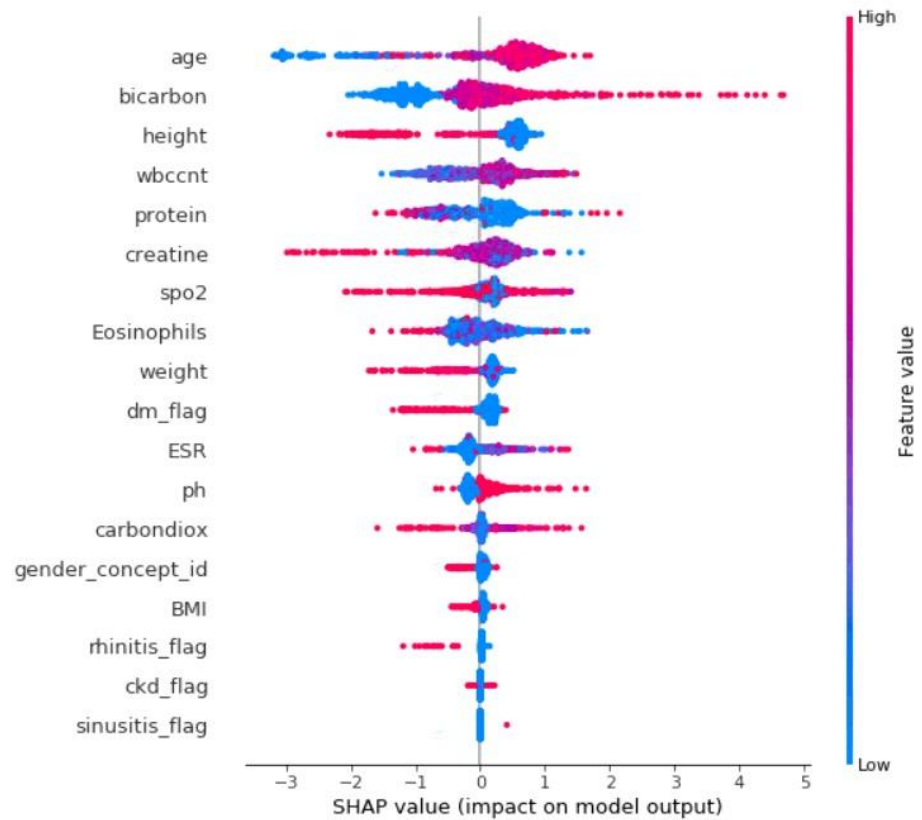
RESULT III



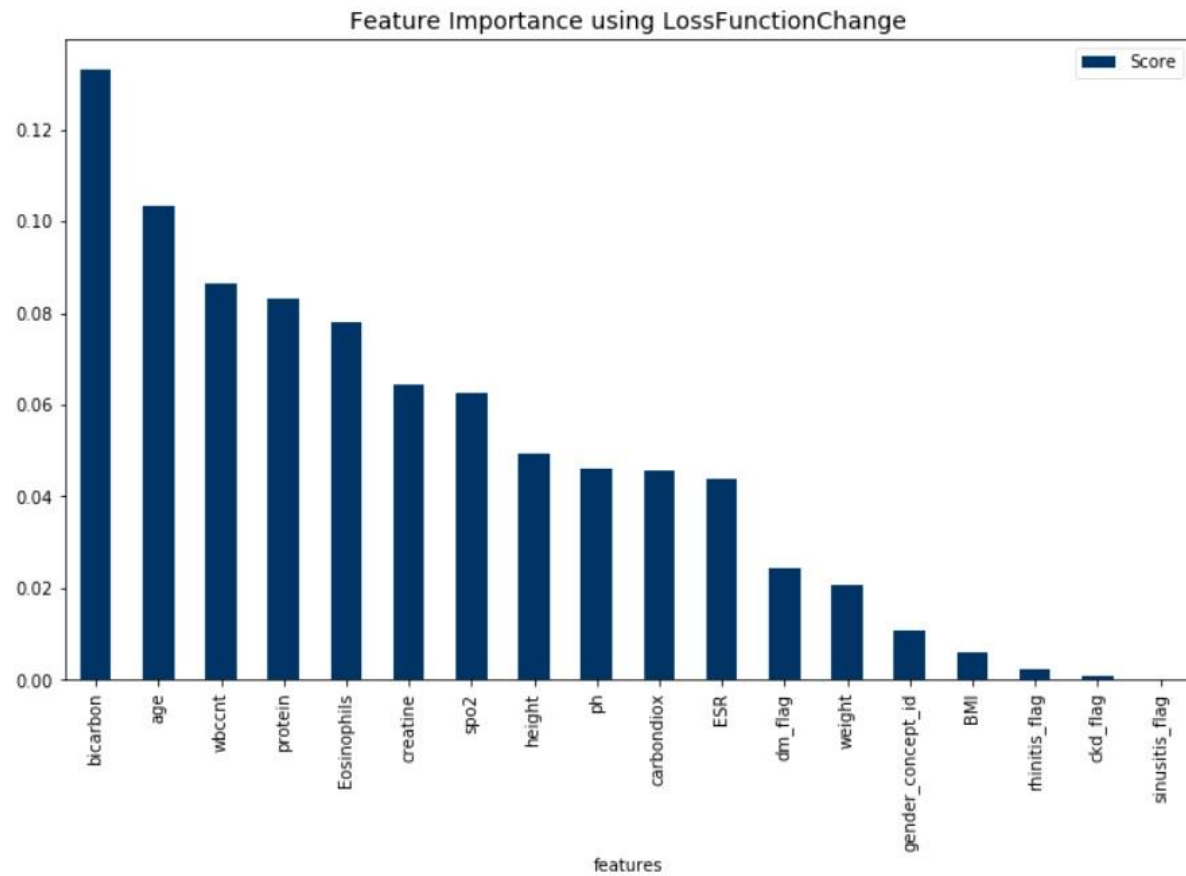
