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Crista Arangala and **Nakhila Mistry*** (nmistry@elon.edu). *Music Genomics: Applying Seriation Algorithms to Billboard #1 Hits.*

Music plays a prominent role in society and companies have even started studying its aspects for commercial purposes. It is only natural to ask what are the characteristics that make certain songs appealing. While much research has been conducted on the mathematical principles of sound, there has been less focus on analyzing the structure of popular songs from a mathematical perspective. One mathematical tool that researchers have used to study this is seriation, ordering. Seriation algorithms are frequently used for companies with an online presence, including Google, Facebook, Amazon, and Pandora, to understand the traits of what users like in order to attract more consumers. We will use these types of seriation algorithms to conduct a mathematical analysis of the structural qualities of music. We will test whether the same structural traits appear in an artist's songs as the songs of the artists that they cite as musical influences. In order to musically link the chosen artists, we will use applied linear algebra methods. Results show that an artist's songs have a higher quantitatively measured connection with the artists they cite as influences rather than the artists who they never mention as musical influences. (Received September 10, 2013)