Model Name	Parameters							
		Accuracy	Precision	Recall	Log Loss	Variance	MAE	Avg F1
Decision Tree	(criterion = 'log_loss', random_state=42)	0.84	0.83	0.83	5.7618	0.1133	0.4890	0.83
	(max_depth = 8, criterion = 'log_loss', random_state=42)	0.84	0.82	0.82	0.3833	0.084	0.5051	0.82
	(max_depth = 8, max_leaf_nodes = 150, min_samples_leaf= 15, criterion = 'log_loss', random_state=42)	0.83	0.82	0.82	0.3741	0.0854	0.5066	0.82
	(max_depth = 8, max_leaf_nodes = 130, min_samples_leaf= 15, criterion = 'log_loss', random_state=42) *pipeline_pdtree43	0.84	0.82	0.82	0.3703	0.0852	0.5041	0.82
	(max_depth = 8, max_features='sqrt', max_leaf_nodes = 130, min_samples_leaf= 15, criterion = 'log_loss', random_state=42)	0.81	0.80	0.76	0.4809	0.0772	0.5618	0.77
Random Forest	(n_estimators=100)	0.87	0.86	0.86	0.2927	0.0838	0.4101	0.86
	(n_estimators = 100, max_depth=20, max_features='sqrt', random_state=42)	0.87	0.86	0.86	0.2928	0.0835	0.4049	0.86
	(n_estimators = 100, max_depth=20, max_features='log2', random_state=42)	0.87	0.86	0.86	0.3068	0.0811	0.4110	0.86
	(n_estimators = 100, max_features=**None**, max_depth=20, random_state=42)	0.87	0.86	0.86	0.2894	0.0890	0.4112	0.86

	(n_estimators = 100, max_features='sqrt', min_samples_leaf= 4, max_depth=20, random_state=42)	0.87	0.86	0.86	0.2981	0.0822	0.4029	0.86
	(n_estimators = 100, max_features=**None**, min_samples_leaf= 6, max_depth=20, random_state=42) *pipeline_prf312	0.87	0.86	0.86	0.2807	0.0883	0.4052	0.86
	(n_estimators = 100, max_features='sqrt', min_samples_leaf= 4 , max_depth=20, min_samples_split=3//7, random_state=42)	0.87	0.86	0.86	0.2981	0.0822	0.4029	0.86
	(n_estimators = 100, max_features=**None**, min_samples_leaf= 6, max_depth=20, min_samples_split=3//7, random_state=42)	0.87	0.86	0.86	0.2807	0.0883	0.4052	0.86
	(n_estimators = 100, max_features='sqrt', min_samples_leaf= 4, max_depth=20, max_leaf_nodes=3000, random_state=42)	0.87	0.86	0.86	0.2972	0.0824	0.4042	0.86
	(n_estimators = 100, max_features=**None**, min_samples_leaf= 6, max_depth=20, max_leaf_nodes=3000, random_state=42)	0.87	0.86	0.86	0.2836	0.0886	0.4084	0.86
	(n_estimators = 100, max_features='sqrt', criterion='entropy'/'log_loss', min_samples_leaf= 4, max_depth=20, random_state=42) *pipeline_prf601	0.87	0.86	0.86	0.2855	0.0832	0.4050	0.86
	(n_estimators = 100, max_features=**None**, criterion='entropy'/'log_loss',	0.86	0.85	0.85	0.2734	0.0897	0.4281	0.85

	min_samples_leaf= 6, max_depth=20, random_state=42)							
SVC	(kernel = ‘rbf’, C=1, gamma=’scale’, decision_function_shape='ovr', random_state=42)	0.87	0.86	0.86	0.3421	0.0916	0.4020	0.86
	(probability=True, kernel='rbf', gamma='scale', C=5, decision_function_shape='ovr', random_state=42)	0.87	0.86	0.86	0.3350	0.0909	0.4014	0.86
	(probability=True, kernel='linear', gamma='scale', C=3, decision_function_shape='ovr', random_state=42)	0.85	0.85	0.85	0.3584	0.0891	0.4374	0.85
	(probability=True, kernel='rbf', gamma='scale', C=3, decision_function_shape='ovr', random_state=42) *pipeline_psvc211	0.87	0.86	0.86	0.3337	0.0914	0.3932	0.86
SGD	(loss= 'log_loss', random_state=42)	0.85	0.84	0.84	0.4019	0.0826	0.4476	0.84
	(loss= 'log_loss', alpha=0.001, learning_rate='invscaling', eta0=1, max_iter=10000, random_state=42)	0.85	0.84	0.84	0.3540	0.0796	0.4434	0.84