RESULT IV



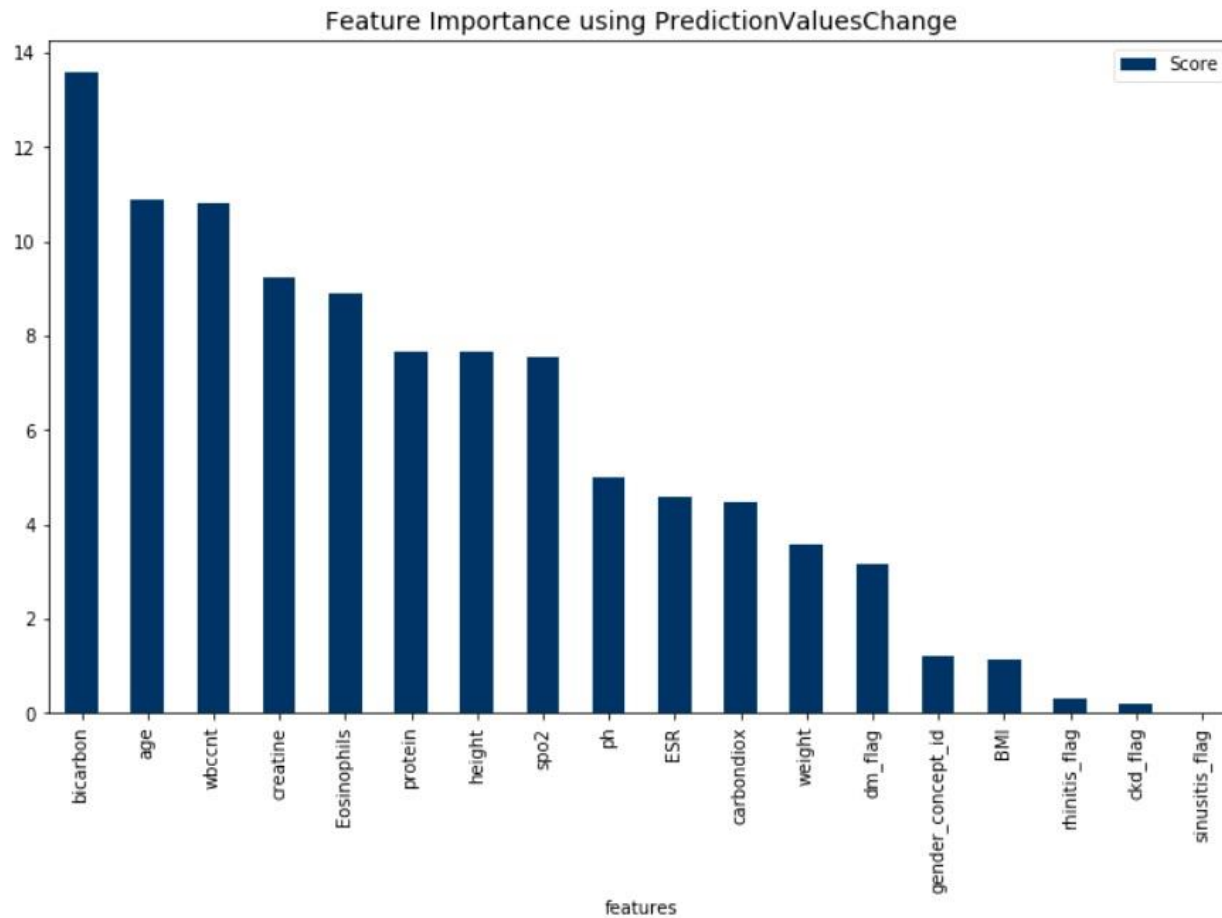
RESULT V



