Transforming Graph Visualization through AI and Human-AI Collaboration

Huamin Qu
Hong Kong University of Science and Technology (HKUST), Hong Kong

Abstract

In recent years, the intersection of artificial intelligence (AI) and graph visualization has led to advancements that enhance our ability to analyze and interpret complex data. In this talk, I will explore how AI and human-AI collaboration have transformed graph visualization, focusing on three key themes: efficiency in graph visualization, the integration of data storytelling, and the creative potential of human-AI partnerships.

In the first part of my talk, I will discuss how AI has been employed to create more efficient graph visualizations. I will highlight our innovative deep learning-based method for assessing the readability of graph layouts directly from images. This approach overcomes the limitations of traditional readability metrics, allowing for a more efficient evaluation of graph aesthetics, particularly in dense networks.

Next, I will delve into the application of graph visualization in data storytelling and virtual reality (VR) environments. I will present how tangible interactions can enhance live presentations of network visualizations, showcasing the effectiveness of intuitive physical interactions in engaging audiences. Additionally, I will discuss the development of semi-automatic data tours that guide users through complex networks, making exploration more intuitive and less time-consuming.

In the final section of my talk, I will focus on the creative aspects of human-AI collaboration in graph visualization. I will examine how generative AI techniques are reshaping the roles of humans and AI in the storytelling process, discussing the shift from human creators to AI-assisted storytelling. This evolution leads to innovative visualization techniques and highlights emerging collaboration patterns that enhance the storytelling experience.

By addressing these themes, my talk will illustrate the impact of AI and human-AI collaboration on graph visualization, highlighting both the opportunities and challenges that lie ahead in this rapidly evolving field.

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