



Hamilton Institute

Effective information delivery through opportunistic replication in wireless networks

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Abstract:

Increased replication of information is observed in modern wireless networks either in pre-planned content replication schemes or through opportunistic caching in intermediate relay nodes as the information flows to the final destination or through overhearing of broadcast information in the wireless channel. In all cases the available other node information might be used to effectively increase the efficiency of the information delivery process. We will consider first an information theoretic perspective and present a scheme that exploits the opportunistically available overheard information to achieve the Shannon capacity of the broadcast erasure channel. Then we will consider information transport in a multi-hop flat wireless network and present schemes for spatial information replication based on popularity, in association with any-casting routing schemes, that achieve asymptotically optimal performance.

Biography: He is Professor of Computer and Communications Engineering at the University of Thessaly, Greece and associate director of ITI-CERTH. His research interests are in the field of computer and communication networks. He worked extensively on fundamental mathematical models of communication networks, cross-layer architectures and protocols of wireless systems, and sensor networks. His contributions include among others the max-weight and the back-pressure algorithms for network control, opportunistic scheduling of time varying networks, as well as the lifetime maximization approach for sensor network design. The recent work of his research team is on future Internet, heterogeneous wireless and sensor networks, content based networking, participatory sensing and social networks, software defined networks and experimentation. He currently leads several EU funded research projects in the above areas as well as collaborative projects with industry. In the past his research has been funded in USA by the National Science Foundation (NSF), Office of Naval Research (ONR), Air Force Office of Scientific Research, Army Research Laboratory, Army Research Office. He published in excess of 260 papers and holds two US patents. Dr. Tassiulas is a fellow of IEEE. He received the IEEE INFOCOM 2007 achievement award, the IEEE INFOCOM 1994 best paper award, an NSF Research Initiation Award 1992, an NSF CAREER Award in 1995, the ONR Young Investigator Award in 1997 and the Bodosaki Foundation award in 1999. He received the PhD in Electrical Engineering from the University of Maryland College Park, in 1991. He held faculty positions at Polytechnic University New York 1991-95 and University of Maryland 1995-2001. He has been a visiting researcher with IBM T.J. Watson research laboratory and he consults regularly with industry.

Venue: Seminar Room, Hamilton Institute, Rye Hall, NUI Maynooth

Time: 2.00pm - 3.00pm

Travel directions are available at www.hamilton.ie

