

A nice list to refer back to

Environment Libraries (not done)

1. [custom gym env](#)
- 2.

3. Google Deepmind
 - 3.1. [Implementations and Code DeepMind publications](#)
 - 3.2. [A customizable 3D platform](#)
 - 3.3. [Environments and Algorithms](#)
 - 3.4. [The CLRS Algorithmic Reasoning Benchmark](#)
4. [Gymnasium is a maintained fork of OpenAI's Gym library](#)
5. [Stable Baselines 3](#)
6. [Curiosity Baselines](#)
- 7.
8. [Gym Pole cart Pytorch DQN](#)

Machine Learning Models and Architectures

1. Transformers and Related Technologies
 - 1.1. Google Transformer: Attention Is All You Need
 - 1.1.1. [Paper](#)
 - 1.1.2. [Article, A detailed overview of the modern transformer](#)
 - 1.1.3. [YouTube](#)
 - 1.1.4. [YouTube](#)
 - 1.1.5. [Visualization Of GPT](#)
 - 1.2. RWKV: Reinventing RNNs for the Transformer Era
 - 1.2.1. [Paper](#)
 - 1.2.2. [YouTube](#)
 - 1.2.3. [GitHub](#)
 - 1.3. Transformer++
 - 1.3.1. [Paper](#)
 - 1.4. Retentive Network: A Successor to Transformer for Large Language Models
 - 1.4.1. [Paper](#)
 - 1.4.2. [GitHub](#)
 - 1.5. BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding
 - 1.5.1. [Paper](#)
 - 1.5.2. [YouTube](#)
2. Mamba
 - 2.1. Linear-Time Sequence Modeling with Selective State Spaces
 - 2.1.1. [Paper](#)
 - 2.1.2. [Official GitHub](#)
 - 2.1.3. [Simple Implementation GitHub](#)
 - 2.1.4. Previous Model
 - 2.1.4.1. [Paper](#)
 - 2.1.4.2. [Nice Break Down](#)

- 2.1.5. [YouTube](#)
 - 2.1.6. [YouTube](#)
 - 2.1.7. [YouTube](#)
- 2.2. Vision Mamba: Efficient Visual Representation Learning with Bidirectional State Space Model
 - 2.2.1. [Paper](#)
 - 2.2.2. [GitHub](#)
- 2.3. VMamba: Visual State Space Model
 - 2.3.1. [Paper](#)
 - 2.3.2. [GitHub](#)
- 2.4. MoE-Mamba: Efficient Selective State Space Models with Mixture of Experts
 - 2.4.1. [Paper](#)
 - 2.4.2. [GitHub](#)
- 2.5. MambaByte: Token-free Selective State Space Model
 - 2.5.1. [Paper](#)
 - 2.5.2. [GitHub](#)
- 2.6. Repeat After Me: Transformers are Better than State Space Models at Copying
 - 2.6.1. [Paper](#)
- 2.7. Efficiently Modeling Long Sequences with Structured State Spaces
 - 2.7.1. [Paper](#)

3. Interesting Approaches

- 3.1. Flash Attention & Flash Attention 2
 - 3.1.1. [Paper](#)
 - 3.1.2. [Paper](#)
 - 3.1.3. [GitHub](#)
- 3.2. SwitchHead: Accelerating Transformers with Mixture-of-Experts Attention
 - 3.2.1. [Paper](#)
- 3.3. SELF-INSTRUCT: Aligning Language Models with Self-Generated Instructions
 - 3.3.1. [Paper](#)
 - 3.3.2. [GitHub](#)
 - 3.3.3. [GitHub](#)
- 3.4. Language Models are Few-Shot Learners
 - 3.4.1. [Paper](#)
 - 3.4.2. [GitHub](#)
- 3.5. Shap-E: Generating Conditional 3D Implicit Functions
 - 3.5.1. [Paper](#)
- 3.6. Point-E: A System for Generating 3D Point Clouds from Complex Prompts
 - 3.6.1. [Paper](#)
 - 3.6.2. [GitHub](#)
- 3.7. Google AlphaGeometry: An Olympiad-level AI system for geometry
 - 3.7.1. [Paper](#)
 - 3.7.2. [Blog](#)
 - 3.7.3. [GitHub](#)
 - 3.7.4. Note: Check Alpha GO, Zero, Fold, Star, Code
- 3.8. Google Alpha Code 2
 - 3.8.1. [Alpha Code 1 Paper - old](#)
 - 3.8.2. [Technical Report](#)
 - 3.8.3. [Blog](#)

