

# Overview

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January 15, 2021

"Science attempts to find logics and simplicity in nature; mathematics attempts to establish order and simplicity in human thoughts"

- Edward Teller

# Program Analysis

Analyzing \*programs\*:

- ▶ source code
- ▶ binary code
- ▶ execution traces
- ▶ runtime products: e.g., memory footprint
- ▶ software repositories: e.g., bugs, patches, makefile, tests
- ▶ machine learning models

It interfaces with discrete maths, AI algorithms, graph algorithms, programming languages and compilers, security

# Course content and syllabus

- ▶ concepts
- ▶ representations
- ▶ algorithms
- ▶ big ideas: abstraction
- ▶ applications: quality assurance of software engineering and AI-engineering
- ▶ dataset and tools
- ▶ examples
- ▶ research frontier and problem solving