Smart Teknologi
Assignment 2, Task 3
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Multi-Resolution Analysis (MRA)

Multi-Resolution Analysis, or MRA, is a fundamental concept in signal processing, especially when using wavelets. It offers a way to analyze data at multiple levels of resolution.

Why MRA is useful

- One of the major benefits of MRA is that it provides a hierarchical representation of data. At the highest level, you get a low-resolution view of the data, and as you move to finer levels, you get more details.

- MRA is widely used in image and signal compression. By representing data in terms of approximation and detail coefficients, you can often achieve high compression ratios by quantizing or discarding certain coefficients that may not contribute significantly to the original data.

- Noise often resides in the high-frequency components. By thresholding or manipulating the detail coefficients, one can effectively reduce noise while preserving the main features of the data.

- MRA is useful in detecting features at different scales.

- MRA is quite diverse, and has been used in many different use cases and applications, such as finance, geophysics, and in medical imaging for analyzing MRI and other medical images.