



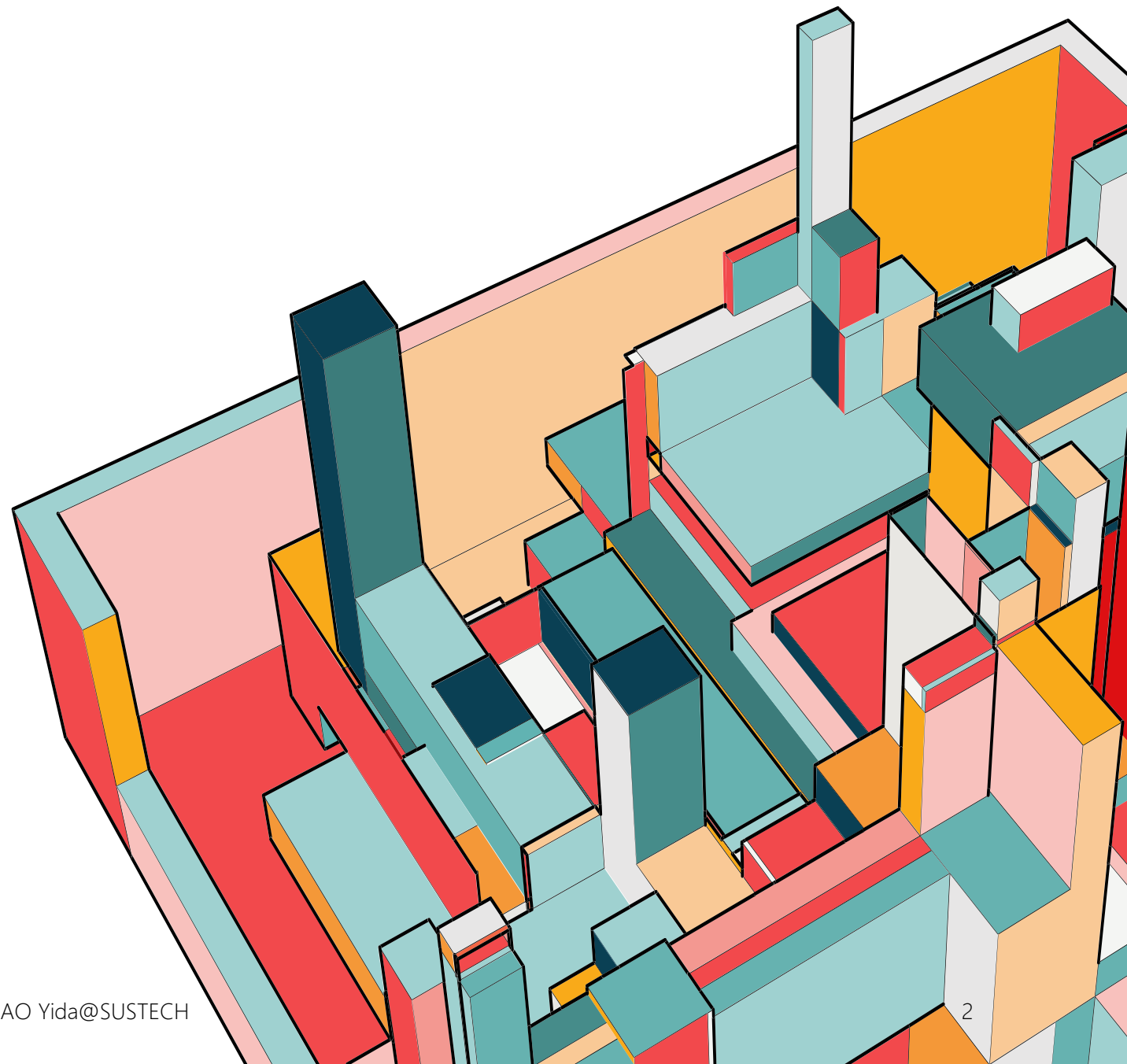
CS304 SOFTWARE ENGINEERING

Yida Tao

taoyd@sustech.edu.cn

LECTURE 14

- Individual academic talks
- Project demo
- Notes on the final exam
- Course review

