

A Mathematical Theory of Communication

Parts I & II

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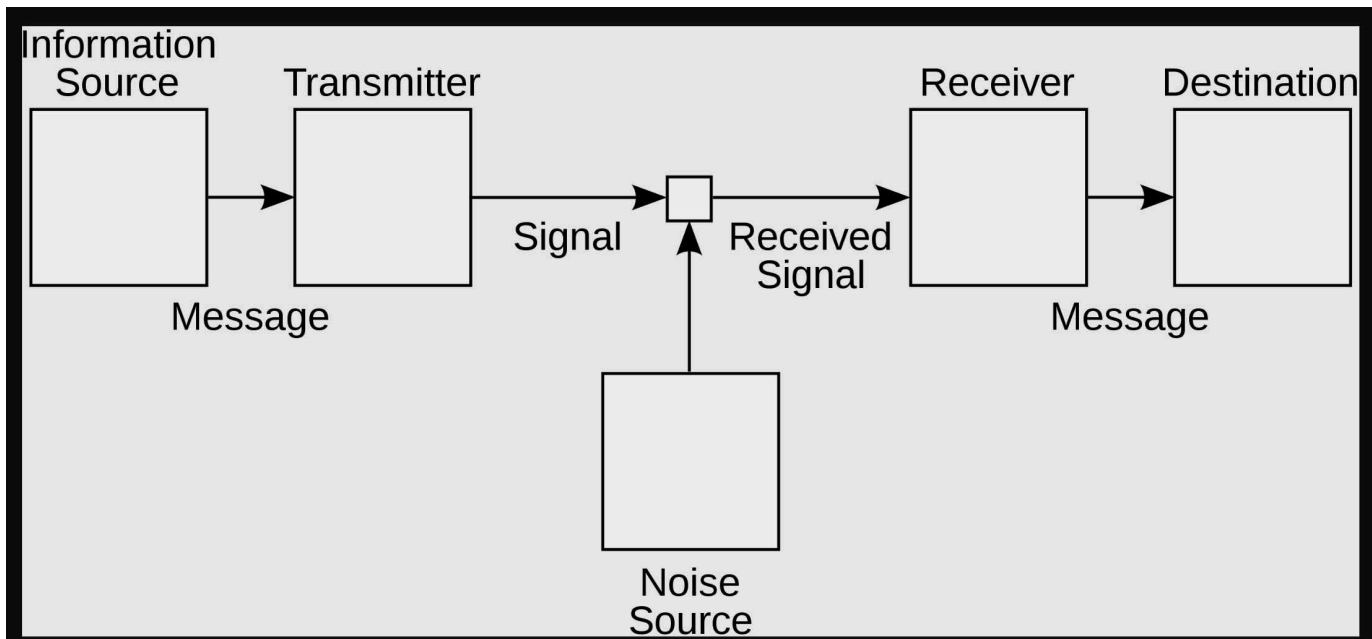
"Developed throughout the war years but published in 1948, Shannon's landmark paper lays the groundwork for digital communications," Bell Labs, Claude Shannon Discoveries, <https://www.bell-labs.com/claude-shannon/#discoveries>
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Information Theory Unit

With this paper, Claude Shannon provided the theoretical foundation for communication engineering. It describes how information can be manipulated using mathematical equations and broken down, into what he called "bits" so that it could be used in digital form. It provides the basis from which all modern communication stems, such as the Internet, Computers, and Smartphones.

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Information (called a message) is produced by a source and is sent out by a transmitter as a signal. The signal goes through a channel and comes to a receiver, which then turns the signal back into the message for the destination. In a telephone, for example, the human voice is the message. The microphone (transmitter) turns it into an electromagnetic signal that travels down the wire (channel) to the earpiece (receiver) on another phone that turns it back into a voice message.