

Borrowing from Computer Music to Describe Temporal Aspects of Social Networks

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If you are a lover of classical music, imagine listening to a sonata from Beethoven. After the music has been introduced in the exposition, it will undergo a modulation and will arrive at the end of the exposition in a different key. As the melody further develops, you will be more and more able to unravel the tune and to analyze and understand the underlying patterns of the melody. The longer you listen to the tune, the better you will know what to expect next. In our project we are aiming to do the same for the evolution of communication patterns in social networks. Our goal is to come up with a set of temporal communication patterns typical of different types of collaborative knowledge networks such as innovation networks, learning networks, and interest networks (Gloor et al, 2004).

The description of music and of the temporal evolution of social networks has strong similarities. In order to describe a melody, we need to portray the recombinations of pitches and durations over time. In a social network we describe the growth and decay of ties between people over time. Just as in an orchestra many different musicians play together to produce a multi-voice melody that develops and unravels over time, people in a social network interact with each other, building up and severing mutual ties over time. Musical composition by computer disassembles tunes written by a human composer into fragments, trying to understand the rules that a particular composer applied to produce her tune. The computer program then takes the fragments, recombining them into new melodies while applying the combination rules of the composer (Cope 2001). We are doing the same for the temporal analysis of social networks, using as formalism principles of music analysis from the field of computer generated music combined with musical classification theory (Mazzola et. al. 2002).

References:

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