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ELETT / ELECT
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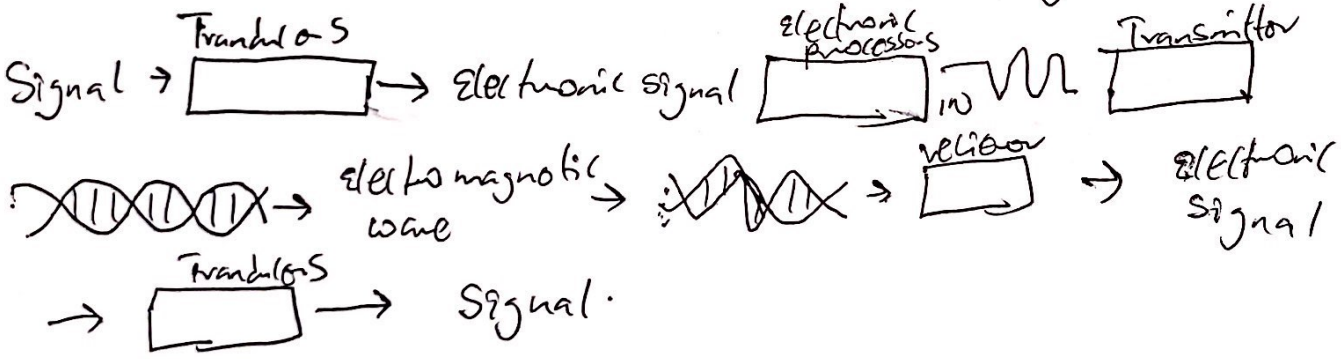
1) Signal processing is concerned with improving the quality of the reading or signal at the output of a measurement system and one particular aim to attenuate any noise in the measurement signal that has not been eliminated by careful design of the measurement system.

This is also an electrical engineering subfield that focuses on analysing, modifying and synthesizing signals such as sound, images, & scientific measurements

The techniques can be used to improve transmission, storage efficiency & subjective quality & to also emphasize or detect components of interest in a measured signal.



The techniques in signal processing goes as follows

* Analog
* Continious time
* Discrete time
* Digital
* Non-linear
* Statistical

* ANALOG : This is for signal that have not been digitized as in most 20th Century radio, telephone, radar, & television systems. This involves linear electronic circuits as well as non-linear ones. The former are, for instance, passive filters, active filter, additive filter, additive mixers integrators and delay lines. Non-linear circuit include Compandors, multipliers [frequency mixers, voltage-controlled amplifiers], voltage controlled filters, voltage controlled oscillatory and phase locked loops.

* Continious Time: Continious-time signal processing is for signals that vary with the change of continious domain {without considering some individual interrupted points}

The methods of signal processing include time domain, frequency domain, and complex frequency domain. This technology mainly discusses the modelling of linear time-invariant continious system, integral of the system's zero state response setting up system functioning & the continious time filtering of determiniate signals.

* Discrete Time

Discrete time signal processing is for sampled signals, defined only as discrete points in time and as such are quantized in time, but not in magnitude

Analog discrete time-signal processing is a technology based on electronic devices such as sample & hand circuits analog time-division multiplexing, analog delay lines & analog feedback shift registors. This technology was a predecessor of digital signal processing & is still used in advance processing giga hertz signals.

DIGITAL : Digital System Signal processing is the processing of digitized discrete-time sampled signals. processing is done by general-purpose computers or by digital circuit such as ASICs, field-programmable gate arrays or specialized digital processors {DSP chips}. Typical arithmetical operations include fixed point & floating-point, real valued & complex-valued, multiplication & addition. The typical operations supported by the hardware are circular buffers and lookup hardware & circular buffers & look-up tables. Examples of algorithms are fast fourier transform (FFT) & adaptive filters such as the linear & kalman filters

NON-LINEAR : Non linear signal processing involves the analysis & processing of signals produced from non-linear systems & can be in the time, frequency or spation temporal domain. Non-linear frequency or can produce highly complex behaviour including bifurications, chaos, harmonics & sub-harmonics which cannot be produced or analyzed using linear methods.

STATISTICAL : Statistical Signal processing is an approach which treats signals as stochastic processes, utilizing their statistical properties to perform signal processing tasks. statistical techniques are widely used in signal processing application for example one can model the probability distribution of noise incurred when photographing an image & construction techniques based on this model the noise in the resulting image.

2) In an artificial intelligence an expert system is a computer system emulating the decision making ability of a human expert. Expert System are designed to some complex problems by reasoning through bodies of knowledge, represented mainly as if - then rules rather than through conventional procedure code.

An expert system is divided in to two systems. The interference engine & the knowledge base. The knowledge base represent facts and rules. The interference engine applies the rules to the know facts to deduce now facts. interference engine can also include explanation & debugging abilities.

ADVANTAGES

* To make the critical information required for the system to work explicit rather than implicit
* used to specify the rules in a format that was easy understood reviewed & even edited by domain experts rather than IT experts.

DISADVANTAGES

* in the academic literature is the knowledge acquisition problem
* Seems as least as critical as knowledge acisition.