



ABSTRACT:
Decentralised Constraint Satisfaction

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2013-09-18

Several important resource allocation problems in wireless networks fit within the common framework of Constraint Satisfaction Problems (CSPs). These include channel allocation, power control, transmission scheduling and network coding. Inspired by the requirements of these applications, where variables are located at distinct network devices that may not be able to communicate but may interfere, we define natural criteria that a CSP solver must possess in order to be practical. We introduce a stochastic decentralized CSP solver, sketching how it provably finds a solution should one exist and illustrating its other desirable features. Using an implementation on a wireless testbed we demonstrate the decentralized solver's practical utility for one of the fundamental challenges in wireless networks, namely interference management by appropriate channel allocation.

About:

Prof. Doug Leith is Director of the Hamilton Institute (www.hamilton.ie) at the National University of Ireland Maynooth, an applied mathematics research institute focussing on communication networks. Doug's research interests include network congestion control, coding/information theory, optimisation and resource allocation in wireless networks.