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**TITLE:** The Art and Science of Musical Synchrony

**ABSTRACT:**

When two or more musicians perform together, each musician is capable of fulfilling his or her role coherently despite all variations that constitute expressivity and interpretive aspects of a live music performance. The result of this live performance is thus deterministic given the plan of the piece (specially for written music) and non-deterministic in its live interpretation aspects. Such capacity of live musical coordination despite all variations related to an interpretation constitutes the very basis of being a musician. The goal of this talk is to study how computers can integrate such micro-societies in live performances, next to human musicians, with similar or more powerful capabilities for understanding, interacting and perceiving an ensemble and interpreting its own part coherently with others. One basic application of such approach is Automatic accompaniment, delegating the interpretation of one or several musical voices to a computer, in interaction with a live solo musician. In a larger context, and probably more interesting, is the association of live musicians with computer generated processes. In this talk we will expose both context and their implicated research domains, a unique mixture of artificial intelligence techniques with signal processing and that of realtime computer languages and systems, and their various artistic applications. Throughout this talk we will introduce the software and synchronous programming language [Antescofo](#) and will expose exciting research questions that has been rises in the recent few months through its applications for live music performance.