

class.

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Elect/Elect Engineering

EEF 471 Assignment

1) Signal processing is an electrical electronics ~~sub~~ sub-field that focuses on analysing, modelling and synthesizing of signals such as sound, images and scientific measurements. It's techniques can be used to improve transmission, storage efficiency and subjective quality and also to emphasize or detect components of interest in a measured signal.

Signal interfacing, is the method of connecting or linking devices, allowing us to adapt and design their output and input configurations of the two electronic devices so they can work together. These techniques are concerned with improving the quality of the readings or signals at the output of a measuring instrument.

Some of the techniques are:

- Discrete time - Continuous time - Statistical - Analog - Digital - Non linear

- Discrete time: - Is a technique for sampled signals defined only at discrete points in time; as such are quantized in time but not in magnitude. The concept for this also refers to a theoretical discipline that establishes a mathematical basis for digital signal processing without taking quantization error into consideration.

- Continuous time: - It is a technique for sampled signals that varies with a change in continuous domain. This method includes; time domain, frequency domain & complex frequency domain

- Statistical: It is a technique that treats signals as a stochastic process, ~~using~~ using their statistical properties to perform signal processing tasks.
- Analogy: Is a technique used for signals that have not been digitized. This involves linear & non-linear electronic circuits.
- Digital: Is a technique used in the processing of digitized, discrete-time sampled signals, done by general purpose computers or by digital circuits.
- Non-linear: It is a technique which involves the analysis and processing of signals produced from non-linear systems and can be time, frequency or spatio-temporal domains.
- Linear: It analyses linear system signals, or signals analysis using linear methods.

2) Expert System Instrumentation: The expert system instrumentation are those systems, like artificial intelligence, which ~~have~~ ^{copy's} the decision making ability of a human. The ESI, is the act of using or adapting an AI, developed to solve or a series or combination of AI's, developed to solve complex problems in a particular domain. Its instrumentation consists of its software, inference engines and all systems that work together for its function.

Architecture/Components of ES

- 1) Knowledge Base
- 2) Inference Engine
- 3) Knowledge Acquisition ~~and~~ Learning model
- 4) User Interface
- 5) Explanation module

ES uses the forward chaining ["what can happen next"] and backward chaining ["Why did this happen?"] to recommend solutions.