How Can Computers Help in Obtaining New Results in Graph Theory?*

Jorik Jooken*

Leiden University, the Netherlands
KU Leuven, Belgium

Abstract

This talk consists of two parts. In the first part, I will give an introduction to the domain of computer-assisted graph theory, which is concerned with developing algorithms in order to help researchers gain insights into various graph theoretical questions. In particular, I will discuss a broad range of popular techniques from this domain and briefly talk about their applications.

In the second part, I will zoom in on an algorithm for exhaustively generating graphs and show how executing this algorithm leads to new insights in the domain of graph colouring.

This talk is based on two papers, available at https://arxiv.org/pdf/2508.20825 and https://arxiv.org/pdf/2404.11704.

Declaration on Generative AI

The author has not employed any Generative AI tools.

CEUR-WS.org/Vol-4323/invited1.pdf

ITAT'26: Information Technologies – Applications and Theory, September 25–29, 2026, Vršatec, Slovakia
*Corresponding author.
© 2026 Copyright for this paper by its author. Use permitted under Creative Commons License Attribution 4.0 International (CC BY 4.0).

CEUR Workshop Proceedings ceur-ws.org ISSN 1613-0073
published 2026-11-09