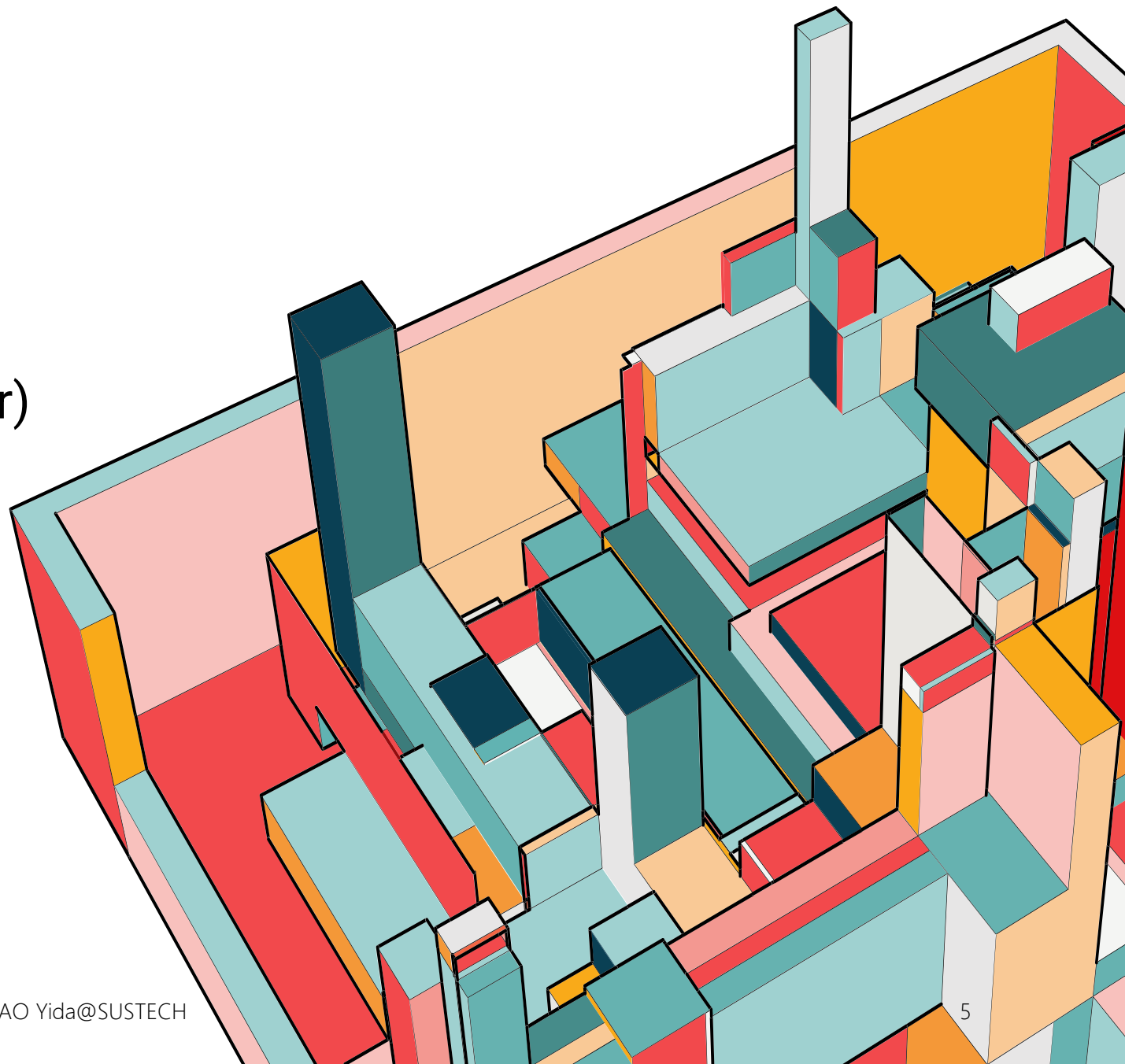


INDIVIDUAL ACADEMIC TALKS & PROJECT DEMO

- 黄北辰: Nix / Nixpkgs / NixOS
 - 吴笑丰: 模糊测试 (Fuzz Testing)
 - 李佳奇: 基于可解释性人工智能的软件工程技术方法综述
 - 王乙: 软件质量保证技术
-
- 1137组 (陈其志, 周珈伊, 陈秋江, 邱逸伦, 郭希阳) 作业评分系统
 - 2221组 (肖煜玮、李思锐、罗诗敏、丁喆、冯大志) CS funding

