

# Artificial Intelligence, Blockchain, and Cryptocurrencies in Software Development

Giancarlo Succi  
Dipartimento di Informatica – Scienza e Ingegneria  
Università di Bologna  
`g.succi@unibo.it`



# Course Objectives

## Artificial Intelligence, Blockchain, and Cryptocurrencies in Software Development

- Analyze cognitive processes in software production
- Evaluate AI tools in software engineering
- Connect engineering principles with systemic analysis
- Construct structured models of complex software systems



# The Nature of Software

- Intellectual product protected by copyright
- Near-zero marginal reproduction cost
- Network-based economic dynamics
- Tame vs. wicked problems
- Engineering under uncertainty



# Cognitive Models in Software Development

- Software as structured reasoning process
- Working memory and cognitive load
- Dual-process reasoning
- Systemic thinking
- Extended mind and distributed cognition



# (Artificial) Intelligence in Software Engineering

- Modeling aspects of human reasoning
- Machine learning and data-driven methods
- Automated reasoning and formal systems
- AI tools in development processes
- Epistemic and methodological limits



# Software as Representation

- ◉ Writing as structuring of actions
- ◉ Drawing as cognitive organization
- ◉ Modularity and separation of concerns
- ◉ Narrative structures in system design
- ◉ Precision and abstraction



# Change in Software Development

- Change as intrinsic property of software
- Corrective, adaptive, perfective, preventive maintenance
- Process models and risk management
- Cognitive and organizational aspects of change