	(loss= 'modified_huber', alpha=0.001, learning_rate='optimal', eta0=1, max_iter=1000, random_state=42)	0.85	0.85	0.83	1.0988	0.0854	0.4513	0.84
	(loss= 'log_loss', alpha=0.0001, learning_rate='adaptive', eta0=2, max_iter=10000, random_state=42) *pipeline_psgd721	0.85	0.84	0.84	0.3476	0.0814	0.4408	0.84
KNN	(n_neighbors = 30)	0.82	0.83	0.79	0.5468	0.0613	0.5466	0.81
	(n_neighbors = 60)	0.82	0.83	0.79	0.5338	0.0571	0.5400	0.80
	(n_neighbors = 60, weights='distance', leaf_size=15)	0.82	0.83	0.79	0.5302	0.0575	0.5368	0.80
	(n_neighbors = 60, p=1, weights='distance', leaf_size=15) *pipeline_pknn14111	0.82	0.83	0.78	0.4951	0.0598	0.5305	0.80

Pitch

Model Name	Parameters							
		Accuracy	Precision	Recall	Log Loss	Variance	MAE	Avg F1
dt	(max_depth = 8, max_leaf_nodes = 130, min_samples_leaf= 15, criterion = 'log_loss', random_state=42))	0.84	0.82	0.82	0.3703	0.0852	0.5041	0.82

	*pipeline_pdtree43							
rf	(n_estimators = 100, max_features=**None**, min_samples_leaf= 6, max_depth=20, random_state=42) *pipeline_prf312	0.87	0.86	0.86	0.2807	0.0883	0.4052	0.86
svc	(probability=True, kernel='rbf', gamma='scale', C=3, decision_function_shape='ovr', random_state=42) *pipeline_psvc211	0.87	0.86	0.86	0.3337	0.0914	0.3932	0.86
sgd	(loss= 'log_loss', alpha=0.0001, learning_rate='adaptive', eta0=2, max_iter=10000, random_state=42) *pipeline_psgd721	0.85	0.84	0.84	0.3476	0.0814	0.4408	0.84
knn	(n_neighbors = 60, p=1, weights='distance', leaf_size=15) *pipeline_pknn14111	0.82	0.83	0.78	0.4951	0.0598	0.5305	0.80
Ensembled								
Stacking	Pitch(SVC) - RF, SVC, SGD	0.87	0.86	0.87	0.4192	0.0889	0.3837	0.87
	Pitch(RF) - RF, SVC, SGD *stacking_model2_1	0.87	0.86	0.87	0.2766	0.0896	0.3830	0.86
Voting	Pitch - RF, SVC, SGD	0.87	0.86	0.86	0.2936	0.0832	0.3959	0.86

HZONE

Model Name	Parameters	Accuracy	Precision	Recall	Log Loss	Variance	MAE	Avg F1
Decision Tree	(max_depth = 8, min_samples_leaf= 15, criterion = 'log_loss', random_state=42)	0.80	0.79	0.81	0.4038	0.1111	0.3997	0.80
	(max_depth = 10, min_samples_leaf= 15, criterion = 'log_loss', random_state=42)	0.82	0.81	0.81	0.4622	0.1173	0.3625	0.81
	(max_depth = 8, min_samples_leaf= 42, criterion = 'log_loss', random_state=42)	0.81	0.79	0.81	0.3844	0.1108	0.3945	0.81
	(max_depth = 12, min_samples_leaf= 42, criterion = 'log_loss', random_state=42) *pipeline_hzdtree13	0.83	0.82	0.82	0.3822	0.1167	0.3377	0.82
Random Forest	(n_estimators=100)	0.84	0.84	0.83	0.3410	0.1086	0.3086	0.83
	(n_estimators = 100, max_depth=10, random_state=42)	0.84	0.84	0.82	0.4047	0.0921	0.3196	0.83
	(n_estimators = 100, max_depth=20, random_state=42)	0.84	0.83	0.83	0.3430	0.1084	0.3122	0.83
	(n_estimators = 100, max_depth=30, random_state=42)	0.84	0.84	0.83	0.3412	0.1086	0.3105	0.83
	(n_estimators = 100, max_features=None, criterion='entropy', min_samples_leaf= 6,	0.83	0.83	0.83	0.3111	0.1165	0.3188	0.83

	max_depth=30, random_state=42)							
	(n_estimators = 100, max_features='sqrt', criterion='entropy', min_samples_leaf= 4, max_depth=20, random_state=42)	0.84	0.84	0.83	0.3336	0.1080	0.3076	0.83
	(n_estimators = 100, max_features='sqrt', criterion='entropy', min_samples_leaf= 4, max_depth=30, random_state=42) *pipeline_hzrf701	0.84	0.84	0.83	0.3331	0.1081	0.3056	0.83
SVC	(probability=True, random_state=42)	0.84	0.84	0.83	0.4012	0.1169	0.3004	0.83
	(probability=True, kernel='linear', random_state=42)	0.83	0.83	0.82	0.3987	0.1149	0.3149	0.83
	(probability=True, kernel='rbf', gamma='scale', C=5, decision_function_shape='ovr', random_state=42) *pipeline_hzsvc21	0.84	0.84	0.83	0.3944	0.1151	0.3055	0.84
	(probability=True, kernel='rbf', gamma='scale', C=3, decision_function_shape='ovr', random_state=42) *pipeline_hzsvc20	0.84	0.84	0.83	0.3947	0.1159	0.3011	0.84
SGD	(loss= 'log_loss', random_state=42)	0.83	0.82	0.82	0.4110	0.1029	0.3291	0.82

