

----- REVIEW 1 -----

SUBMISSION: 22

TITLE: Key-Finding Based on a Hidden Markov Model and Key Profiles

AUTHORS: Nestor Napoles Lopez, Claire Arthur and Ichiro Fujinaga

----- Overall evaluation -----

SCORE: 3 (strong accept)

----- TEXT:

This is a well written short paper, discussing a novel key-finding algorithm that works across the domains of symbolic and audio music in digital formats with high-level of accuracy. This algorithm is unique in that it generates both local and global keys at two output stages. The results can be useful to different user groups. The evaluation of the local and global key-finding model conducted against other algorithms is described, including the discrepancies caused by using different key profiles.

----- REVIEW 2 -----

SUBMISSION: 22

TITLE: Key-Finding Based on a Hidden Markov Model and Key Profiles

AUTHORS: Nestor Napoles Lopez, Claire Arthur and Ichiro Fujinaga

----- Overall evaluation -----

SCORE: -1 (weak reject)

----- TEXT:

This paper describes a pitch-class based system for key finding with good performance and the ability to operate well on symbolic and audio data (this latter arises from its use of pitch class as a primary feature and its generally noise-tolerant approach).

The evaluation is generally of a high quality, including testing on a public dataset and qualitative exploration of the differences that various profiles make.

The approach is described in terms of local and global key finding, which is a bit problematic. What these local regions aren't describing, I suspect, is key, as is witnessed by figure 4, showing as many as 9 keys in six bars. This is not a criticism of the method itself, which is good - summarising pitch profiles for tonally-coherent regions and then looking at the global key that best accommodates those - it's just that these regions are just tonal areas, with little significance in terms of conventional music-theoretic concepts. I think that they sit somewhere between harmony and tonal region, but would need to see more examples to be able to tell.

This terminological, music-theoretical gripe aside, this is a good paper, and an argument could be made for key finding over a mixed-media library as an area of interest to the community. Nonetheless, this paper feels a bit ISMIR-ish in content - it describes a novel approach to a problem that already has some tools, and shows that the new system outperforms existing tools for a certain corpus. Without either a clearer use case or more exploration of the musical significance of its strengths and failings or of the meaning of the local component of the algorithm, I'm not sure that reducing the number of erroneously-labelled pieces by a third, great though that is, really justifies a fit for this conference.

This is only a weak reject - key finding is a foundational component of much musical work, and the paper itself is of a good quality.

If accepted, the paper will need trimming to fit into the page count, but the change needed is minor, and easily achieved.

----- REVIEW 3 -----

SUBMISSION: 22

TITLE: Key-Finding Based on a Hidden Markov Model and Key Profiles

AUTHORS: Nestor Napoles Lopez, Claire Arthur and Ichiro Fujinaga

----- Overall evaluation -----

SCORE: 2 (accept)

----- TEXT:

I am not certain that this DLfM the best forum for this paper; it would seem more directly

suited to ISMIR, as it should obtain good impact as being one of only a few that have focused on the crucially important (though mostly neglected) area of cross-searching between audio and symbolic musical data. Possibly it needs more development to be convincing to reviewers in that community, who will need to see a wider range of test materials than a single Chopin work.

The idea of using an HMM over 24 major and minor key profiles, applied to audio/symbolic cross-domain retrieval was addressed by Pickens et al in ISMIR 2002, and this paper should have been cited as prior work:

Jeremy Pickens, Juan Pablo Bello, Tim Crawford, Matthew J. Dovey, Giuliano Monti, Mark B. Sandler, 'Polyphonic Score Retrieval Using Polyphonic Audio Queries: A Harmonic Modeling Approach' (ISMIR 2002, Paris, France)

However, the paper is excellently presented and seems sound, as far as it goes (there is clearly more work to follow). It would thus be acceptable to DLfM given space in a crowded programme.