- 3.8.4. [Demo](#)
- 3.9. Google Gemini 1.5 pro
 - 3.9.1. [Paper](#)
 - 3.9.2. [Blog](#)
- 3.10. Google Gemma
 - 3.10.1. [Blog](#)
 - 3.10.2. [GitHub](#)
- 3.11. OpenAI Sora
 - 3.11.1. [Technical Paper](#)
- 3.12. The Deep Learning Compiler: A Comprehensive Survey
 - 3.12.1. [Paper](#)
- 3.13. Improved Techniques for Training GANs
 - 3.13.1. [Paper](#)
 - 3.13.2. [GitHub](#)
- 3.14. GLIDE: Towards Photorealistic Image Generation and Editing with Text-Guided Diffusion Models
 - 3.14.1. [Paper](#)
 - 3.14.2. [Open AI implementation + collab](#)
- 3.15. Offline RL for Natural Language Generation with Implicit Language Q Learning
 - 3.15.1. [Visual Blog + Paper + GitHub](#)

4.

Deep Learning Tools and Libraries

1. Data Analysis and Preprocessing Tools:

- 1.1. Scikit-learn: tools for data cleaning
- 1.2. NumPy: Fundamental package for scientific computing.
- 1.3. Pandas: Data analysis and manipulation tool.
- 1.4. Jupyter NoteBooks: Interactive computing across

2. Frameworks

- 2.1. TensorFlow: ML library by the Google Brain team
- 2.2. Keras: Easy API for TF
- 2.3. PyTorch: ML library by Meta AI and now part of the Linux Foundation umbrella.
- 2.4. Microsoft Cognitive Toolkit (CNTK): last release was 2019- It's dead

3. Visualization

- 3.1. Matplotlib
- 3.2. [Seaborn](#)

4. General Library's

- 4.1. CUDA: Nvidia's parallel computing platform
- 4.2. [Hugging Face Transformer](#): State-of-the-art Machine Learning for PyTorch, TensorFlow, and JAX.
- 4.3. [Hugging Face Diffusers](#): pretrained diffusion models for generating images, audio
- 4.4. [OpenCV](#): library for computer vision and image processing tasks.
 - 4.4.1. [Interesting Portfolio - Project Inspiration](#)
 - 4.4.2. [GitHub](#)

- 4.4.3. [Latest Release GitHub](#)
 - 4.4.4. For a clearer understanding of their library, here are the [Modules](#)
 - 4.4.5. Note: No new developments possible, amazing applications though.
- 4.5. [SciPy](#): Scientific computing and technical computing
- 5. **Other Library's**
 - 5.1. Hyperparameter Tuning Libraries
 - 5.1.1. [Optuna](#):
 - 5.1.2. [Hyperopt](#): Bayesian optimization, use's Tree of Parzen Estimators (TPE) algorithm
 - 5.1.3. [Ray Tune](#):
 - 5.2. Gradient Boosting Libraries
 - 5.2.1. XGBoost: Speed and performance
 - 5.2.2. LightGBM: Speed and performance for Large datasets
 - 5.2.3. CatBoost: Categorical features, robust against overfitting
 - 5.3. [FastAI](#): Straightforward library for deep learning + educational resources
 - 5.4. spaCy: An industrial-strength natural language processing (NLP) library.
 - 5.5. FastText: A library for efficient learning of word representations and sentence classification.
- 6. **Software**
 - 6.1. Anaconda: A distribution of Python, comes with pre-installed packages for data science and machine learning.
 - 6.2. MLflow: ML lifecycle, experimentation, reproducibility, and deployment.
 - 6.3. TensorBoard: Visualization toolkit for TensorFlow.
 - 6.4. Docker: Containerization platform to simplify deployment.
 - 6.5. Kubernetes: Same as Docker but with more network capabilities
 - 6.6. ONNX: Open Neural Network Exchange, standardized format for access and distribution for different frameworks.
 - 6.7. ONNX Runtime: To run actually run any model

