In all the Jupyter notebooks and Matlab code, you will need to adjust the various file paths to match your directory.

To reproduce figure 3 results

To generate training data from oracle, run CircuitX_Oracle.ipynb
To train model, run CircuitX_Train.ipynb with the following hyperparameters:

Circuit	no_kernels	lambda	lr_min	lr_max	learn_rate
2, 3A or 3B	3	1e-1	1e-4	1e-5	-
	8	1e1	1e-4	1e-5	-
	16	1e1	1e-4	1e-5	-
	28	1e1	1e-4	1e-5	-
1	3	1e-7	-	-	1e-5
	28	1e-5	-	-	1e-5
	14	1e-5	-	-	1e-5

To compute System and Support recovery score, run CircuitX_Rsys_Rsupp_Calculator.m
(you will need to adjust filepaths to match your local directory name)

To reproduce figure 4ab results

Same as above, but with lambda = 0.0

To reproduce figure 4cd results

To generate training data from oracle, run CircuitX_Oracle.ipynb
To train model, run CircuitX_Train_NoSignConstraint.ipynb with the following hyperparameters:

Circuit	no_kernels	lambda	lr_min	lr_max	learn_rate
2	3	1e-1	1e-4	1e-5	-
	8	1e1	1e-4	1e-5	-

	16	1e1	1e-4	1e-5	-
	28	1e1	1e-4	1e-5	-
1	3	1e-7	-	-	1e-5
	28	1e-5	-	-	1e-5
	14	1e-5	-	-	1e-5

To compute System and Support recovery score, run CircuitX_Rsys_Rsupp_Calculator.m
(you will need to adjust filepaths to match your local directory name)

To reproduce figure 5 results

To generate training data from oracle, run KDD_X_Oracle.ipynb
To train model, run KDD_Fig5_Training.ipynb with the following hyperparameters:

lambda	learn_rate
1e-3	1-3

To compute System and Support recovery score, run Fig5_Rsys_Rsupp_Calculator.m
(you will need to adjust filepaths to match your local directory name)

To reproduce figure 6 results

Preconvolve stimuli with basis of filters by running kdd_X_preconv.ipynb
Train model by running KDD_realdata_X_Training.ipynb with the following hyperparameters:

lambda1	learn_rate
1e1	1e-3