Twitter Thread by Pratham Prasoon



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Everything you need to know about the math for machine learning as a beginner.

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Before diving into the math, I suggest first having solid programming skills.

For example■

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In Python, these are the concepts which you must know:

- Object oriented programming in Python : Classes, Objects, Methods
- List slicing
- String formatting
- Dictionaries & Tuples
- Basic terminal commands
- Exception handling

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If you want to learn python, these courses are freecodecamp could be of help to you.

■Basics: youtube .com/watch?v=rfscVS0vtbw
■Intermediate :youtube .com/watch?v=HGOBQPFzWKo

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You need to have really strong fundamentals in programming, because machine learning involves a lot of it.

It is 100% compulsory.

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Another question that I get asked quite often is when should you start learning the math for machine learning?

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Math for machine learning should come after you have worked on some projects, doesn't have to a complex one at all, but one that gives you a taste of how machine learning works in the real world.

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Here's how I do it, I look at the math when I have a need for it.

For instance I was recently competing in a kaggle challenge.

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I was brainstorming about which activation function to use in a part of my neural net, I looked up the math behind each activation function and this helped me to choose the right one.

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The topics of math you'll have to focus on
- Linear Algebra
- Calculus
- Trigonometry
- Algebra
- Statistics
- Probability

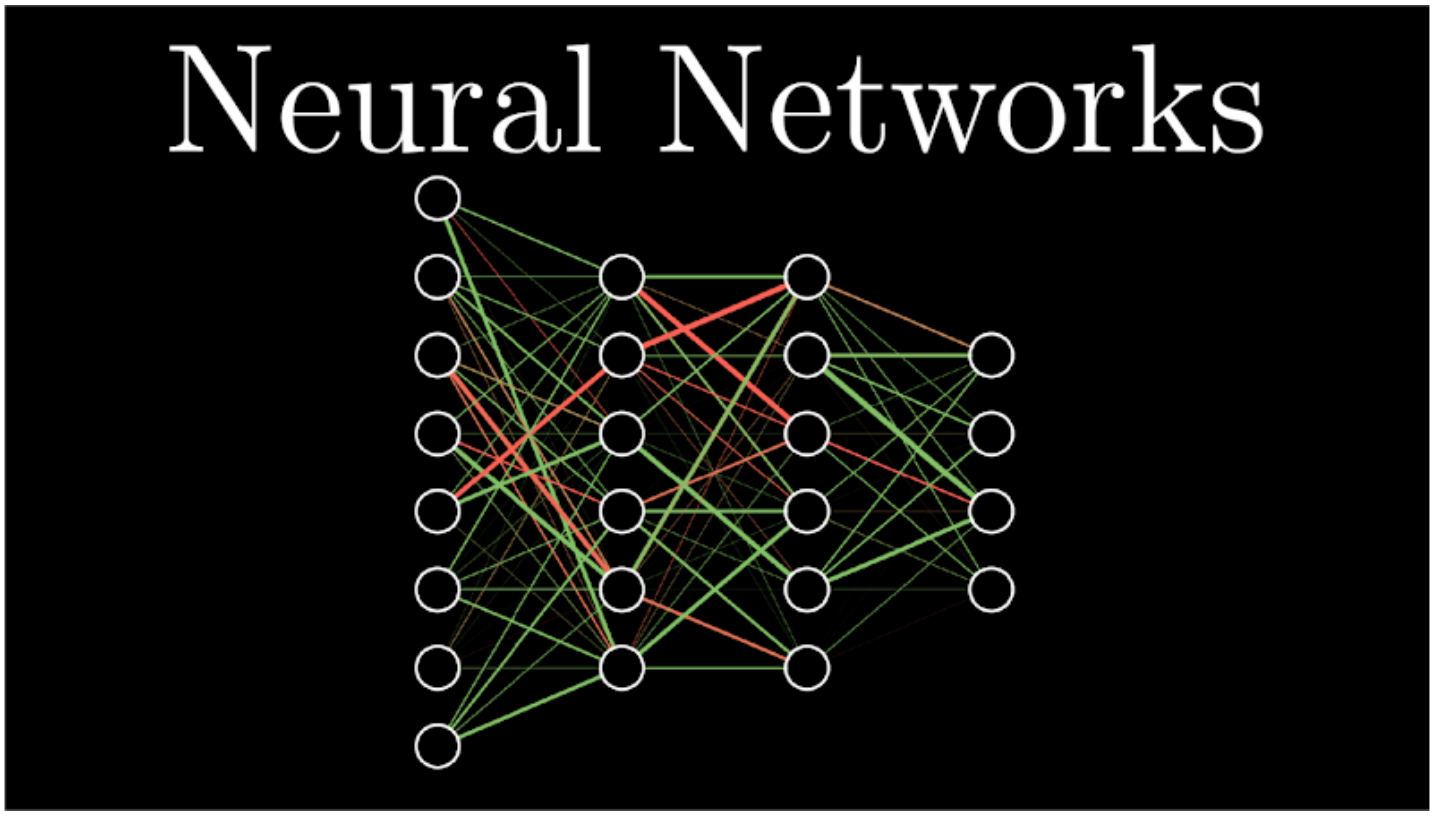
Now here are the math resources and a brief description about them.