FINAL EXAM

- Closed-book (NO cheating paper)
- Weight: 30%
- Scope: Everything (extended) from the lectures and labs

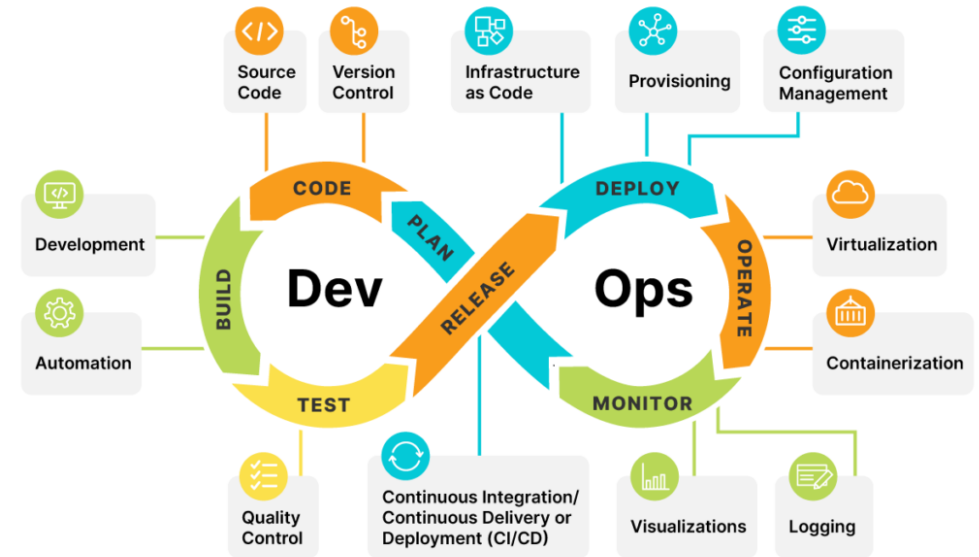


WHAT IS SOFTWARE ENGINEERING?

Software engineering is programming integrated over time, scale, and trade-offs

SOFTWARE PROCESS

- Software process models
- Agile development
- DevOps

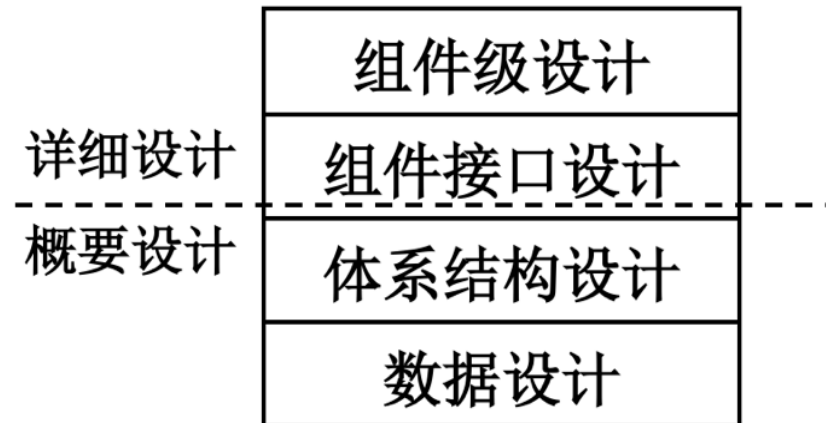


SOFTWARE REQUIREMENTS

- Stakeholders
- Different types of software requirements
- Types of requirements modeling
 - Scenario-based modeling
 - Class-based modeling
 - Behavioral modeling

SOFTWARE DESIGN

- Design models
 - Data design
 - Architectural design
 - Interface design
 - Component design
- Design concepts (e.g., SOLID)



