## ISI Add On Experiment

# Goal

* The goal is to demonstrate that when routing a board it is necessary to know and take into consideration not only the data in the transmission line being routed but also the effects on nearby traces. User will be able to see that when transmitting at high crosstalk and ISI can affect and the output of more than one line.

# Detail requirements:

* Powered by USB 2.0
* Include 1-8 MHz clock
* Have pseudo random pattern generator (LSFR)
* Capable of injecting other signals external function generator.
  + External clock can be used
  + LSFR can be disconnected and other patters used
* Will have 1 victim with 2 aggressors at each side of victim.
* Include Test points near input and output
* Will include variable passive components (R,C,L) to affect transmission line properties
* User must be able to perform experiment using USB powered board and oscilloscope

# Description

Before completing this experiment is recommended that the student completes and understands the crosstalk and the Intersymbol interference (ISI) experiment in the E3VB. ISI distortion is a result of previous symbols interfering with the current symbol. Crosstalk is a form of signal distortion that happens when the nearby traces interfere with each other. Both factors may affect signals at the same time; our focus is to provide an experiment that demonstrates the effect of both ISI and crosstalk either independently or simultaneously.

The new ISI experiment consists of expanding and improving both the ISI and the crosstalk experiment on the E3VB. The clock and the pseudo random function generator are included on board to allow the experiment to be run anywhere. If the user wants to make different observation the user can inject a new clock or digital patterns by disabling the built-in components and using provided jumpers.