model	R2	MSE	R2 std	hidden sizes	total hs	epochs
Relu2HiddenLayer	96.2	0.03	1.6	[15, 5]	20	100
	94	0.05	4.7	[8, 4]	12	50
	91.7	0.07	5.1	[8, 4]	12	20
	91.4	0.07	1.9	[8, 4]	12	200
	90.1	0.09	0.9	[15, 10, 3]	28	20
	87.5	0.11	8.3	[15, 10, 3]	28	200
	84.8	0.13	2	[15, 5]	20	50
	81.9	0.16	4.9	[15, 10, 3]	28	50
	81.2	0.16	6.6	[15, 5]	20	200
	80.7	0.17	0.3	[15, 10, 3]	28	100
	68.7	0.27	2.3	[8, 4]	12	100
	65.3	0.3	3.4	[15, 5]	20	20

Table 1: Results of different models

features	R2
flow_rate1, conc_nano1, Kfluid1, heat_flux1, X_D1, flow_rate2, conc_nano2, Kfluid2, heat_flux2, X_D2	82.69
conc_nano1, Kfluid1, heat_flux1, X_D1, flow_rate2, conc_nano2, Kfluid2, heat_flux2, X_D2	62.45
flow_rate1, Kfluid1, heat_flux1, X_D1, flow_rate2, conc_nano2, Kfluid2, heat_flux2, X_D2	81.63
flow_rate1, conc_nano1, heat_flux1, X_D1, flow_rate2, conc_nano2, Kfluid2, heat_flux2, X_D2	73.64
flow_rate1, conc_nano1, Kfluid1, X_D1, flow_rate2, conc_nano2, Kfluid2, heat_flux2, X_D2	72.94
flow_rate1, conc_nano1, Kfluid1, heat_flux1, flow_rate2, conc_nano2, Kfluid2, heat_flux2, X_D2	67.45
flow_rate1, conc_nano1, Kfluid1, heat_flux1, X_D1, conc_nano2, Kfluid2, heat_flux2, X_D2	68.03
flow_rate1, conc_nano1, Kfluid1, heat_flux1, X_D1, flow_rate2, Kfluid2, heat_flux2, X_D2	76.57
flow_rate1, conc_nano1, Kfluid1, heat_flux1, X_D1, flow_rate2, conc_nano2, heat_flux2, X_D2	38.28
flow_rate1, conc_nano1, Kfluid1, heat_flux1, X_D1, flow_rate2, conc_nano2, Kfluid2, X_D2	69.39
flow_rate1, conc_nano1, Kfluid1, heat_flux1, X_D1, flow_rate2, conc_nano2, Kfluid2, heat_flux2	81.61

Table 2: Results of Backward Feature Elimination

1 Results

1.1 Main Results

1.2 Backward Feature Selection

1.3 Forward Feature Selection

1.4 Weight Analysis

1.5 Jackknife Sensitivity Analysis

features	R2
X_D1	14.85
flow_rate2	27.69
conc_nano2	11.15
Kfluid2	62.66
heat_flux2	-4.92
flow_rate1, Kfluid2	75.33
conc_nano1, Kfluid2	64.49
Kfluid1, Kfluid2	67.9
heat_flux1, Kfluid2	74.3
X_D1, Kfluid2	67.3
flow_rate2, Kfluid2	9.94
conc_nano2, Kfluid2	87.59
heat_flux2, Kfluid2	56.8
X_D2, Kfluid2	67.59
flow_rate1, Kfluid2, conc_nano2	60.42
conc_nano1, Kfluid2, conc_nano2	78.36
Kfluid1, Kfluid2, conc_nano2	79.88
heat_flux1, Kfluid2, conc_nano2	90.37
X_D1, Kfluid2, conc_nano2	84.51
flow_rate2, Kfluid2, conc_nano2	65.14
heat_flux2, Kfluid2, conc_nano2	57.1
X_D2, Kfluid2, conc_nano2	54.6
flow_rate1, Kfluid2, conc_nano2, heat_flux1	62.62
conc_nano1, Kfluid2, conc_nano2, heat_flux1	92.87
Kfluid1, Kfluid2, conc_nano2, heat_flux1	80.94
X_D1, Kfluid2, conc_nano2, heat_flux1	87.63
flow_rate2, Kfluid2, conc_nano2, heat_flux1	82.76
heat_flux2, Kfluid2, conc_nano2, heat_flux1	55.75
X_D2, Kfluid2, conc_nano2, heat_flux1	75.43
flow_rate1, Kfluid2, conc_nano2, heat_flux1, conc_nano1	49.56
Kfluid1, Kfluid2, conc_nano2, heat_flux1, conc_nano1	93.06
X_D1, Kfluid2, conc_nano2, heat_flux1, conc_nano1	87.49
flow_rate2, Kfluid2, conc_nano2, heat_flux1, conc_nano1	69.35
heat_flux2, Kfluid2, conc_nano2, heat_flux1, conc_nano1	65.5
X_D2, Kfluid2, conc_nano2, heat_flux1, conc_nano1	64.18
flow_rate1, Kfluid2, conc_nano2, heat_flux1, conc_nano1, Kfluid1	84.19
X_D1, Kfluid2, conc_nano2, heat_flux1, conc_nano1, Kfluid1	87.54
flow_rate2, Kfluid2, conc_nano2, heat_flux1, conc_nano1, Kfluid1	76.61
heat_flux2, Kfluid2, conc_nano2, heat_flux1, conc_nano1, Kfluid1	71.81
X_D2, Kfluid2, conc_nano2, heat_flux1, conc_nano1, Kfluid1	77.34

Table 3: Results of Forward Feature Selection for different features

Feature	Weight Importance
X_D2	0.681455
X_D1	0.617036
heat_flux2	0.613336
heat_flux1	0.612263
Kfluid2	0.512448
conc_nano2	0.490265
flow_rate1	0.426227
Kfluid1	0.419663
conc_nano1	0.390698

Table 4: Results of Weight Analysis

Feature	Sensitivity	Variance
Kfluid2	16.7308	149.29
heat_flux2	11.0725	134.77
X_D1	10.0772	645.93
flow_rate2	4.83764	792.954
X_D2	3.97001	194.98
flow_rate1	1.0037	874.711
Kfluid1	-0.31073	554.655
conc_nano1	-5.82048	116.927
heat_flux1	-8.58076	242.628
conc_nano2	-11.9773	43.7778

Table 5: Results of Jackknife Sensitivity Analysis