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Neural Networks
> A series of videos that go over how neural networks work with approach visual, must watch

■youtube. com/watch?v=aircAruvnKk&list=PLZHQObOWTQDNU6R1_67000Dx_ZCJB-3pi

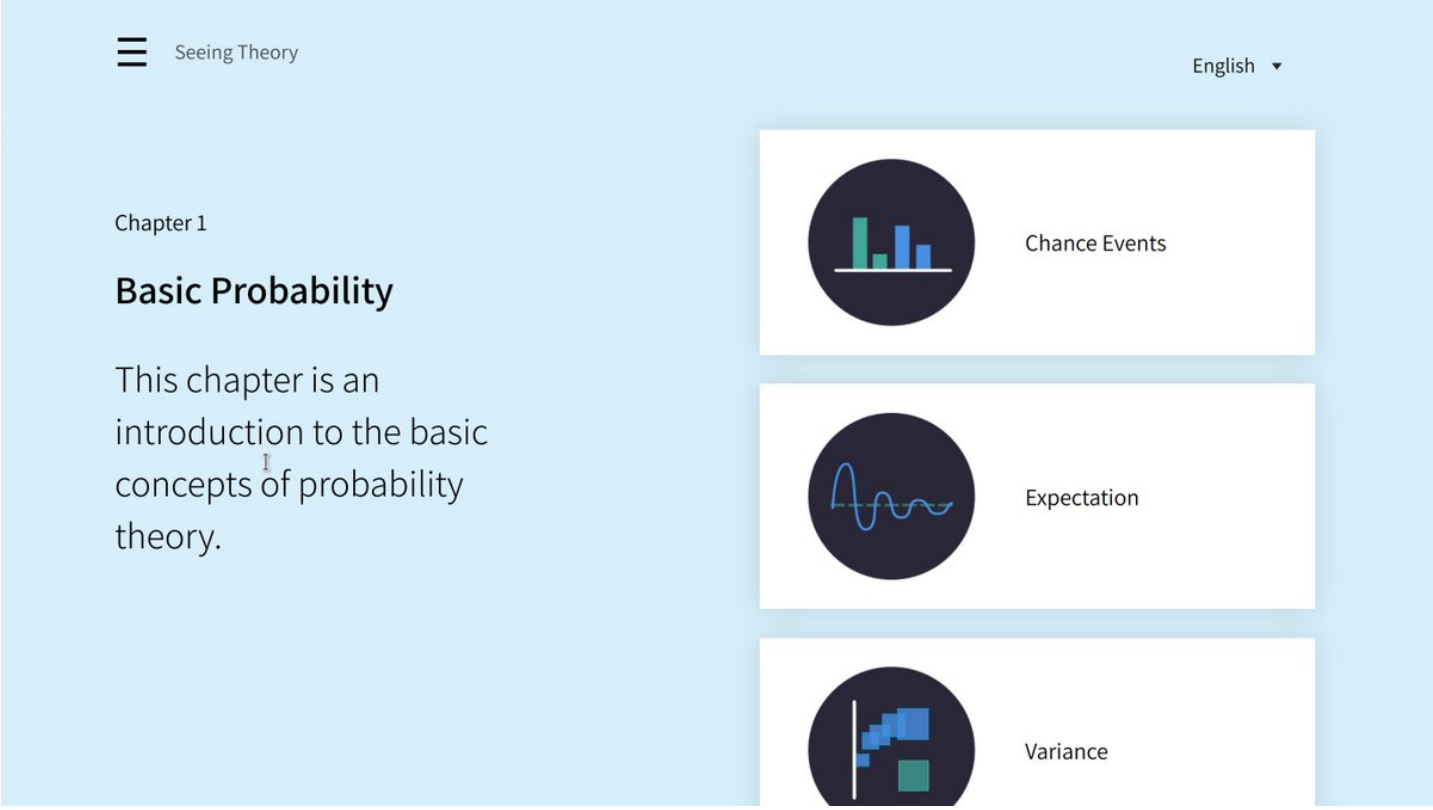
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Seeing Theory
> This website gives you an interactive to learn statistics and probability