VERSION CONTROL SYSTEMS

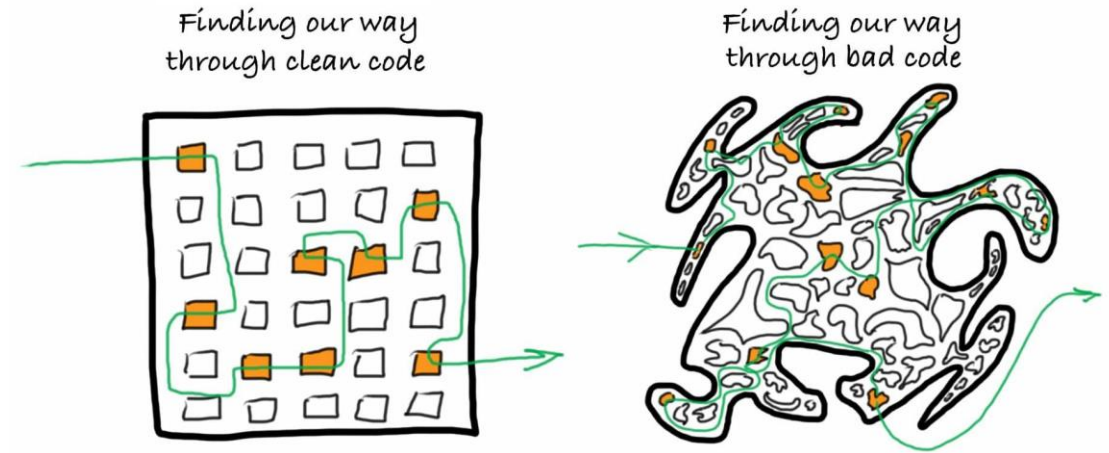
- Types of VCSs
- Git architecture
- Git basic concepts & workflows (e.g., branching, merging, etc.)
- Git internals

BUILD SYSTEMS

- Types of build systems
 - Task-based build system
 - Artifact-based build system
- Dependency management
 - Internal & external dependency
 - Semantic versioning

SOFTWARE QUALITY

- Types of software quality
- Different aspects of code quality
 - Case study for each aspect
- Code review
 - Case study at Google



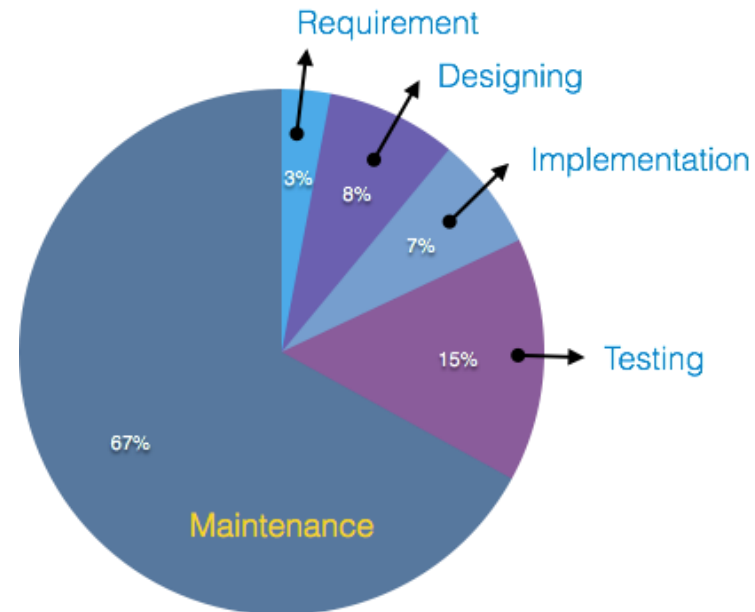
SOFTWARE MEASUREMENTS

- Measuring software quality
- Commonly used code metrics
- Measurement validity



SOFTWARE EVOLUTION AND MAINTENANCE

- Software evolution
 - Legacy systems
 - Deprecation
- Software maintenance
 - Reengineering
 - Refactoring



SOFTWARE DOCUMENTATION

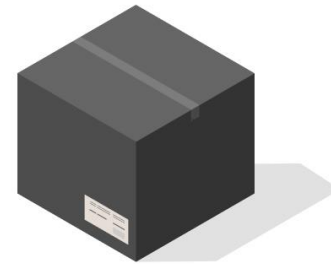
- Types of software documentation
- Documentation tools
- Documentation best practices
- Case study: g3doc



Good developers
write good code;
great ones also
write good
comments.

