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Simple Markov Process Investigation

Abstract: This assignment entails a search for knowledge about Markov processes, real world applications of Markov processes, and perspectives on the strengths and weaknesses of Markov models. It then calls for the expression of that knowledge in the form of a short essay.

The depths of Markov processes by Amanda Pirie

Conception & establishment of Markov processes

Markov chose to pursue mathematics as a bachelor's, master's, and doctoral degree at university. His professors urged him to research fresh concepts and challenges which he did. Markov maintained his investigation by publishing papers and conducting research studies. Markov chains were created as a result of these papers and studies. The concept of Markov chains created a whole new field of probability theory, which in turn produced stochastic process theory. The continuous Markov process was first studied by Nobert Wiener. The theory of Markov chains was then further developed by Sergei Bernstein using Makrov and Chebyshevs methods and research (MacTutor). Following this, Markov continued to construct Markov chain theory as mathematical ideas without considering real-world mathematical applications, which he was eventually able to apply it to. In the end, Markov's research with these processes led to the processes' names being named after Markov.

Real world applications of the Markov processes

There are multiple amounts of real-world applications of Markov processes, such as, the stock market, the weather, sporting/betting events, determining page rank by Google, state votes for presidency/mayor, market prices and asset prices, chess, and more. Markov processes are, as written above, predictions of the probability of the present/current state. For example, if you

were to play chess online against an online simulator, a Markov process could be used to make mechanical decisions when making moves on the board.

Strengths and weaknesses of the Markov processes

Some strengths of a Markov process could be: (1) predicts the future, (2) it can help businesses improve faster by using these processes (weather channel, stock market, etc.), and (3) the processes work in M-mode. Some weaknesses of a Markov process could be: (1) it is memoryless, (2) the predictions don't show or use anything from the past, and (3) the predictions could be a poor representation of what it could be. Although there may be many more strengths and weaknesses, these are the most important that are relevant and salient to Markov processes as a whole.

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