

# Topology-aware Methods for Enhancing Robustness in the Internet

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## Abstract

Outages and loss of connectivity in the Internet can have a significant impact on businesses and users. While the Internet was designed to recover from simple failures, there are numerous examples of accidents and attacks over the past two decades that have resulted in large-scale loss of connectivity. This suggests that standard mechanisms to ensure Internet robustness require renewed consideration.

Toward the goal of improving Internet robustness, this talk has two themes: (i) understanding the structural complexity and dynamics of the Internet two factors which makes the Internet failure-prone and (ii) building scalable, robust and easy-to-deploy systems to enhance network robustness. I will describe a bottom-up approach to unraveling Internet complexity that is based on a unique repository of Internet maps. I will also describe a set of techniques and tools that take advantage of emerging technology to improve Internet robustness. Finally, I present a new research problem called Internet Measurement Data Science (IMDS), which will be the focus of my future investigations.

## Bio

Ram Durairajan is a graduate student in the Department of Computer Sciences at the University of Wisconsin-Madison, where he is advised by Prof. Paul Barford. Ram's research interests are in network measurement, large-scale data analysis, and network economics. His work has been recognized with Best Paper Awards from ACM SIGCOMM CCR and ACM CoNEXT and has been covered in the media (NYTimes, Boston Globe, Popular Science, Gizmodo, MIT Tech Review, etc.).

Faculty Host: Badri Nath