Signal Processing Notes

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Pre course: Complex numbers

Topic 1: Introduction to signals

A discrete signal is generally defined as a sequence of numbers A set in other words.
There are multiple different basic sequences that you can consider, these will be shown below:

Name	Definition
sequence	$x[n] = \sum_{k=-\infty}^{\infty} x[k]\delta[n-k]$
unit sample sequence	$\delta[n] = \{^{0, n \neq 0,}_{0, n = 0.}$
unit step sequence	$u[n] = \{^{1, n \leq 0,}_{0, n < 0.}$

Topic 2: Convolution

Topic 3: z-transform

Topic 4: Sampling

Topic 5: Analog Filters

Topic 6: Digial IIR Filters

The Impulse Invariant Method

Topic 7: Design of IIR Digital Filters

Topic 8: Digital FIR Filters

Linear Phase

The Window Method

Topic 9: Frequency Analysis of LTI Systems

Topic 10: Realization Structures for Digital Filters

Topic 1113: The Discrete Fourier Transform

Topic 14: The Short Time Fourier Transform (STFT)