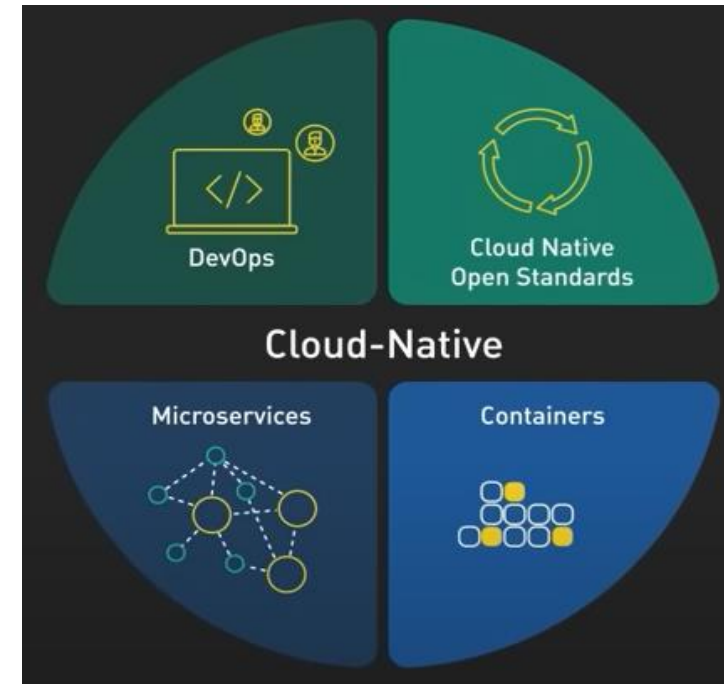
SOFTWARE TESTING

- Testing Concepts & Types
- Blackbox & Whitebox Testing
- Test Doubles
- Writing Maintainable Tests



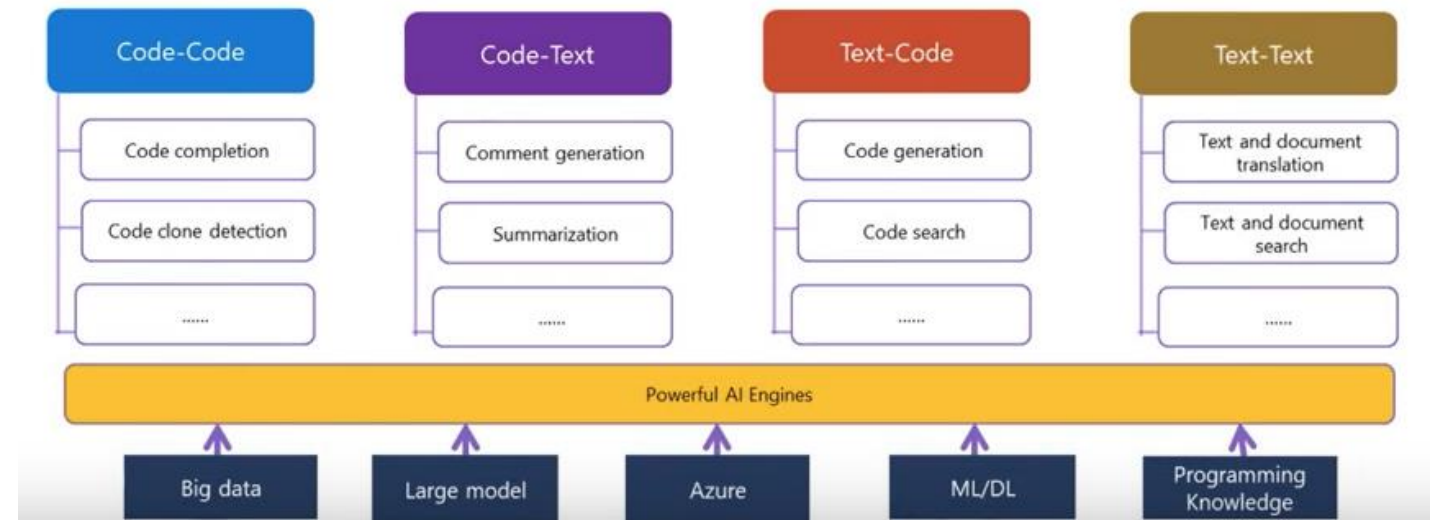
CI/CD AND DEPLOYMENT

- CI/CD
- Deployment Strategy
- Cloud-native Applications
- Deployment Pipelines



AI AND SE

- AI Overview
- Data & tasks in SE
- Challenges



THANK YOU!