	(loss= 'log_loss', alpha=0.001, learning_rate='invscaling', eta0=1, max_iter=10000, random_state=42)	0.83	0.82	0.81	0.4237	0.0977	0.3300	0.82
	(loss= 'log_loss', alpha=0.0001, learning_rate='adaptive', eta0=2, max_iter=10000, random_state=42) *pipeline_hzsgd70	0.84	0.83	0.82	0.3993	0.1017	0.3181	0.83
	(loss= 'log_loss', alpha=0.0001, learning_rate='optimal', eta0=2, max_iter=10000, random_state=42)	0.83	0.82	0.82	0.4110	0.1029	0.3291	0.82
KNN	(n_neighbors = 5)	0.72	0.71	0.71	2.9331	0.0879	0.5233	0.71
	(n_neighbors = 30)	0.77	0.79	0.73	0.6471	0.0669	0.4531	0.76
	(n_neighbors = 60)	0.77	0.81	0.73	0.6559	0.0605	0.4579	0.76
	(n_neighbors = 30, p=2, weights='distance', leaf_size=30)	0.7	0.79	0.73	0.6445	0.0674	0.4582	0.75
	(n_neighbors = 30, weights='distance', p=1) *pipeline_hzknn32	0.78	0.80	0.74	0.5797	0.0730	0.4342	0.77
	(n_neighbors = 60, p=1, weights='distance', leaf_size=15)	0.79	0.81	0.75	0.5981	0.0664	0.4311	0.77

Model Name	Parameters	Accuracy	Precision	Recall	Log Loss	Variance	MAE	Avg F1
dt	(max_depth = 12, min_samples_leaf= 42, criterion = 'log_loss', random_state=42) *pipeline_hzdtree13	0.83	0.82	0.82	0.3822	0.1167	0.3377	0.82
rf	(n_estimators = 100, max_features='sqrt', criterion='entropy', min_samples_leaf= 4, max_depth=30, random_state=42) *pipeline_hzrf701	0.84	0.84	0.83	0.3331	0.1081	0.3056	0.83
svc	(probability=True, kernel='rbf', gamma='scale', C=5, decision_function_shape='ovr', random_state=42) *pipeline_hzsvc21	0.84	0.84	0.83	0.3944	0.1151	0.3055	0.84
sgd	(loss= 'log_loss', alpha=0.0001, learning_rate='adaptive', eta0=2, max_iter=10000, random_state=42) *pipeline_hzsgd70	0.84	0.83	0.82	0.3993	0.1017	0.3181	0.83
knn	(n_neighbors = 30, weights='distance', p=1) *pipeline_hzknn32	0.78	0.80	0.74	0.5797	0.0730	0.4342	0.77
Ensembled								
Stacking	HZONE(SVC) - RF, SVC, SGD	0.85	0.84	0.83	0.4804	0.1111	0.2927	0.84

	HZONE(RF) - RF, SVC, SGD	0.84	0.84	0.83	0.3275	0.1173	0.3081	0.83
Voting	HZONE - RF, SVC, SGD *voting_classifier2	0.85	0.84	0.84	0.3474	0.1051	0.2933	0.84

VZONE

Model Name	Parameters	Accuracy	Precision	Recall	Log Loss	Variance	MAE	Avg F1
Decision Tree	(max_depth = 8, min_samples_leaf= 15, criterion = 'log_loss', random_state=42)	0.81	0.79	0.81	0.4064	0.1133	0.3904	0.80
	(max_depth = 8, min_samples_leaf= 42, criterion = 'log_loss', random_state=42) *pipeline_vzdtree12	0.81	0.79	0.81	0.3711	0.1132	0.3941	0.80
	(max_depth = 12, min_samples_leaf= 42, criterion = 'log_loss', random_state=42) *pipeline_vzdtree14	0.83	0.82	0.82	0.3834	0.1200	0.3408	0.82
	(max_depth = 12, min_samples_leaf= 50, criterion = 'log_loss', random_state=42) *pipeline_vzdtree15	0.82	0.82	0.82	0.3594	0.1189	0.3439	0.82
Random Forest	(n_estimators=100)	0.84	0.84	0.83	0.3404	0.1105	0.3083	0.83
	(n_estimators = 100, max_features='sqrt', criterion='entropy', min_samples_leaf= 4, max_depth=20, random_state=42)	0.84	0.83	0.83	0.3339	0.1099	0.3125	0.83
	(n_estimators = 100, max_features='sqrt', criterion='entropy', min_samples_leaf= 4,	0.84	0.83	0.83	0.3333	0.1100	0.3085	0.83

