TECHNOLOGY OVERVIEW

Large Scale Failure Resilience in Communication Networks

Background

Communications infrastructure makes the instant exchange of information possible and constitutes a vital part of the social infrastructure underpinning the daily lives and economic activities of people worldwide. With technological advances in recent years, the convenience and importance of the Internet and broadband have grown dramatically. As a result, communications infrastructure has become ever more fundamental to society not only as a means of providing traditional telephone service but also as a medium for delivery of all manner of information and services provided by government and businesses, etc. Thus, during a large-scale natural or man-made disaster, the failure of these communication networks has immediate and profound impacts.

Technology Overview

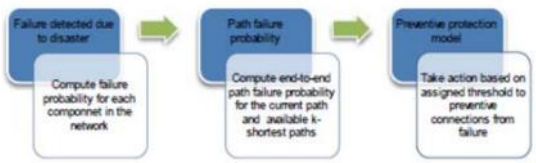

Fig.2. Preventive protection model.

The research group led by Dr. Shahram Shah Heydari has developed a novel design for a software-defined networking connection management system. This system proactively monitors network connections in a backbone communication network, while also proactively protecting the network from failures that have resulted from a large-scale natural or man-made disaster. As the system identifies early notification of potential large-scale damage to a wide geographic region, the system then estimates the probabilities of failure for network connections close to the region of issue; it then re-routes them from “red” (danger) zones to “green” (safe) zones.

The design of this system is novel in numerous ways:

- The system does not just react to failure but takes proactive measures to move network traffic to safer zones before they are disrupted.
- The system continuously evaluates and updates the probabilities of failures as the impact range of the disaster spreads.

Business Opportunity

Ontario Tech University looks to work with companies in a way that helps develop a relationship that is tailored to their interests. Thus, are happy to explore collaborations, licenses, options, assignments, etc. It is the belief that only through enabling the company to utilize its business model will Ontario Tech University technology be able to make an impact within the marketplace.

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About Ontario Tech University

Ontario Tech University conducts high-quality, rigorous research designed to meet the research and development needs of business and industry and benefit society. Whether the focus is on developing hydrogen-from-nuclear or fuel-cell technologies, improving network security, or understanding youth crime, we are committed to interdisciplinary research and development that addresses social, environmental, health, and economic challenges.