

Personal Glossary

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This is quick—**incomprehensive**—reference for **my** current understanding on terms. I *overlooked* how people **precisely** defined terms, so I'm building this collection to emphasize how words precisely capture core ideas.

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1. Machine Learning

Any algorithm that is used on machine to **learn**. For example, gradient descent lets a machine learn on a loss function given data.

1.1. Diffusion Model

1.1.1. Score Distillation Sampling

Score is a gradient of diffusion loss. **Distillation** implies that it uses a trained model. **Sampling** indicates that it is a stochastic process.

1.2. Flow Matching

Flow is a trajectory in a differential equation.

1.3. Reinforcement Learning

Trial and error and then **reinforce** positive outcomes.

1.4. Language Model

A model that captures **language**. It predicts a probability of a sequence of tokens in a language.

2. Competitive Programming

A type of programming that is can be in contest for **competitive** environment. Main difference is the code should be fast and not need maintainance.

2.1. Lazy

A delay in computation until it is needed.

2.2. Persistent

A data structure that doesn't change original data. Useful for time-travel.

2.3. Dynamic Programming

The focus is on the “dynamic” word. The approach computes “dynamically” instead of “statically” for solutions, and while it is computing the original (big) solution. It solves smaller solution and utilizes memory “dynamically” to remember subsolutions that are useful for the original solution.

3. Mathematics

3.1. Real Analysis

“Real” means real numbers. There is complex analysis for complex numbers. Real analysis is my first mathematical rigor, as I was exposed to “analysis” the first time.

4. Miscellanea

4.1. Research

Is it a repeat of search?