	max_depth=30, random_state=42) *pipeline_vzrf701							
	(n_estimators = 100, max_features='sqrt', criterion='gini', min_samples_leaf= 4, max_depth=30, random_state=42)	0.84	0.83	0.83	0.3480	0.1084	0.3130	0.83
	(n_estimators = 100, max_features=None, criterion='entropy', min_samples_leaf= 4, max_depth=30, random_state=42)	0.83	0.82	0.83	0.3181	0.1195	0.3277	0.82
	(n_estimators = 100, max_features=None, criterion='entropy', min_samples_leaf= 6, max_depth=30, random_state=42)	0.83	0.82	0.82	0.3170	0.1192	0.3315	0.82
SVC	(kernel = 'rbf', C=1, gamma='scale', decision_function_shape='ovr', random_state=42)	0.84	0.83	0.83	0.4047	0.1189	0.3076	0.83
	(probability=True, kernel='rbf', gamma='scale', C=3, decision_function_shape='ovr', random_state=42) *pipeline_vzsvc20	0.84	0.83	0.83	0.3981	0.1181	0.3049	0.83
	(probability=True, kernel='rbf', gamma='auto', C=3, decision_function_shape='ovr', random_state=42) *pipeline_vzsvc30	0.84	0.83	0.83	0.3978	0.1181	0.3056	0.83
SGD	(loss= 'log_loss', random_state=42)	0.82	0.82	0.81	0.4262	0.1030	0.3414	0.81

	(loss= 'log_loss', alpha=0.001, learning_rate='invscaling', eta0=1, max_iter=10000, random_state=42)	0.82	0.82	0.81	0.4305	0.0991	0.3396	0.82
	(loss= 'log_loss', alpha=0.0001, learning_rate='adaptive', eta0=2, max_iter=10000, random_state=42) *pipeline_vzsgd70	0.83	0.82	0.82	0.4155	0.1021	0.3335	0.82
	(loss= 'log_loss', alpha=0.001, learning_rate='adaptive', eta0=2, max_iter=10000, random_state=42)	0.83	0.82	0.82	0.4281	0.0991	0.3353	0.82
KNN	(n_neighbors = 5)	0.72	0.71	0.71	3.0470	0.0891	0.5286	0.71
	(n_neighbors = 30)	0.77	0.78	0.74	0.6571	0.0676	0.4410	0.75
	(n_neighbors = 60)	0.77	0.79	0.74	0.6659	0.0615	0.4421	0.76
	(n_neighbors = 60, weights='distance')	0.77	0.79	0.74	0.6619	0.0621	0.4473	0.75
	(n_neighbors = 60, p=1, weights='distance') *pipeline_vzknn70	0.78	0.80	0.75	0.6084	0.0675	0.4177	0.77

Model Name	Parameters							
		Accuracy	Precision	Recall	Log Loss	Variance	MAE	Avg F1

dt	(max_depth = 12, min_samples_leaf= 42, criterion = 'log_loss', random_state=42) *pipeline_vzdtree14	0.83	0.82	0.82	0.3834	0.1200	0.3408	0.82
rf	(n_estimators = 100, max_features='sqrt', criterion='entropy', min_samples_leaf= 4, max_depth=30, random_state=42) *pipeline_vzrf701	0.84	0.83	0.83	0.3333	0.1100	0.3085	0.83
svc*	(probability=True, kernel='rbf', gamma='auto', C=3, decision_function_shape='ovr', random_state=42) *pipeline_vzsvc30	0.84	0.83	0.83	0.3978	0.1181	0.3056	0.83
sgd	(loss= 'log_loss', alpha=0.0001, learning_rate='adaptive', eta0=2, max_iter=10000, random_state=42) *pipeline_vzsgd70	0.83	0.82	0.82	0.4155	0.1021	0.3335	0.82
knn	(n_neighbors = 60, p=1, weights='distance') *pipeline_vzknn70	0.78	0.80	0.75	0.6084	0.0675	0.4177	0.77
Ensembled								
Stacking	VZONE(SVC) - RF, SVC, DT *stacking_model1_3	0.85	0.84	0.84	0.4774	0.1136	0.2931	0.84
	VZONE(RF) - RF, SVC, Dt	0.84	0.83	0.83	0.3135	0.1197	0.3089	0.83

Voting	VZONE - RF, SVC,DT *voting_classifier3	0.84	0.84	0.4	0.3230	0.1128	0.2970	0.84