Mining Contrast Patterns in Charlie Parker Solos

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Contrast pattern mining is the process of finding patterns whose frequency differs significantly from one group of data to another (Conklin 2024). In earlier work (Conklin and Eigenfeldt 2024), we applied an efficient contrast pattern discovery algorithm to contrast two time periods of Miles Davis' solos. In this study, we extend this work, exploring sequential patterns distinctive within the solos of Charlie Parker. Parker is considered a highly influential alto saxophonist in jazz's bebop period, with many later musicians transcribing and learning his recorded improvisations.

A dataset containing transcriptions from seventeen selected recordings from 1946 and 1951, derived from the Jazzomat corpus of 456 solos (Pfleiderer et al. 2017), was mined to determine the following (number of solos in brackets):

- whether there are significant patterns contrasting the (17) solos of Charlie Parker with the remainder of the corpus (439 solos);
- whether or not these patterns in Charlie Parker solos are significant when contrasted only with all other alto saxophonists (73 solos), both prior and later;
- whether there are patterns contrasting Charlie Parker solos (17) with those of trumpeter Dizzy Gillespie (6 solos), another important soloist and collaborator of Parker's from the same period;
- whether there are examples of quotation: significant patterns within one Parker solo (out of all 17) that appear in the solos of other performers (439 solos).

This research will determine which patterns have been taken up by other alto saxophonists and other jazz improvisers through quotation, a common technique in jazz that pays tribute to another performer, and whether Parker's iconic patterns/licks are truly his own or idiomatic to the alto saxophone or the period.

References

Conklin, D.: Mining Significant Sequential Contrast Patterns. In: Noll, T., Montiel, M., Gómez, F., Hamido, O.C., Besada, J.L., Martins, J.O. (eds.) Mathematics and Computation in Music. pp. 387–392. Springer Nature Switzerland, Cham (2024)

Conklin, D. and Eigenfeldt, A. Mining Contrast Patterns in Jazz Solos. In 15th International Workshop on Machine Learning and Music (MML 2024), Vilnius, (2024)

Pfleiderer, M., Frieler, K., Abeßer, J., Zaddach, W.G., Burkhart, B. (eds.): Inside the Jazzomat - New Perspectives for Jazz Research. Schott Campus (2017)