ORIGINAL ARTICLE

Assemblage thinking as a methodology for studying urban AI phenomena

Yu-Shan Tseng[1]

Abstract
This paper seeks to bypass assumptions that researchers in critical algorithmic studies and urban studies find it difficult to study algorithmic systems due to their black-boxed nature. In addition, it seeks to work against the assumption that advocating for transparency in algorithms is, therefore, the key for achieving an enhanced understanding of the role of algorithmic technologies on modern life. Drawing on applied assemblage thinking via the concept of the urban assemblage, I demonstrate how the notion of urban assemblage can work as an alternative way to explore the distributed and potential dimensions of what has been termed as Urban AI phenomena. Rather than seeing Urban AI phenomena as black-boxed, unknown and opaque, the notion of urban assemblage locates such entities within the wider contests of the city: urban places, communities and politics, where human-algorithmic relationships gather and disperse. In addition, this approach focuses on the potentialities of Urban AI phenomena—how algorithmic systems can operate differently through different aspects of the city—which can be seen to manifest new forms of resistance, collective actions and democracy. I use a case study of an algorithmic system designed to facilitate digital democracy—vTaiwan—to exemplify how assemblage methodology foregrounds the role of cities as spaces and places for exploring the democratic possibilities of algorithmic systems. This paper concludes with discussion of how the assemblage methodology contributes to serve as a bridge between critical algorithm studies and recent studies of platform urbanism.

Keywords Assemblage · Urban assemblage · Black-boxed algorithms · Algorithmic decision · Platform urbanism · Digital democracy · Smart urbanism

1 Introduction

The term Urban AI loosely describes various emergent phenomena where algorithmic technologies affect urban infrastructures, places and everyday life (Luusua and Ylipulli 2020). Various AI technologies (such as biometrics, social media platforms, smart sensors) are algorithmic systems which are capable of performing and adapting their outputs in response to changes in surrounding environments (Amoore 2013; Kitchin 2017). Such phenomena are an important field of inquiry for urban scholars and geographers: from automatic face recognition to algorithmic recommendation systems, urban scholars claim that algorithmic systems have already changed various ways in which urban

everyday life, policy-making and infrastructures operate and are (re)organised (Coletta and Kitchin 2017; Kitchin 2017; Luque-Ayala and Marvin 2020; Luusua and Ylipulli 2020). Within the notion of algorithmic governance, Coletta and Kitchin (2017, p. 4) consider algorithmic regimes as a new mode of governance in which algorithms actively "search, collate, sort, categorise, group, match, analyse, profile, model, simulate, visualise and regulate people, processes and places" (also see Kitchin 2017, p. 18).

The study of the encroachment of algorithmic technologies—particularly those involving machine learning—on urban life poses huge methodological challenges for scholars of algorithmic studies and urban studies, due to the invisible, inaccessible, contingent and heterogeneous nature of their embedded algorithms (Graham 2005; Kitchin 2017). This is not just because a large proportion of algorithms are proprietary by nature but also because of the technologically complicated and contingent calculations they embody (Graham 2005; Kitchin 2017). In his book, Frank Pasquale

✉ Yu-Shan Tseng
  Yu-shan.tseng@helsinki.fi

1 Centre for Consumer Society Research, University of Helsinki, Helsinki, Finland