TRUST IN THE MUSIC? AUTOMATED MUSIC DISCOVERY, MUSIC RECOMMENDATION SYSTEMS & ALGORITHMIC CULTURE.

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After nearly three decades of piracy and declining sales, online music streaming has returned some semblance of stability and growth to the global music industry. Popular music streaming service Spotify reports 200 million active users and a powerful music recommendation system that curates and personalises playlists based on user data and profiles. Given access to huge online collections of music, users become increasingly reliant on algorithmic recommender systems and automated discovery features to find and curate music for them. In this way, Spotify's black box recommender system becomes a powerful cultural intermediary, shaping music consumption and altering processes of music discovery.

In this paper I argue that music recommendation algorithms are a complex element of contemporary digital culture. They are personalised, aim to 'know' us intimately and reflect some of our most private listening moments. We trust music streaming services and recommender systems like Spotify to 'set the mood' for us, to soundtrack our private lives and activities, to recommend and discover music for us. These systems purport to 'know' individual users (alongside the millions of other data profiles), and as such users let them into their most intimate listening spaces and moments. Spotify users fetishise and share the datafication of their own listening habits, reflected annually in Spotify's "Your 2019 Wrapped" and every Monday in 'Discover Weekly', and in the

daily offering of a "playlist made for you". In this way users' music taste becomes a commodity and a marketing tool, as well as a fuel for automated discovery.

This paper examines the affectivities, restrictions and possibilities of music recommendation algorithms. Drawing on an ongoing observational and ethnographic study of Spotify users, artists, and software developers, I develop a critical framework for understanding the emerging politics of recommendation algorithms. The critiques I raise relate to the role algorithms play in: (1) the interpersonal and social relations of music discovery and listening, (2) human-software anthropomorphism, and (3) the politics of in/exclusion of content and its relation to phenomena such as curation & control, identity and tastemaking. In bringing together these critiques of algorithmic music recommendation technology, I situate this particular subset of algorithms within a number of embodied material practices relating to the computer-mediated modelling, prediction and reification of music discovery. This research, I argue contributes to work that is critically engaging with broader trajectories and emerging political issues relating to automation, machine learning and the technical mediation of human subjectivity.

In order to 'reverse-engineer' the Spotify recommender system, I consider: what people do with their playlists, how are data profiles of users created and what modes of analysis are deployed in making sense of the music found on the platform. Of the approximately 20 million songs on Spotify, each is acoustically analysed and annotated, by both humans and computers. Semantic analysis, natural language processing and machine learning models are used to make sense of how users, and non-users on music websites, talk about and describe music. This particular hybrid filtering approach that relies on both human and computer analysis, is arguably what gives Spotify it's competitive edge over other streaming sites.These infinitesimal data points about both users & music items are arrayed to produce the affordance of "discovery". Music is matched to those most likely to enjoy it, at the 'right time', in the 'right context'. Spotify thus automates discovery, but in doing so places a premium on accuracy over serendipity. This is emblematic of the logics of recommendation more broadly.

Music recommenders are sense-making machines, attempting to compute the relationship between music and listeners, and offer meaningful recommendations based on this computation. However they each represent just one way of understanding music, each platform has a different combination of human and non-human knowledge to train machine learning models and algorithmic recommender systems. Music streaming services buttress computational and algorithmic logics with the subjective experience of human music knowledge and taste. But I ask, what is the difference between computational accuracy and human subjectivity?

Identified by Schedl et. al (2018) as an emerging research agenda in the field of music information retrieval (MIR), this research aligns itself with the idea of a '*beyond-accuracy*' evaluation of music recsys. Until recently accuracy has been the key measure of the efficacy of a recommender system, with researchers and industry alike beginning to acknowledge that other factors such as novelty, serendipity, and diversity are also desirable qualities in a music recsys. This research positions itself within this recognised research agenda, suggesting that computational accuracy is only one part of the music recommendation and discovery experience as automated by streaming platforms. As such, the central thesis proposed herein is that music recommender systems, and indeed MIR research, have neglected essential parts of the phenomenological human experience of music discovery. This ongoing project aims to elucidate the user experience of music recommender systems and perhaps suggest ways that aspects such as serendipity, novelty and diversity can be better incorporated into music streaming services.

As the processes of discovery and listening become further automated, and these systems purport to ease search frictions, the active input of users seeking music becomes less and less important to the functioning of the system. What are the qualitative concerns in adopting this algorithmically assisted music discovery from the point of view of content vendors and platform users respectively? How might we better understand (or re-define) 'accuracy' in relation to music recommendation algorithms? Are trustworthy recommendations inherently good recommendations? In what way do music recommender systems bear the imprint of the developers that built them? What tacit music knowledge exists, or indeed, pre-exists the music recommender system?

This research aims to make some way towards answering the broader concerns of, how can we train machines to understand human taste, and what do we gain and lose when we relinquish curatorial control to platforms, machines & recommender systems. As music recommendation systems seek to incorporate and expand their reach into the private life world of users, by providing recommendations based on context factors like mood or activity, how does this affect the privacy of users? At what point do these automated curatorial choices and algorithmic recommendations stop being predictive and start to be prescriptive? Might trust in recommendations lead to passivity in music seeking behaviours?

References

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