Twitter Thread by elvis

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I have always emphasized on the importance of mathematics in machine learning.

Here is a compilation of resources (books, videos & papers) to get you going.

(Note: It's not an exhaustive list but I have carefully curated it based on my experience and observations)

■ Mathematics for Machine Learning

by Marc Peter Deisenroth, A. Aldo Faisal, and Cheng Soon Ong

https://t.co/zSpp67kJSg

Note: this is probably the place you want to start. Start slowly and work on some examples. Pay close attention to the notation and get comfortable with it.

■ Pattern Recognition and Machine Learning

by Christopher Bishop

Note: Prior to the book above, this is the book that I used to recommend to get familiar with math-related concepts used in machine learning. A very solid book in my view and it's heavily referenced in academia.

■ The Elements of Statistical Learning

by Jerome H. Friedman, Robert Tibshirani, and Trevor Hastie

Mote: machine learning deals with data and in turn uncertainty which is what statistics teach. Get comfortable with topics like estimators, statistical significance,...

■ Probability Theory: The Logic of Science

by E. T. Jaynes

Note: In machine learning, we are interested in building probabilistic models and thus you will come across concepts from probability theory like conditional probability and different probability distributions.

■ Multivariate Calculus by Imperial College London

by Dr. Sam Cooper & Dr. David Dye

https://t.co/OYaqzlXmJG

Note: backpropagation is a key algorithm for training deep neural nets that rely on Calculus. Get familiar with concepts like chain rule, Jacobian, gradient descent,.

■ The Matrix Calculus You Need For Deep Learning

by Terence Parr & Jeremy Howard

https://t.co/Gk96dRsX5t

Note: In deep learning, you need to understand a bunch of fundamental matrix operations. If you want to dive deep into the math of matrix calculus this is your guide.

■ Mathematics for Machine Learning - Linear Algebra

by Dr. Sam Cooper & Dr. David Dye

https://t.co/lNYLiMKLma

Note: a great companion to the previous video lectures. Neural networks perform transformations on data and you need linear algebra to get better intuitions.

■ Information Theory, Inference and Learning Algorithms

by David J. C. MacKay

Note: When you are applying machine learning you are dealing with information processing which in essence relies on ideas from information theory such as entropy and KL Divergence,...