



Dear Colleague,

We are delighted on behalf of the IEEE Finland COMSOC Board to inform you that we will organize a lecture of *Professor Zygmunt J. Haas* from Cornell University, Ithaca on **May 29, 2009** in Oulu. The title of the lecture is "*Stochastic Routing for Delay Tolerant Networks*". The abstract can be found below.

The lecture in **Oulu** is at **room KO 102 from 11 to 12 am** including some room for discussions. The more precise address is the University of Oulu, first floor, the corridor behind the door 2S.

Please register by the 26th of May by clicking <https://www.webropol.com/P.aspx?id=329634&cid=70369629> for approximating the required coffee service before the lecture. See more information on CWC's web pages: <http://www.cwc oulu.fi/doc/programme/lectures/>.

Prof Haas' biography can be found below. He will make lectures also in Stockholm (KTH), **Helsinki (TKK) Lecture Hall S3, in Otakaari 5A, on 27 May 2009 at 10am**, Linköping (LiU), Copenhagen (DTU), Aalborg and Lund during this distinguished lecturer tour (DLT), check <http://web.it.kth.se/~timus/ieee/HLT/Haas.html>.

If you have further questions, please don't hesitate to contact me.  
Check also our chapter pages [http://www.cwc oulu.fi/IEEE\\_COM19/](http://www.cwc oulu.fi/IEEE_COM19/).

Yours truly,  
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## Stochastic Routing for Delay Tolerant Networks

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### *Abstract*

In this talk, I will discuss selected research results in the area of Stochastic Routing. Especially, I will concentrate on the use of Stochastic Routing as it applies to Delay/Disruption Tolerant Networks (DTNs). DTNs are useful for applications with lenient requirements on message latency. Stochastic Routing is especially well suited for mobile DTNs. We demonstrate and compare the operation of some of the Stochastic Routing schemes and discuss a number of potential applications.

Gossiping, an example of Stochastic Routing, is a techniques where each node resends the received message with some probability. In fact, flooding is a limiting case of Gossiping, where the retransmission probability equals 1. Numerous variants of Gossiping have been proposed and optimized to implement efficient broadcasting, multicasting, and anycasting.

Epidemic Routing, another example of Stochastic Routing schemes, has been suggested as a protocol for DTNs. Unrestricted Epidemic Routing results in shortest packet delivery time and high packet delivery probability at the destination nodes. However, this comes at the cost of excessive number of packet copies in the network, which leads to wasteful energy consumption at the nodes. I will introduce and present the performance of several schemes which, in different ways, restrict Epidemic Routing in the number of generated packet copies. The schemes are compared in regards to the tradeoff between energy consumption and delivery delay, while maintaining fixed delivery rate.

Another drawback of Unrestricted Epidemic Routing is that the energy consumption is unequal at the different network nodes. Consequently, the system's lifetime is reduced. I will also discuss several approaches to extend and to maximize the system lifetime of Epidemic Routing.

### Prof. Z. Haas

#### *Biography*

Prof. Zygmunt J. Haas received his Ph.D. in 1988 from Stanford University, at which time he joined the AT&T Bell Laboratories, pursuing research in wireless communications, mobility management, fast protocols, optical networks, and optical switching. In 1995, he joined the faculty of the School of Electrical and Computer Engineering at Cornell University. He heads the Wireless Network Laboratory ([wnl.ece.cornell.edu](http://wnl.ece.cornell.edu)), a research group with extensive contributions in the area of Ad Hoc Networks and Sensor Networks.

Dr. Haas is a Fellow of the IEEE and an author of over 200 technical conference and journal papers. He holds eighteen patents in the areas of wireless networks and wireless communications, optical switching, optical networks, and high-speed networking protocols. He has organized numerous workshops, chaired and co-chaired several key conferences in the communications and networking areas, and delivered many tutorials at major IEEE and ACM conferences. His interests include: mobile and wireless communication and networks, modeling and performance evaluation of large and complex systems, and biologically-inspired networks.