Resources

- 1. **Datasets**
 - 1.1. [Google Dataset Search](#)
 - 1.2. [Hugging Face](#)
 - 1.3. [Kaggle](#)
 - 1.4. [OpenML](#)
 - 1.5. [UC Irvine ML Repository](#)
 - 1.6. [Ontario Data Catalog](#)
 - 1.7. [Internet Archive](#)
 - 1.8. [Academic Torrents](#)
 - 1.9. [AWS](#)
 - 1.10. [GitHub](#)
 - 1.11. [Eleuther AI](#)
- 2. **Research & Educational Resources**
 - 2.1. [arxiv](#): Access academic Papers.

- 2.2. [Free Course by Fast.AI](#)
- 2.3. [How to Publish 101](#)
- 2.4. [Kaggle Learn](#)
- 2.5. [TensorFlow Learn](#)
- 2.6. [Pytorch Tutorials](#)
- 2.7. [Hugging Face Transformer GitHub](#)
- 2.8. [Open-CV Free courses](#)
- 2.9. O'reilly Free Books + Courses → there's way too many to list
- 1.1.

9.

Awesome Links

- 1. Note: Keep in mind the age of some repositories
- 2. [Awesome - Most Cited Deep Learning Papers](#)
- 3. [Awesome Software Engineering for Machine Learning](#)
- 4. [Awesome Python Data Science](#)
- 5. [Awesome Machine Learning](#)
- 6. [Awesome Deep Learning](#)
- 7. [Awesome Model-Based Reinforcement Learning](#)
- 8. [Awesome Exploration Methods in Reinforcement Learning](#)
- 9. [Awesome Decision Transformer](#)
 - 9.1. [Youtube](#)
 - 9.2. [Youtube](#)

10. [Awesome RLHF \(RL with Human Feedback\)](#)
11. [Awesome Computer Vision](#)
12. [Awesome Lists](#)
13. [Awesome Deep Vision](#)
14. [Awesome Generative AI](#)
15. [Awesome JAX](#)
16. [Awesome XAI](#)
17. [dive-into-machine-learning](#)
18. [Interactive Machine Learning Experiments](#)
19. [Demo app for Machine Learning Experiments GitHub repository](#)
20. [Homemade Machine Learning - Explains algorithms interactively](#)
21. [A VISUAL INTRODUCTION TO MACHINE LEARNING](#)
22. [PythonForArtificialIntelligence](#)
23. [Awesome H2O](#)
- 1.

Experiments

1. DQN's + transformers + architecture
2. OpenAI Gym
3. Hugging Face Transformers
4. SSM Architecture
5. LLM's
6. LLM's with control... (Similar AlphaGeometry)
7. [Pytorch - Pole cart DQN](#)

Temporarily Unorganized Stuff

1. [Azure cheat sheet](#)
2. [Azure Learn ML](#)
3. [gloVe](#)
 - 3.1. [okfn - learn more.](#)
 - 3.2. [old okfn](#)
4. [Spin website, Paper, code, hugging face](#)
- 5.
- 6.
7. [DI-ENGINE](#)
- 8.
9. [Decision Transformer: Reinforcement Learning via Sequence Modeling](#)
10. [Deep Q-Networks \(DQN\) architectures](#)
 - 10.1. [Vanilla DQN](#)
 - 10.2. [Double DQN \(DDQN\)](#)
 - 10.3. [Dueling DQN](#)
 - 10.4. [Prioritized Experience Replay DQN](#)
 - 10.5. [Rainbow DQN](#)
 - 10.6. [Distributional DQN](#)
 - 10.7. [Noisy DQN](#)
 - 10.8. [Multi-step DQN](#)
11. [A generalist AI agent for 3D virtual environments](#)
12. [AlphaStar](#)
13. [Capture the Flag](#)
14. [Links](#)
 - 14.1. [Machine Learning Cheat Sheet](#)
 - 14.2. [Machine Learning Cheat Sheet 2](#)
 - 14.3. [Machine Learning Cheat Sheet 3](#)
 - 14.4. [OpenAI intro to RL](#)
 - 14.5. https://d2l.ai/chapter_reinforcement-learning/index.html