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Process Essay
May 17th, 2025

Around the world in 133 ms

Have you ever wondered what really happens with your voice when you talking to someone on the phone? From the instant the soundwaves leave your throat until they reach the ear of the person you are talking to, a series of analog and digital processes collaborate to carry your message. In fact, this whole process can be broken down into three major steps – sampling, quantisation and modulation. In the course of this essay, we will investigate each of these steps in more depth to understand how modern communication works on a technical level.

In the sampling process, an analogue signal is transformed into its digital representation. This signal can be interpreted as any kind of waveform or motion that has not been processed by a digital device yet. For example, the sound of your voice or the tone of a guitar string is a suiting type of signal that we want to digitize. However, a digital device like a computer or a phone cannot unterstand such an analogue signal, thus we have to first convert it into some kind of electrical signal the device can unterstand. We can achieve that by taking repeated “snapshots” of the current state of the analogue signal and saving the corresponding value. The resulting signal is now so called “time discreet”, because we went from a continuous signal that has a value for every imaginable point in time to one where such values only exist at fixed, predefined points in time (i.e. every second). Going on, we now have a signal that consists of repeated snapshots of the originating signal where each value can still be considered as continuous

Essay has a total of 280 words.

References