■seeing-theory. brown. edu/basic-probability/index.html

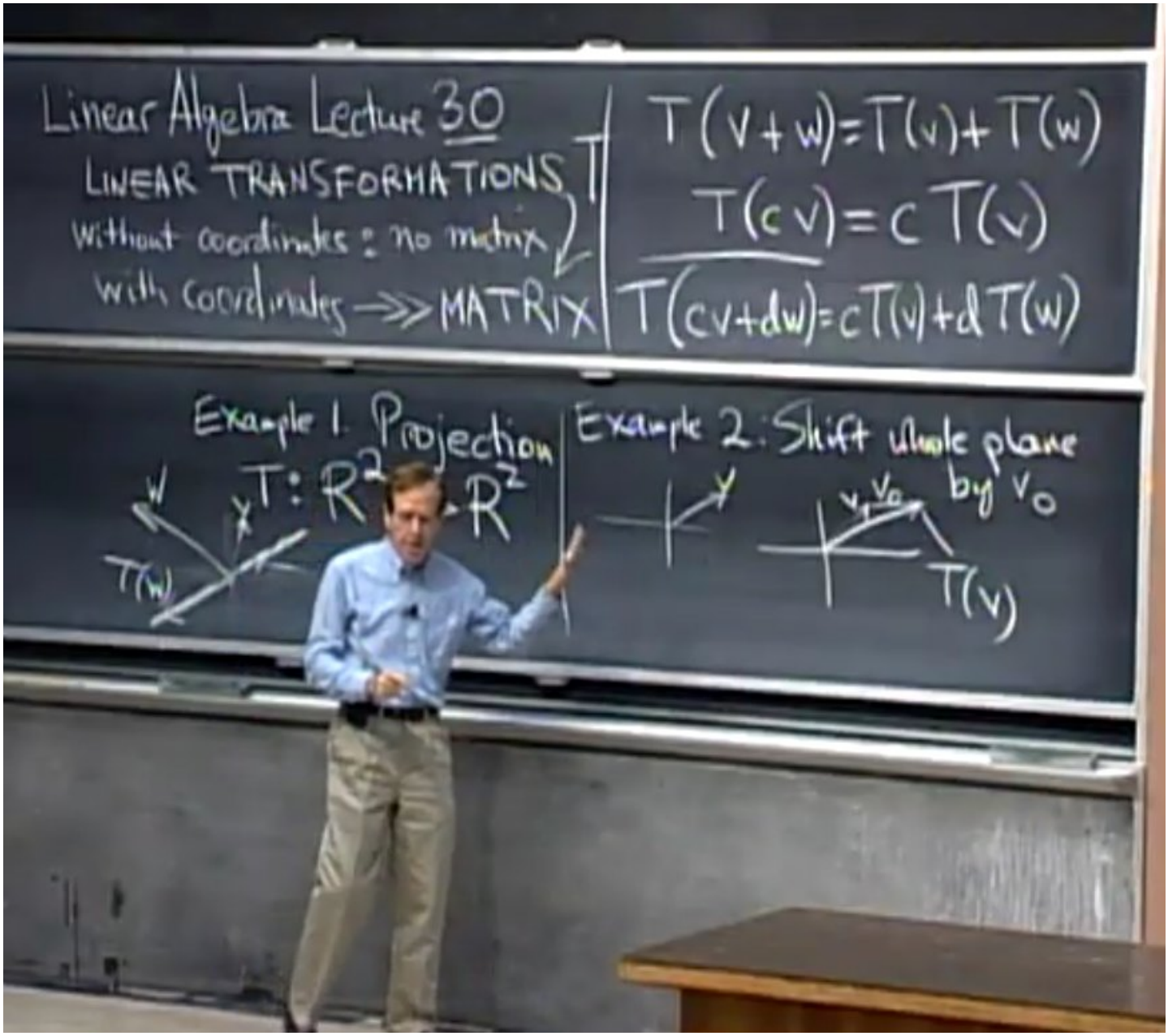
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Gilbert Strang lectures on Linear Algebra (MIT)
> They're 15 years old but still 100% relevant today!
Despite the fact these lectures are for freshman college students ,I found it very easy to follow.

