

Temporal Dynamics of the Network of Mathematics Sub-disciplines

Have you ever wondered which came first, algebraic geometry or algebraic topology? Maybe you have wondered if dynamical systems or graph theory were more important for the development of network theory? Perhaps you want to know which decade category theory started to become mainstream?

Well in this Winter 2022 Log(M) project you could help answer these questions and more. Work with mathematics librarians Sam Hansen and explore the relationships and connections between different areas of mathematics by digging into who cited whom, when the citations took place, and how often. This work will utilize citation and classification information from multiple major bibliographic datasets, such as: Web of Science, zbMath, and Microsoft Academic. During this project you will become familiar with a number of different methods for analyzing very large data sets, how to apply many bibliometrics measures and techniques, and learn how to visualize networks that change over time. This is an exciting area of research into the nature of relationships within mathematics, an area that has had very little previous done in it. So, this is your chance to not only help mathematicians better understand their discipline but also to stamp your name as one of the first to ever explore the dynamics of mathematical knowledge over time.

Prerequisites: Coding experience