

IM350 SCALING DATA AND SOCIETIES

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Module Description

Big data technologies involve scaling-up — scaling up quantities of data, scaling up data infrastructures, scaling up data management, and scaling up the number of participants in a given technological system. This module provides an understanding of the technical, methodological and conceptual changes in the new forms of thinking, research and engineering required for understanding and working with scalable socio-technical systems. Beginning with the question of what ‘scale’ is in general and how data-based transformations redefine the limits of scale, the module presents students with a series of

different ‘lenses’ through which the impact of scale manifests itself differently across contemporary data spaces, including hands-on laboratory exercises. By the end of the module, students will have gained knowledge and a greater appreciation of the impact of big data on research in socio-technical systems at various scales and, conversely, the multiple ways in which the concept of scale is driving developments in big data.

Structure of the Module

- Week 1: Conceptualizing Scale
- Week 2: Distributed Systems and Distributed Data
- Week 3: Computing in the Cloud
- Week 4: Network at Scale
- Week 5: From Networks to Blockchains
- Week 6: Reading Week
- Week 7: Individuals and/as Crowds
- Week 8: Prediction at Scale
- Week 9: Scaling Time
- Week 10: Assessment Workshops

Learning Outcomes and Assessment

- Demonstrate the ability to identify and communicate key concepts and techniques related to scalable data systems, including their technical foundations and real-world applications.
- Demonstrate the ability to understand the role that scale plays across research, industry, and society, and to consolidate understanding of how big data influences these domains.
- Demonstrate the ability to describe, at a primary level, how technologies such as distributed data processing and blockchain systems function within scalable ecosystems.
- Demonstrate the ability to recognize and reflect on the current societal, ethical, and cultural considerations that arise from the use of scalable technologies in data-rich environments.
- 100% Essay (15 CATS: 1500 words / 30 CATS: 3000 words)