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1) Signed Processing Condenses measurements to extract information about some distant state of nature. Signal processing can be described from different perspectives. to an acoustician, it is a tool to turn measured signals into useful information to a sonar designer. it is one part of a sonar system. To an Electrical Engineer, it is often restricted to digitalization, sampling, filtering and spectral estimation. A modern Underwater acoustic signal processing system can include the following

- Digitalization (sampling in time and quantizing in amplitude)
- bandpass and base bound filtering
- Beam forming (spatial filtering)
- Matched filtering and/or incoherent integration.
- Defection, classification, localization and tracking although measurements are typically acquired jointly in space and time, signal processing is usually partitioned to Combine signals across space first and then time. The other Components are similarly seperate, in part owing to their inherent modularity and also from a paced evolution in computational power. For example, early deployment of beam formers required special hardware can only beam-output ~~data~~ were easily accessible for analysis. Easy access to data enables advances in the modern signal processing Components of defection, Classification, localization and tracking.

2) In artificial intelligence, an expert system is a Computer system emulating the decision making ability of a human expert. An expert system generally ~~Cosists~~ Consists of four Components which are a knowledge base, the search or inference system, a knowledge acquisition system and the user interface or Communication system.

Expert systems are designed to solve Computer problems by reasoning through bodies of knowledge represented mainly as "If-the

rules rather than through conventional procedural code.

We can also divide the expert system into two subsystems: The inference engine and the knowledge base. The knowledge base represents facts and rules. The inference engine applies the rules to the known facts to deduce new facts. Inference engines can also include explanation and debugging abilities.