Problem Statement

Predict the insurance charges based on the input 'age', 'bmi', 'children','sex_male', 'smoker_yes'

MultipleLinearRegression

fit_intercept	*copy_X*	*n_jobs*	*positive*	*r2_score*
True	*True*	None	False	0.710092369
False	True	None	False	0.6061988575
False	False	None	False	0.6061988
False	False	-1	False	0.6061
False	False	10000	False	0.60619
True	True	-10	True	0.71008
True	True	1	True	0.71008

The best r2_score comes for default parameter values

SupportVectorMachine Regression

kernel	**rbf**	**linear**	**poly**	**sigmoid**	**rbf**	**linear**
degree	3	3	3	3	3	3
gamma	scale	scale	scale	scale	auto	auto
coef0	0.0	0.0	0.0	0.0	0.0	0.0
tol	*1e-3*	*1e-3*	*1e-3*	*1e-3*	*1e-3*	*1e-3*
C	1.0	1.0	1.0	1.0	1.0	1.0
epsilon	0.1	0.1	0.1	0.1	0.1	0.1
shrinki	True	True	True	True	True	True

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cache_size	200	200	200	200	200	200
verbose	False	False	False	False	False	False
max_iter	1	1	1	1	1	1
r_score	**-34167.663**	**-11.39**	**-174.883**	**-3443455.3**	**-34167.663**	**-11.3966**

DecisionTreeRegressor

Criterion	*squared_error*	***poisson***	***friedman_mse***	***absolute_error***
splitter	*best*	*best*	*random*	*random*
max_depth	*None*	*20*	*None*	*None*
min_samples_split	**2**	**20**	**2**	**2**
min_samples_leaf	**1**	**10**	**1**	**1**
min_weight_fraction_leaf	**0.0**	**0.0**	**0.0**	**0.0**
max_features	**None**	**None**	**None**	**None**
random_state	**None**	**None**	**None**	**None**
max_leaf_nodes	**None**	**100**	**None**	**None**
min_impurity_decrease	**0.0**	**0.0**	**0.0**	**0.0**
ccp_alpha	**0.0**	**0.0**	**0.0**	**0.0**

monotonic_cst	**None**	**[1,1,1,1,1]**	**None**	**None**
r2_score	**0.71862**	**0.8753**	**0.7222**	**0.7499**

Random Forest Regressor

n_estimators	100	100	1000	100	1000
criterion	*squared_error*	***absolute_error***	***poisson***	***friedman_mse***	*squared_error*
max_depth	None	None	1000	None	1000
min_samples_split	2	2	20	2	20
min_samples_leaf	1	1	3	1	10
min_weight_fraction_leaf	0.0	0.0	0.0	0.0	0.0
max_features	1.0	1.0	1.0	1.0	1.0
max_leaf_nodes	None	None	None	None	None
min_impurity_decrease	0.0	0.0	0.0	0.0	0.0
bootstrap	True	True	True	True	True
oob_score	False	False	False	False	False
n_jobs	None	None	None	None	None
random_state	None	None	None	None	None

verbose	0	0	0	0	0
warm_start	False	False	False	False	False
ccp_alpha	0.0	0.0	0.0	0.0	0.0
max_samples	None	None	None	None	None
monotonic_cst	None	None	None	None	None
r2_score	0.8461	0.8467	0.8767	0.8461	0.8794

The best score model is Random Forest Regressor with 0.8794