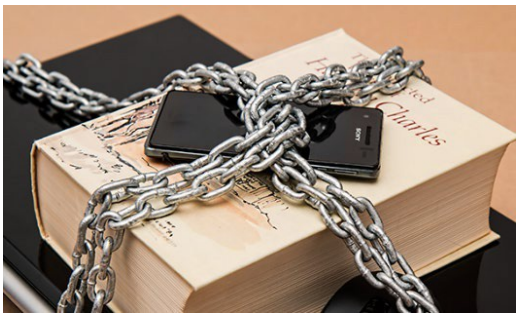

Security Lancaster | Lancaster University

Research Seminar

Application Meaning: The Holy Grail in Distributed Systems

Dr Amit Chopra

Lancaster University

Date: March 11th, 2022

Time: 14:00-15:00

Teams Link: Join Seminar (We'd appreciate if you could optionally register to join our mailing list)

Abstract:

Early works and retrospectives by the researchers who founded the network protocols underlying current distributed systems indicate they were aware of the importance of capturing application meaning but didn't know how to handle it programmatically. Therefore, those researchers introduced simplifications in the protocols that violated their own principle of the end-to-end argument in systems design.

The thesis underlying this talk is the following. First, the above-mentioned simplifications, especially the reliance on reliable, ordered communication protocols such as TCP (and QUIC, widely touted as TCP's successor, a darling of tech companies, and recently enshrined as an IETF standard) have run their course. Modern applications demand flexibility that can only be achieved through modeling application meaning, and many applications (such as those based on the Internet of Things) cannot pay TCP's overhead. Second, the multiagent systems community has developed alternative meaning-based approaches that can provide a new foundation for distributed computing at large. To support the thesis, I will demonstrate how modeling applications via information protocols enables realizing them over a transport as simple as UDP!

Biography:

Amit Chopra is a senior lecturer at Lancaster University. He is interested in software abstractions and methodologies for engineering decentralized multiagent systems and using them to operationalize governance and accountability. He has worked extensively on protocols and norms and programming models based on them. Amit has been an Area Chair for AAMAS. His research has been funded by the EPSRC. Amit received a PhD in Computer Sciencein 2008 from North Carolina State Univesity.

Please contact Jennifer for any Teams connectivity issues: j.mcculloch@lancaster.ac.uk