

Temporally Ordered Routing Algorithm (TORA)

Computer and communication networks such as the Internet are multilayered, highly complex systems that rely on a plethora of protocols and algorithms for seamless, reliable operation. However, the traditional routing algorithms used in today's networks are designed for operation in relatively static hardwired networks and are not well-suited for emerging mobile wireless networks. Vincent Park of the NRL has created an enabling technology for the development of mobile wireless networks.

TORA possesses the essential aspects of traditional approaches, but also has unique attributes that make it better suited for use in the more dynamic and bandwidth-constrained wireless networks needed to support our increasingly mobile society. Park designed the technology to minimize communication overhead, thus preserving the precious bandwidths and resources of wireless systems. TORA establishes a multipath routing structure that improves robustness and reduces the frequency of protocol reactions to network dynamics. Designed to be highly adaptive, efficient and scalable, TORA has the properties essential to support the intended network environment.

Park's technology, which has a patent pending, resulted from his master's thesis research at the University of Maryland (UMD). The university was also a partner in the technology transfer effort, as NRL negotiated a licensing agreement with UMD and Nova Engineering, Inc.

Currently, Nova Engineering has marketed a wireless router product (the NovaRoam 900) that is based on the TORA technology. In addition, Park's technology transfer partnership with UMD has proven to be so successful that the university is looking for other licensing opportunities from NRL.

This technology enables the deployment and use of computer and communication networks in new environments and applications where networking was previously not possible. By facilitating the formation of mobile wireless networks, TORA supports the extension of Internet-type information and services to users on the move or in remote locations—such as establishing a telemedicine link between a doctor in a hospital and a paramedic at a remote site, or providing current tactical information to rapidly deploying Marines in hostile territory.

The range of potential applications for this technology and the communities that it can benefit are vast.



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