Basics of Running a Model

To run a Simulink model, first go to the file MC_run.m. This script will run the Monte Carlo model for the Digitizing Design over the range of N and T specified in the script. To actually simulate the model, press Run in the Matlab tool bar or call MC_run from the Matlab command window.

MC_run.m works by first initializing variables required for the simulink design, this includes the parameters which determine the component errors for each component. To simulate the Digitizing Design, the EOM on and off times and delays need to be determined. MC_run.m calls the script runExperiment(T, N) which calls a script located in the Automation_Optimization directory which computes the EOM on/off times given the delays specified according to minimizing the overlap integral in the Delay-Optimization code.

Using these EOM on/off times and delay specifications the actual model is ready to be run. For MC_run.m, the digitizing design simulink model (MC_DigitizingDesign,slx) is run and simulated with these timing specifications.

The output data from the model is then stored in a structure. After completing a given N and T, the average timing and performance metrics are computed and stored in this structure. At the end of the model, an output structure titled FinalResultsSet is present in Matlab's workspace and contains all of the simulation parameters and performance metrics. With this structure you can compare the simulated overlap integral values for a given N and T against the UDD overlap integral value. Other useful parameters such as the power performance and RMSE timing error are stored.

After running the model, run OutputPlotting.m to visualize the last simulation. Open the script and press the “Run” button in Matlab's toolbar or call the script from Matlabs command window.