Twitter Thread by Sanju Sinha

Sanju Sinha
@Sanjusinha7

A lot of Machine Learning (ML) I learned during my Ph.D. was from youtube. I didn't have a guide to do this effectively and thus here it is:

A complete guide to studying ML from youtube: 13 best and most recent ML courses available on YouTube. ■■■■■■

We will start with "Stanford CS229: Machine Learning" by Andrew Ng to start and learn the following ML concepts:

Linear & Logistic Regression,
Naive Bayes, SVMs, Kernels
Decision Trees, Introduction to Neural Networks
Debugging ML Models.
https://t.co/cMLzvsdIcT

A series of mini-lectures (~5 mins) covering various introductory topics in ML by Cassie Kozyrkov, covering:

Explainability in AI, Precession vs. Recall, Statistical Significance, Clustering and K-means, and finally, Ensemble models.
https://t.co/LiujYMWFbT

Beyond an AI genius, Andrej Karpathy is a brilliant teacher. His creative teaching methods make this intro to Neural Networks (NN): Zero to Hero makes one of the best ways to get introduced to NN. https://t.co/WaYzmyHYKU

"MIT: Deep Learning for Art, Aesthetics, and Creativity " covers the application of deep learning for art, aesthetics, and creativity, including Neural Abstractions, Efficient GANs, and explorations in AI for Creativity. https://t.co/cANOWM1M2B

(Striking again) Andrew Ng's "Stanford CS230: Deep Learning (2018)" covers:

The foundations of deep learning, how to build different neural networks (CNNs, RNNs, LSTMs, etc...), how to lead machine learning projects and finally - AI and Healthcare. https://t.co/F1jBHejS5k

Applied Machine Learning teaches some of the most widely used techniques in ML, including:

Optimization and Calculus, Overfitting and Underfitting, Regularization, Monte Carlo Estimation, and Maximum Likelihood Learning. https://t.co/2znEMgrJvf

The first part of 'Practical Deep Learning for Coders' teaches you how to:

Build & deploy deep learning models for vision & NLP. Use PyTorch, plus popular libraries like fastai.
https://t.co/xTg00k7wrt

The 2-hour second part of 'Practical Deep Learning for Coders' takes a deep dive into a recent hot ML topic - Diffusion Models. https://t.co/82AHonifNK

ML with graphs teaches some of the latest graph techniques in machine learning:

PageRank, Matrix Factorizing, Node Embeddings, Graph Neural Networks, Knowledge Graphs, and finally, Deep Generative Models for Graphs.
https://t.co/hkgfoFoB9O

This course focuses on the probability and maths behind ML, covering:

Reasoning about uncertainty, Continuous Variables, Sampling, and Markov Chain Monte Carlo. https://t.co/Z76gVxeI3d

This 12-part Deep Unsupervised Learning aims to teach the latest and most widely used techniques in deep unsupervised learning:

Autoregressive Models, Latent Variable Models, & Self-supervised learning.
https://t.co/ywkSKC5r5w

'Foundation Models' is a recent course (June 2022) that aims to teach about foundation models like GPT-3, CLIP, Flamingo, and cross-language generalization. https://t.co/owLqaDXAwj

8 out of 10 ML breakthroughs you recently heard of are likely based on transformers. "Stanford CS25 - Transformers United" aims to introduce us to the following:

Transformers, its applications in Language (GPT-3), vision & universal compute
engines. https://t.co/nkTtSCG854

I will add here as I find more.

I tweet resources for big data research in healthcare. Follow me @Sanjusinha7 if that is of interest. See below for other such resources.

A list of almost all the big data resources available in cancer research. https://t.co/RjGMw2sxD4

> Methods & data available to you are your thinking tools. While I learned the methods in my classes, I wish I knew various data available to me.
>
> 10 resources to learn almost all the big data resources available in cancer research. \U0001f9f5\U0001f447
>
> — Sanju Sinha (@Sanjusinha7) September 16, 2022

28 common issues you will likely face while using ML for biomedicine and how to address them.
https://t.co/1kqZ03zmJd

> I curated a list of 28 common issues one faces while using machine learning for biomedicine research and using different kinds of omics data. I also provided guides on how to best overcome them. \U0001f349\U0001f9f5\U0001f447 pic.twitter.com/TFhwTOZsij
>
> — Sanju Sinha (@Sanjusinha7) November 2, 2022

11 computational resources to study immune system
https://t.co/drV8IQSDJY

> Our understanding of the immune system is quickly growing.
>
> 11 resources (videos and papers) covering the fundamentals and computational tools available to study the immune system. \U0001f9f5\U0001f447\U0001f52c\U0001f912
>
> — Sanju Sinha (@Sanjusinha7) October 1, 2022

12 resources to best analyze Spatial Transcriptomics. https://t.co/3WAb4z8HRL

> Best computational practices to analyze Spatial Transcriptomics (ST) are yet non-trivial.
>
> 14 Resources, including videos, papers, data repo, tutorial, & a podcast, covering our current understanding of preprocessing & downstream analysis of Spatial Transcriptomics. \U0001f30c\U0001f9ec \U0001f9f5\U0001f447
>
> — Sanju Sinha (@Sanjusinha7) October 7, 2022

10 educational resources for anyone interested in building skills to analyze big data in healthcare.
https://t.co/U1NbzVZMlN

> Using big data in healthcare. Here are 10 educational resources for anyone interested in building skills to analyze big data in healthcare.
>
> Ranging from introductory to advanced, this includes courses, youtube channels, papers & online books.\U0001f9f5\U0001f951\U0001f447
>
> — Sanju Sinha (@Sanjusinha7) October 14, 2022

20 open grand challenges to understand the relationship btw cancer and aging better.
https://t.co/IUqnLLlmuW

> Interested in aging and cancer. I did a year of literature survey on this.
>
> Here is my list of 20 key open questions and challenges to better understand the interplay between aging and cancer. A thread \U0001f9f5\U0001f447 pic.twitter.com/gd6NX1VJM7
>
> — Sanju Sinha (@Sanjusinha7) September 29, 2022

I am developing a drug discovery startup based on a recent computational technology I co-developed (See below).

I would love to chat if you would like to collaborate on this or a potential investor. DM/email sanju@terpmail.umd.edu
https://t.co/ketww3SwSY

> Drug target identification is at the heart of drug development, and we\u2019ve been working to change how it\u2019s been done.
>
> We present DeepTarget: a new computational tool to characterize a drug\u2019s mechanism of action in-depth beyond its primary target. \U0001f9f0\U0001f9f5\U0001f447
> https://t.co/MuNTjsiniI pic.twitter.com/8g20uUotxp
>
> — Eytan Ruppin, MD, PhD (@NCIEytanRuppin) October 20, 2022