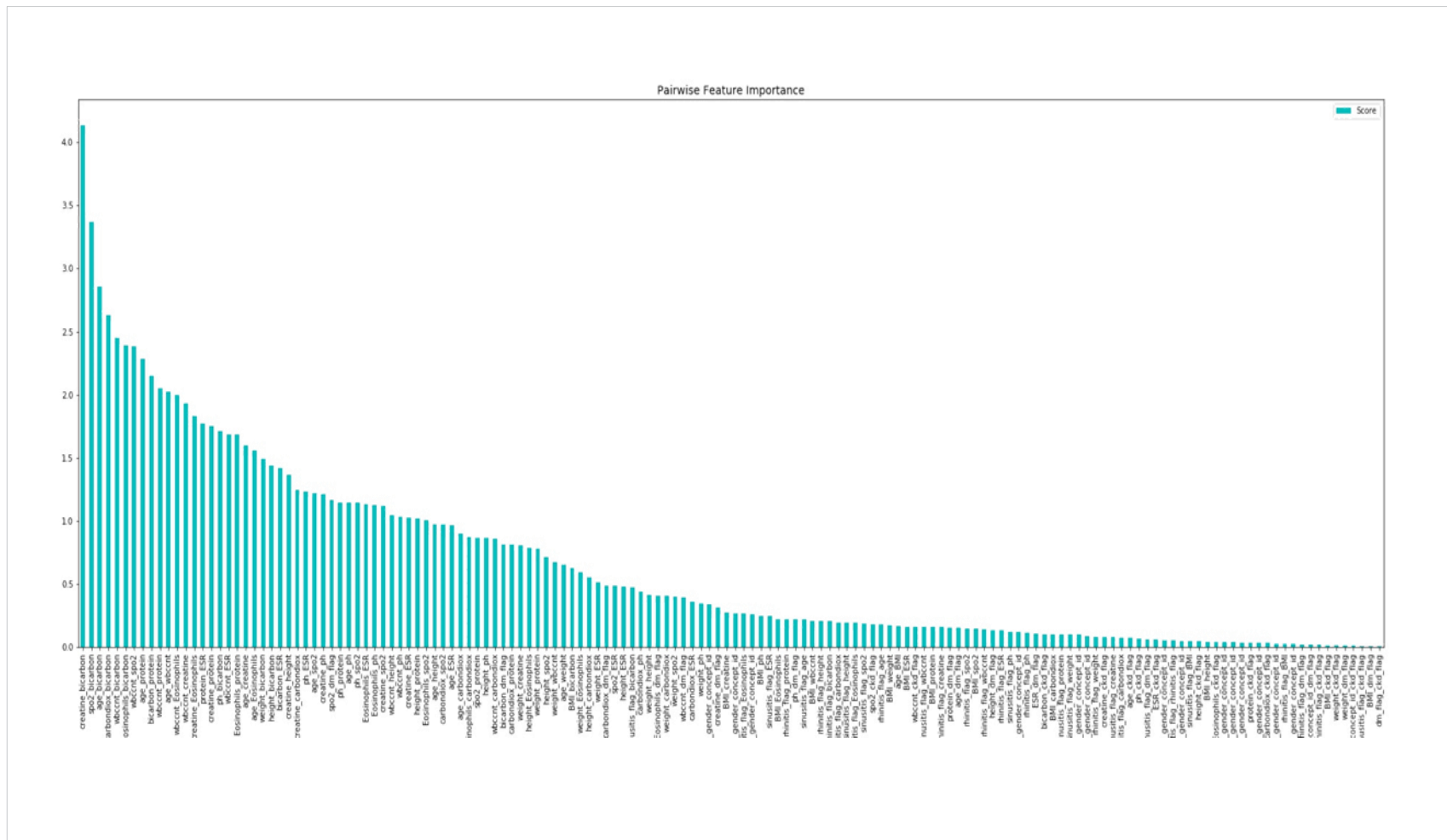
RESULT VI



RESULT VII



RESULT VIII



RESULT IX

