GenAI, NN, ML Reference Material

GenAI Related

extra material
• Udemy:
• Generative A.I., from GANs to CLIP, with Python and Pytorch
• Generative AI - From Big Picture, to Idea, to Implementation
• Blogs and Articles
• WEF (non technical): What is generative AI? An AI explains
• NVIDIA (semi technical): What is Generative AI?
• Towards Data Science (very technical): A Comprehensive Hands-on Guide to Transfer Learning with Real-World Applications in Deep Learning

GenAI Videos and walk throughs

Gen AI YouTube Playlist
https://www.youtube.com/playlist?list=PLrY_Vs-4fCcmaRnDuSlKv8sMP7N6nSYxk

Free ChatGPT Webinar: Prompt Engineering
https://www.youtube.com/watch?v=zcEgV8FLigk

Amazon SageMaker JumpStart
https://docs.aws.amazon.com/sagemaker/latest/dg/studio-jumpstart.html

Amazon Bedrock
https://aws.amazon.com/bedrock/

Twitter Post: 15 AI websites that will help you write code faster:
https://twitter.com/Prathkum/status/1684565062579785729?utm_source=Iterable&utm_medium=email&utm_campaign=newsletter-2022607

Creating Samantha from “Her” by Fine-tuning GPT-3 on the Movie Script
https://matemarschalko.medium.com/creating-samantha-from-her-by-fine-tuning-gpt-3-on-the-movie-script-dabdbf78b883

Mastering GPT-3: A Comprehensive Guide to Fine-Tuning with OpenAI, Complete with Examples

https://medium.com/@kapildevkhatik2/mastering-gpt-3-a-comprehensive-guide-to-fine-tuning-with-openai-complete-with-examples-e28515c22d92

How To Build Your Own Custom ChatGPT Bot
https://levelup.gitconnected.com/how-to-build-your-own-custom-chatgpt-bot-cf4af959adcc

The best framework currently going forward: LangChain vs Microsoft (Guidance and Semantic kernel)?
https://www.reddit.com/r/LocalLLaMA/comments/14cagpc/the_best_framework_currently_going_forward/?rdt=57570

Semantic Kernel: empower your LLM apps
https://medium.com/devrain/semantic-kernel-empower-your-llm-apps-51d8d488cf84#:~:text=LangChain%20has%20many%20more%20integrations,you%20to%20build%20LLM%20applications.&text=Let%27s%20build%20an%20app%20that,questions%20to%20our%20PDF%20files

How ChatGPT Works Technically | ChatGPT Architecture
https://www.youtube.com/watch?v=bSvTVREwSNw

From the MIT GenAI Summit: A Crash Course in Generative AI
https://www.youtube.com/watch?v=f5Cm68GzEDE

THE NEURAL NETWORK ZOO
https://www.asimovinstitute.org/neural-network-zoo/

100% Offline ChatGPT Alternative?
https://www.youtube.com/watch?v=Coj72EzmX20

LangChain Explained in 13 Minutes | QuickStart Tutorial for Beginners
https://www.youtube.com/watch?v=aywZrzNaKjs

LangChain
https://docs.pinecone.io/docs/langchain

Question answering using Retrieval Augmented Generation with foundation models in Amazon SageMaker JumpStart
https://aws.amazon.com/blogs/machine-learning/question-answering-using-retrieval-augmented-generation-with-foundation-models-in-amazon-sagemaker-jumpstart/

ClippyGPT - How I Built Supabase's OpenAI Doc Search (Embeddings)
https://www.youtube.com/watch?v=Yhtjd7yGGGA

Why GPT-3 Matters
https://bmk.sh/2020/05/29/GPT-3-A-Brief-Summary/
Effective Post-Training Quantization for Large Language Models
https://medium.com/intel-analytics-software/effective-post-training-quantization-for-large-language-models-with-enhanced-smoothquant-approach-93e9d104fb98#:~:text=Quantization%20for%20LLM,would%20make%20LLM%20deployment%20easier

ChatGPT Can Be Broken by Entering These Strange Words, And Nobody Is Sure Why
https://www.vice.com/en/article/epzyva/ai-chatgpt-tokens-words-break-reddit

GPT best practices
https://platform.openai.com/docs/guides/gpt-best-practices

Connecting ChatGPT with Your Own Data using LlamaIndex
https://levelup.gitconnected.com/connecting-chatgpt-with-your-own-data-using-llamaindex-663844c06653

GPT-3 Fine Tuning: Key Concepts & Use Cases
https://www.mlq.ai/gpt-3-fine-tuning-key-concepts/

LangChain Tutorial in Python - Crash Course
https://www.python-engineer.com/posts/langchain-crash-course/

Evaluating Generative Models
https://saturncloud.io/glossary/evaluating-generative-models/

dolly-v2-3b Model Card
https://huggingface.co/databricks/dolly-v2-3b

NN and ML Related

From MLE Program
ML Cheat Sheets/References

Here are some useful "Cheat Sheets" for machine learning, everything from the basics up through NN's and TL:

ML Models (Classical Models) Cheat Sheet:
https://www.datacamp.com/cheat-sheet/machine-learning-cheat-sheet

ML Metrics Cheat Sheet:
https://medium.com/ml-cheat-sheet/machine-learning-evaluation-metrics-b89b8832e275

NN Techniques Cheat Sheet:
https://stanford.edu/~shervine/teaching/cs-230/cheatsheet-deep-learning-tips-and-tricks
(this one also goes into some topics that were outside the scope of what we covered)

Deep Learning Basics Cheat Sheet:
https://stanford.edu/~shervine/teaching/cs-229/cheatsheet-deep-learning
(note additional tabs with ML basics on other topics at this link)

