University of Evansville

Project 4

Discrete Convolution Animation

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EE356 Small Computer Software

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Description:

Allows user to enter a series of numbers separated by commas into two textboxes, which represent the values of the impulse response and input for a discrete system. The start button calculates the convolution, and displays an animation of the output at each step, then the final output. If the “Step Mode” checkbox is check when the start button is clicked, then the user may step forward and backward in the animation using the arrows, and the Finish button to display the final output

* Meets these Minimum Requirements:
  + A method to get the input signal from the user. This may be a text box in which the user types in a sequences of numbers separated by commas.
  + A method to get the impulse response. You can also do this with a text box.
  + A graphical display of the input which will not change for the animation.
  + A graphical display of the time-reversed impulse response sliding across the input signal.
  + A graphical display of the output produced at each discrete step as the impulse response slides across the input.
* And these Extra Features:
  + Allow the user to run the animation continuously, or single-step through the animation using the arrow buttons to go forwards and backwards.
  + When not in “Step Mode”, the speed at which the animation runs is changed depending on the number of data points, so that even a convolution with a large number of data points results will be displayed in a timely manner.
  + 2 example signals are given as buttons that insert the data into the textbox’s when clicked.
  + The graphs are scaled based on the input data size, so it will properly display any reasonably sized data.
  + Can handle the calculation and animation of both positive or negative data points.
  + X and Y axes with tick marks allows user to see magnitude of each data point.
  + Custom window icon