■youtube. com/playlist?list=PL49CF3715CB9EF31D

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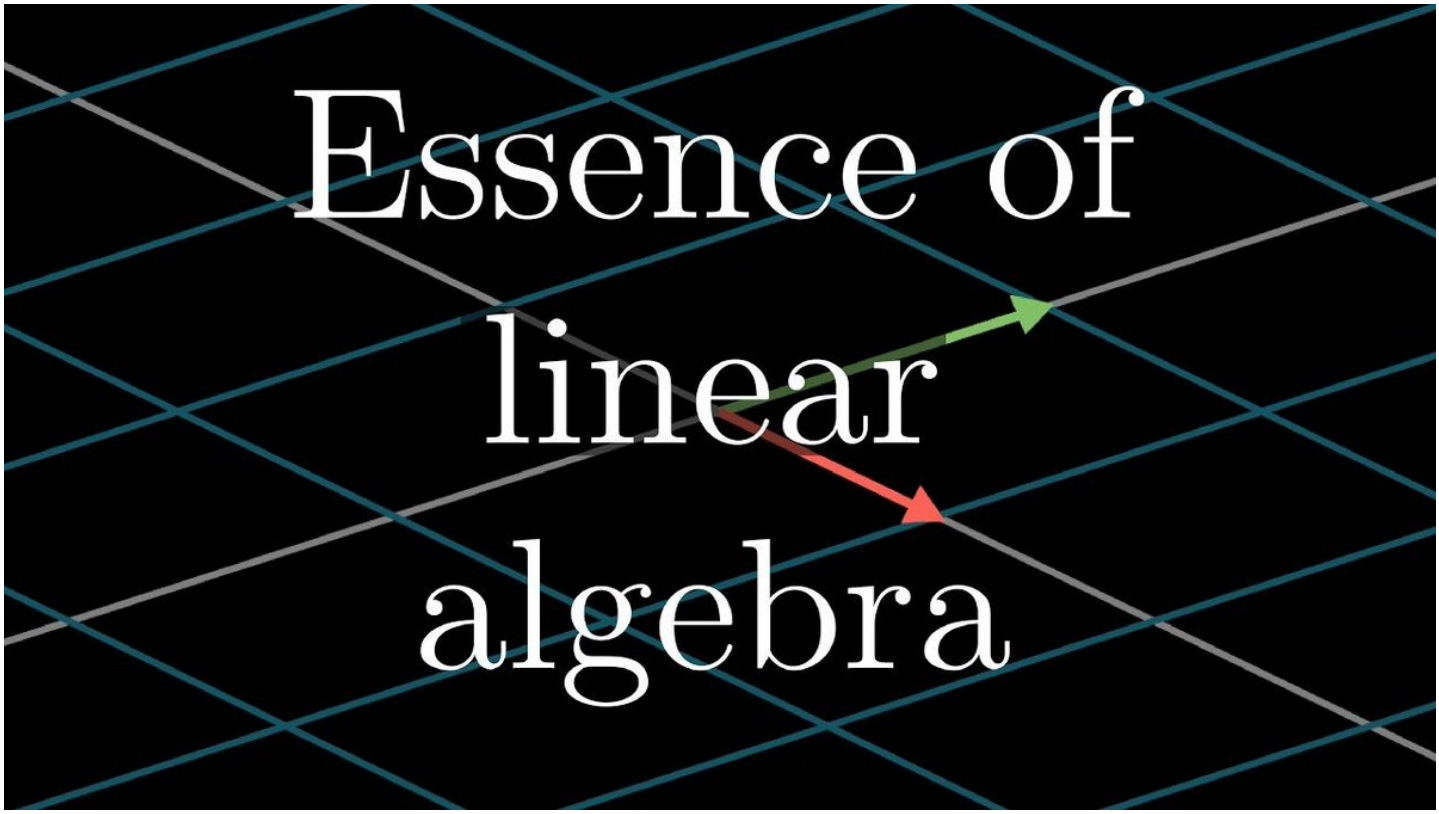


