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Foundations of AI

After reading eight foundation disciplines of AI: philosophy, mathematics, economics, neuroscience, psychology, computer engineering, control theory and cybernetics, linguistics, I found out each of these factors have difference impact on the growth of AI. Of these disciplines, mathematics is the most appealing to me.

In my opinion, mathematics is very important to AI and Machine Learning since it provides means to calculate how to reach their goals. Using self-driving cars as an example, the goals of self-driving cars are to have the computer recognize objects and people on the roads in 2D and choose the fastest way to reach destination. In order to do that, the objects/people should be captured in hexadecimal in put in some equation for some circles, lines or curves, the ways should be captured in a virtual map to find the best one. These calculations and equations require some basic knowledge of Linear Algebra & Probabilistic theory and geometry. One of the most important things that mathematics is the most importance thing of AI is that computer or AI, until now, do not share our concept of reason, vision, morale. AI/Computers are only working with 0s and 1s. In fact, the only way we can communicate with AI are functions, procedures. Mathematics is what behind all these great advances.

In my conclusion, without mathematics, AI/machine just like a vacuum robot without any sensors. It still can do its job (clean the dust), but it will take more time than it supposes to do. We may not need to have a mathematical degree to make a neural system, however for those people who write algorithms, do the research on AI cannot go far with the math.