

Community Computing: Understanding, Modeling, and Designing Human-Centered Societies

Communities are complex systems formed through interactions among people, places, and local resources. Understanding how such communities function and evolve is important for addressing challenges related to regional sustainability, economic vitality, and social well-being. However, community dynamics cannot be fully explained from a single disciplinary perspective. Their analysis requires the integration of knowledge from computer science, network science, social sciences, and regional studies. This talk presents recent research on community computing through case studies conducted in commercial districts and local communities. First, behavioral data collected from large-scale stamp rally events are analyzed to reveal patterns of customer movements and relationships among stores. Network-based approaches are employed to uncover hidden structures of human activities and interactions within communities. The talk then introduces a framework for the dynamic analysis of social capital. By representing social relationships as evolving networks, it becomes possible to investigate how trust, communication, and social connections change over time and influence community development. These studies demonstrate how computational approaches can provide new insights into community structures and dynamics that are difficult to capture through conventional methods alone. Through these examples, the presentation highlights the importance of integrating diverse forms of knowledge, including quantitative behavioral data, social relationships, and field-based observations. The talk discusses how such interdisciplinary perspectives contribute to a deeper understanding of communities and support the design of more vibrant, sustainable, and human-centered societies.