Essence of Linear Algebra

> A beautifully crafted set of videos which teach you linear algebra through visualisations in an easy to digest manner

■youtube. com/watch?v=fNk_zzaMoSs&list=PLZHQObOWTQDPD3MizzM2xVFitgF8hE_ab

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Khan Academy
>The resource you must refer to when you forget something or want to revise a topic.

■khanacademy. org/math

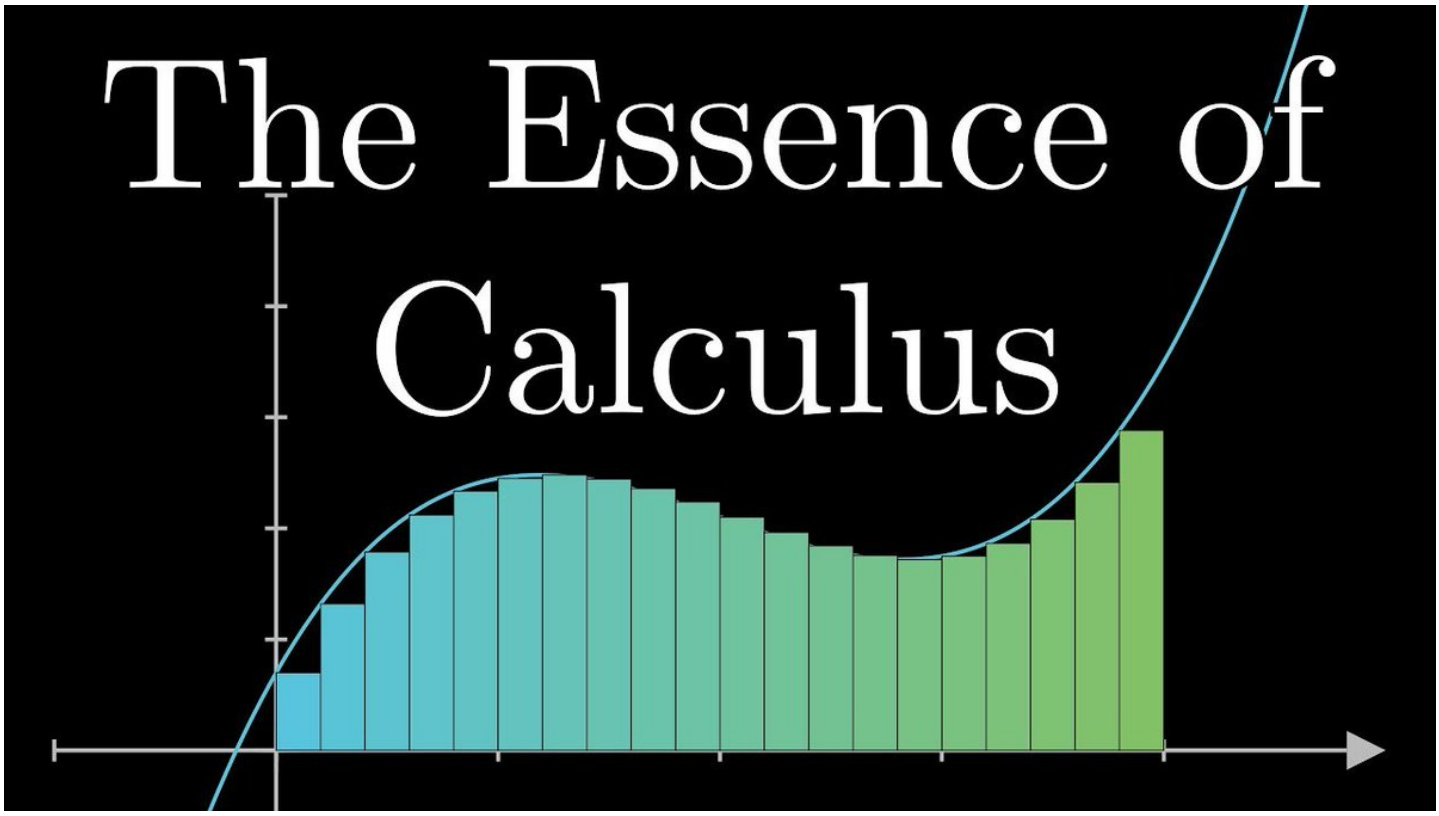
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Essence of calculus
> A beautiful series on calculus, makes everything seem super simple

■youtube. com/watch?v=WUvTyaaNkzM&list=PL0-GT3co4r2wlh6UHTUeQsrf3mlS2lk6x

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The math for Machine learning e-book
> This is a book aimed for someone who knows a decent amount of high school math like trignometry, calculus etc.

I suggest reading this after having the fundamentals down on khan academy.

■mml-book. github .io

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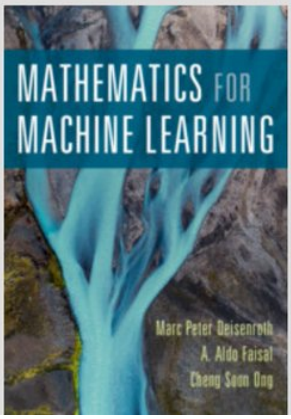
Mathematics for Machine Learning

View On GitHub

Companion webpage to the book "Mathematics for Machine Learning". Copyright 2020 by Marc Peter Deisenroth, A. Aldo Faisal, and Cheng Soon Ong. Published by Cambridge University Press.

Please link to this site using https://mml-book.com.

Twitter: @mpd37, @AnalogAldo, @ChengSoonOng.



We wrote a book on Mathematics for Machine Learning that motivates people to learn mathematical concepts. The book is not intended to cover advanced machine learning techniques because there are already plenty of books doing this. Instead, we aim to provide the necessary mathematical skills to read those other books.

The book is available at published by Cambridge University Press (published April 2020).

We split the book into two parts: