

# Postgraduate Seminar Series

*Venue: Graduate Seminar Room*

*Date & Time: July 11, 2026 at 3:30 PM*

## **Speaker Information**

Md. Nazmul Hasan (0419052003) is a part time M.Sc. Engineering student of the Department of Computer Science and Engineering (CSE), Bangladesh University of Engineering and Technology (BUET). He did his undergraduate in CSE from BUET, and working as project manager in Reve Systems. His research interests include graph visualization, scalable software systems, and algorithm design. He has been doing his graduate research under Prof. Mahmuda Naznin. In this seminar, he will present his research findings on the evolution of a hierarchical graph visualization framework that he developed as a part of the research.

## **An Optimized Framework for Readable Tree Layout**

This talk will provide the different aspects of the iterative development of a graph visualization framework for the large hierarchical graphs. The work began with a density-aware tree layout, followed by D3 force simulation, adoption of the Fruchterman-Reingold algorithm, and finally a scaling-based refinement technique to improve space utilization and reduce edge crossings. In this talk, the motivation behind this research, implementation challenges, experimental observations, and key improvements achieved so far will be presented.

## **Key Topics**

- Hierarchical Tree Layout
- Density-Based Expansion
- D3 Force Simulation
- Fruchterman-Reingold Algorithm
- Scaling-Based Refinement