

Minitrack: Advances in Trust, Identity, and Trusted Systems in Technology-Mediated Environments

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Abstract

Within the 52nd Hawaiian International Conference on System Sciences (HICSS), we organize for the third time a minitrack on Trust, Identity, and Trusted Systems in Technology-mediated Environments. Trust is a pervasive concern not just with new technologies but also with established technologies as they become more complex and interdependent. Through five papers and an open discussion, the minitrack will discuss and debate when and to what degree trust matters, in what form(s), and with which consequences in the context of existing and emerging hardware and software technologies, e.g., biometric technologies, cryptocurrencies, artificial intelligence, peer-to-peer networked platforms, and autonomous vehicles.

1. Introduction

The concept of trust continues to become increasingly complex as technology-mediated environments are leading to new inter-personal, organizational, inter-organizational, network, and platform contexts. In order to address these emerging contexts, this mini-track advances trust and identity research in technology-mediated environments. Some of the questions discussed and debated in the minitrack include the following: 1) How do new advancements in both hardware and software technologies change the way we trust and identify? 2) What forms will digital trust and trust in digital environments take, e.g., how to measure trust in the biometric technologies? 3) What are the various risks and vulnerabilities to trust and identity imposed by emerging algorithmic capabilities, cloud-based platforms, complex platform infrastructures, and highly distributed peer-to-peer networks, e.g.,

cryptocurrencies or other applications in the financial industry, in the automotive industry, in the public sector? 4) What are the implications for trust and identity as technologies take on capabilities with both social and moral agency? 5) How do technological advances such as driverless cars or Tesla's autopilot change the way we relate to the automobiles, their manufacturers, and other institutions?

Finally, some digital technologies may replace the trust we now have in institutions as trust shifts from humans and central organizations to computers and anonymous decentralized organizations that know no geographic boundaries. Digital technologies may create new fluid identities. This leads to several other questions to be discussed and debated in the minitrack: 6) How does trust in humans differ from trust in technology? 7) Is it possible that human-like systems exacerbate rather than compensate weaknesses common in trust assessments? 8) How do trust and identity relate?

This year's papers theoretically and empirically advance our understanding of different forms of trust in technology-mediated environments, including in inter-personal, organizational, inter-organizational, network, and platform contexts. The papers are also very timely in terms of the phenomena and topics addressed.

2. Minitrack papers

The minitrack consists of two sessions, one with three papers and the second with two papers, followed by a more open discussion. The first session will begin with the paper by K.M. Koskinen, A.K. Lyyra, N. Mallat, and V.K. Tuunainen and is titled "Trust and Risky Technologies: Aligning and Coping with Tesla Autopilot". Drawing on forum data, the authors seek to investigate the development of users' trust in car automation.

This paper is followed by a contribution by S. Vidolov, J.P. Sabou, and N. Mitev titled, “Trust Development in Networked Environments: A Performative Account”. The papers offer a novel perspective on trust development in dynamic, unstructured, and non-commercial networked environments.

The final paper in the first session is by Y. Wang, Z. Wang, and D. Redmiles and is titled “The Co-Evolution of Trust and Coordination in Global Software Development Teams: An Extensible Evolutionary Game Theory Model”. The authors develop an evolutionary game theory model using the Behavior-Preference-Constraint (BPC) model and Adaptive Play to illustrate how trust and coordination co-evolve as team members interact over time.

The second session has two papers. The first paper is by T.J. Ryan, C. Walter, G.M. Alarcon, R. Gamble, S.A. Jessup, and A. Capiola and is titled the “Development of Trust Measure in Biometric Technology”. In this paper, the authors develop a measure of consumer trust in biometric technology based on a literature review and subsequent survey of individuals using the MTurk platform.

The second paper by Z. Semnani-Azad, S.-Y.J. Chien, Y. Forster, S. Schukers, and H. Gan and addresses “The Influence of Personality on Code Reuse”. This paper investigates the role of programmers’ personal traits on their willingness to reuse prewritten code. The authors use an experimental setting to investigate this relation.

3. Discussion

In the remainder of the session, we will discuss and debate the future directions of the track around the following issues:

- Understanding issues of digital trust, identity, and risk in the context of sharing economy and other platform-based organizations, e.g., in the digital platform, among the users of the platform, in the organization behind the platform, in financial and other transactions conducted through the platform.
- Understanding the relationship between an organization’s handling of its users’ data, e.g., privacy/integrity/security, use of the cloud, and trust and identities in the organization.
- Understanding the relationship between trust in an organization and trust in the organization’s technology-based offerings and understanding the difference between trust in humans and trust in technology.
- How do changes in trust influence identity and identification processes? And vice versa?
- Understanding how regulation and policy at the national and international levels influence issues of digital trust and the penetration of technology, e.g., in the financial industry and the sharing economy, and vice versa.
- How to leverage trust levels by implementing new forms of digital trust tools online?
- Understanding trust and or identity relationships between users and emerging technologies, e.g., personal robots, smart toys, wearables, personal voice assistants, 3D printing, autonomous vehicles, drones.
- Understanding the role of trust in the development of algorithms, e.g., functions, openness of coding, data collection.
- Investigating new digital trust cues that can signal and form trust
- Understanding the relationship between trust and business models in startups and emerging industries as well as in the commercialization of new technologies by established firms.
- Understanding the relationship between trust and the development and dynamics of self-regulated, decentralized, peer-to-peer networks.
- How does trust change in blockchain technology and cryptography contexts?
- How does trust evolve in multi-layered environments such as digital platforms?
- Understanding the relationship between national culture and institutions and trust in technology and digital environments that know no geographic boundaries.
- Understanding the relationship between trust, identity, control, and influence in digital environments.