Two popular, well-established service access models are the client-server model and the push model. In the former model, the user makes a request to get the desired data. In the latter model, servers push data on to the clients when certain conditions are satisfied. In both the models, it is the server that acts as a central point of control and data distribution. In both the models, there is no interaction between users. An emerging third model of data access is the peer-to-peer (P2P) model, where a user is aware of other users and users communicate among themselves to access and share data. The idea in the P2P model is twofold: (i) plain sharing of information among users, and (ii) work in tandem with the client-server model for performance reasons. So far, P2P networks have relied on the fixed Internet infrastructure, and service accessibility has been their main objective. However, mobility due to wireless connectivity will provide new opportunities and challenges to the designers of P2P networks. Also, peers need not be identical in their computing and communication capability and willingness to participate in P2P services.

Therefore, the new challenges in designing P2P systems will include communication protocols to support P2P communication in a heterogeneous network including the fixed Internet, wireless LANs, and the 3G systems. Those protocols must be aware of the quality of service (QoS) needs of the users. Efficient discovery of contents will be of importance because search involves sending messages on the network. This problem gains additional importance in a wireless network, where bandwidth is at a premium. There may be a need for peers to form an ad hoc network so that less service is demanded from the infrastructure-based part with the objective of localizing communication and reducing the cost. When peers apply their local constraints on participation, there will be additional challenges on the above design aspects. Also, because of the open nature of P2P networks, security will be a problem. There has been ongoing research on these problems, but a great deal of work still remains to be done.

The goal of this issue is to provide a forum for the recent research results on P2P systems with emphasis on P2P user applications and middleware support. We plan to solicit papers in the following areas:

- Object location and storage
- Data replication strategies
- Index structure for resource discovery
- DDoS resilient P2P networks
- Resource conserving P2P communication
- Integration of P2P model with client-server and push models
- Search and routing in heterogeneous P2P networks
- Novel applications of P2P communication

Only original and unpublished research papers will be considered. Prospective authors should refer to the Information for Authors found at http://www.arggreenhouse.com/society/J-SAC under "Submitting Papers to J-SAC". Authors should submit their papers in pdf format to knaik@swen.uwaterloo.ca according to the following timetable.

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