

Observing musical communities dedicated to improvisation on TikTok using web scraping

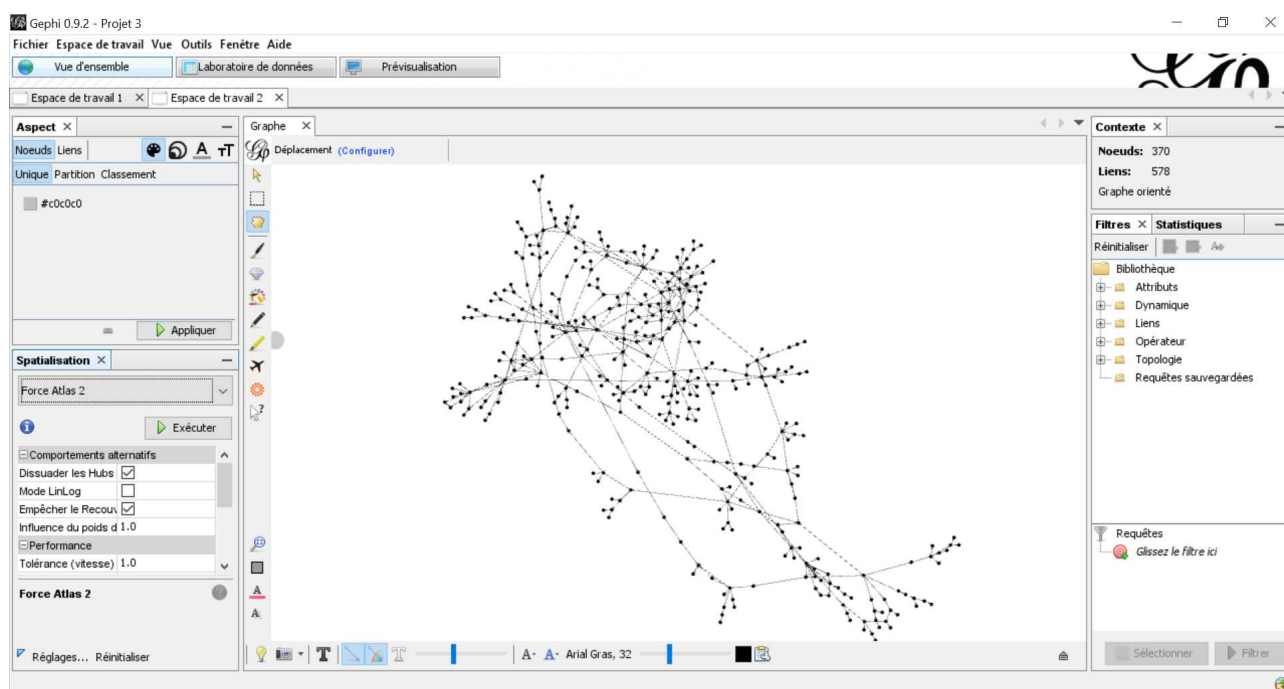
Marc Chemillier (CAMS-EHESS), Yohann Rabearivelo (CAMS-EHESS), Rémi Jaylet (Télécom Paris), contact: chemilli@ehess.fr

Music plays a fundamental role on TikTok, particularly through dance challenges that promote songs to dizzying levels of listening (Ahlse, Nilsson, Sandström, 2020). The music industry has recognized the importance of this phenomenon for a few years, as evidenced by Microsoft's attempted acquisition in the summer of 2020 (Hu 2020). Communities have formed around musical practices fostered by TikTok such as the duet function that allows one to complete a pre-existing video by recording a new video placed next to it. This type of musical collaboration has been studied recently (Bondy Valdovinos Kaye, 2022), but research on music is still scarce among academic works on TikTok, which rather deal with video content analysis (Klug, 2020) or economic aspects related to the attention economy (Crystal, 2021) or algorithmic precarity (Duffy, 2020).

Our study focuses on the improvisational practices developing on TikTok and on the way they adapt to the duo function and to the other characteristics of the application (very short video format, possibility of live broadcasting). In addition to the usual methods of video analysis and ethnographic surveys conducted with TikTok musicians, we will also use web scraping techniques (Teather, 2022) to highlight the relationships between musicians and the musical communities that are formed through these practices.

Thanks to a recursive algorithm, we could get the collaborations of different musicians by studying their network made of the tagged artists in their videos' descriptions and those with whom they directly collaborated via the duo feature. By filtering the profiles according to their characteristics and used hashtags, we could target the users inclined to interact with other musicians and to experiment with different forms of improvisation.

We visualized the relationships between musicians in the form of a graph using the Force Atlas 2 algorithm as implemented in the Gephi software (figure 1). We can thus show the dense points, the sparse areas, the possible separation of the graph into connected components, the sub-graphs corresponding to specialized mentions (duets, covers, etc.). We are also interested in the motivations that push musicians to invest in these new practices.



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Biographies

Marc Chemillier

Musician, computer scientist and anthropologist, Marc Chemillier studied jazz piano (Schola Cantorum, CIM). He entered the ENS de Fontenay-aux-roses in mathematics in 1981 and studied harmony-counterpoint at the CNSM in Paris. He made a PhD thesis in collaboration with IRCAM. In ethnomusicology, he worked on the harp of the Nzakara of the Central African Republic (CD Musiques des anciennes cours Bandia in 1995), then on the zither of Madagascar. In 2000, he created with the OMax Brothers (Gérard Assayag, Marc Chemillier, Shlomo Dubnov, Georges Bloch) the OMax improvisation software. Director of studies at the EHESS in Paris, he published *Les Mathématiques naturelles* in 2008 (Odile Jacob) and continues his research on computer-assisted improvisation and its anthropological and social issues. In 2021, he published the book-CD *Artificiel* with Bernard Lubat and Gérard Assayag.

Yohann Rabearivelo

Musician and research student, Yohann Rabearivelo studied music and sound engineering at the UPEM (Université Paris-Est Marne La Vallée). He then entered EHESS in Paris to study an alternative and underground music label and its community and graduated with a Master Degree on this subject under Philippe Le Guern's direction. He is now working on TikTok's musician communities and on improvised music on the platform under the direction of Marc Chemillier at EHESS. He also studied classical piano at the Music Conservatory of Avignon, and now

participates in the alternative music life in Paris.

Rémi Jaylet

He entered Télécom Paris in 2019 after two years at the Lycée Saint-Louis. Specialized in data science and econometrics, he worked on several projects in the field of data modelling and data visualisation. In 2020, for his end-of-year project, he implemented the Force Atlas 2 algorithm (force-directed graph drawing algorithms) in the scikit-network library (Thomas Bonald, Nathan de Lara, Quentin Lutz). In 2021, for his econometrics project, he analysed and studied the data of the Kickstarter website (crowdfunding platform) by scrapping the information of the projects and implemented a machine learning algorithm to predict their success rate.