ML & NN Basics, plus ML Metrics Cheat Sheet:
https://medium.com/@clever.tech.memes/ultimate-machine-learning-and-deep-learning-cheat-sheet-part-1-dcfa0c4ff981
(ML metrics towards bottom)

NN basics through advanced topics, as a Q&A format:
https://www.simplilearn.com/tutorials/deep-learning-tutorial/deep-learning-interview-questions
(after 32 gets into advanced NN topics)
(#39 explains how Adam works, which some of you asked about)

PyTorch Cheat Sheet:
https://pytorch.org/tutorials/beginner/ptcheat.html
(goes well past what we did with PyTorch)

Deep Transfer Learning Cheat Sheet:
https://hub.packtpub.com/5-types-of-deep-transfer-learning/

EDA Cheat Sheet:
https://www.kaggle.com/code/marcinrutecki/how-to-create-a-meaningful-eda

ML Useful Links
pre-req knowledge, Udemy course
https://bah.udemy.com/course/machinelearning/

Resampling Imbalanced Data

https://machinelearningmastery.com/data-sampling-methods-for-imbalanced-classification/

XGBoost Regression
https://sagemaker-examples.readthedocs.io/en/latest/introduction_to_amazon_algorithms/xgboost_abalone/xgboost_abalone_dist_script_mode.html#Train-the-XGBoost-model

AWS ML Instance Types
https://docs.aws.amazon.com/sagemaker/latest/dg/notebooks-available-instance-types.html

Feature Selection with LASSO
https://towardsdatascience.com/feature-selection-in-machine-learning-using-lasso-regression-7809c7c2771a

Connect GitHub to SageMaker
https://stackoverflow.com/questions/57157608/how-to-connect-private-github-repo-in-sagemaker

Hugging Face BERT Docu
https://huggingface.co/transformers/v3.0.2/model_doc/bert.html

Word2Vec application, as Protein2Vec
https://github.com/sloomba/protein2vec/blob/master/src/protein_encoder.py

Git Cheat Sheet
https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwivhNXt4ur9AhXVDkQIHdiAApwQFnoECBQQAQ&url=https%3A%2F%2Fwww.atlassian.com%2Fdam%2Fjcr%3A8132028b-024f-4b6b-953e-e68fcce0c5fa%2Fatlassian-git-

Merge Conflicts
https://www.atlassian.com/git/tutorials/using-branches/merge-conflicts

sort() vs orderBy()
https://towardsdatascience.com/sort-vs-orderby-in-spark-8a912475390

BERT NLP Example (Shared DB CC Notebook from Denis)
https://databricks-prod-cloudfront.cloud.databricks.com/public/4027ec902e239c93eaaa8714f173bcfc/4021903115874596/4279274404479269/7327043351517393/latest.html

Hugging Face NLP Transformers
huggingface.co/docs/transformers/model_summary

AWS Dev Tools
https://aws.amazon.com/developer/tools/

Fine Tuning Pre-Trained Models on Hugging Face
https://huggingface.co/docs/transformers/training#train-with-pytorch-trainer

Keras vs TF vs PyTorch
https://www.simplilearn.com/keras-vs-tensorflow-vs-pytorch-article

XGBoost Fine Tuning Example
https://towardsdatascience.com/fine-tuning-xgboost-model-257868cf4187

Boto S3 list example
https://dev.to/aws-builders/how-to-list-contents-of-s3-bucket-using-boto3-python-47mm

AWS Studio vs Notebook Instances
https://docs.aws.amazon.com/sagemaker/latest/dg/notebooks-comparison.html

Jupyter auto-wrap-quotes (and current Jupyter bug and manual fix)
https://github.com/jupyterlab/jupyterlab/issues/9897

SKLearn ROC Curve
https://stackoverflow.com/questions/34564830/roc-curve-with-sklearn-python

PySpark MLlib evaluation library
https://dvgodoy.github.io/handyspark/_modules/pyspark/mllib/evaluation.html

PySpark precision/recall/ROC
https://stackoverflow.com/questions/52401043/pyspark-how-to-get-precision-recall-roc-from-trainvalidationsplit

AUC for binary classification (not typical to use this)
https://stats.stackexchange.com/questions/434178/auc-or-r2-rmse-for-binary-classification

ML Models that need Feature Scaling
https://stats.stackexchange.com/questions/244507/what-algorithms-need-feature-scaling-beside-from-svm

XGBoost (AWS' implementation on SageMaker)
https://docs.aws.amazon.com/sagemaker/latest/dg/xgboost.html

Spark SQL Functions, STD
https://spark.apache.org/docs/3.2.1/api/python/reference/api/pyspark.sql.functions.stddev.html

Python gitignore template
https://github.com/github/gitignore/blob/main/Python.gitignore

ROC Curve with sklearn
https://stackoverflow.com/questions/34564830/roc-curve-with-sklearn-python

EDA reference
https://www.kaggle.com/code/marcinrutecki/how-to-create-a-meaningful-eda

Sagemaker: Running Inferences against a deployed endpoint
https://docs.aws.amazon.com/sagemaker/latest/dg/neo-requests-sdk.html

Upsampling with SMOTE
https://towardsdatascience.com/smote-fdce2f605729

AWS HuggingFace (NLP, transformers) containers
https://huggingface.co/transformers/v4.4.2/sagemaker.html

Custom models/environments on Sagemaker
https://godatadriven.com/blog/bare-minimum-bring-your-own-model-on-sagemaker/

Sagemaker demos and code, from AWS
https://github.com/aws/amazon-sagemaker-examples

Scoring Metrics, when to use, trade-offs (PR UAC vs ROC AUC vs F1)
https://neptune.ai/blog/f1-score-accuracy-roc-auc-pr-auc