COLLOQUIUM PRESENTATION
Department of Mathematics & Computer Science

DATE: Friday—25 October 2013

TIME: 12:00—12:50 p.m.

LOCATION: D632

SPEAKER: Jim Parker

Dr. Jim Parker is a past professor of Computer Science at the University of Calgary and is now professor of Art at the same school, where he focuses on game design and development, computer vision, and digital arts and humanities.

TITLE: Music as a Game Controller: An Exercise in Pitch Perception

ABSTRACT: An educational game was developed in which the game is controlled by the sounds produced by an acoustic instrument.

The interesting part of this work is not really the game, but what was learned about 'pitch'. Is musical pitch well described by the primary frequency in the sound? The answer is 'no.' Is a Fourier transform the best way to identify pitch? Again, 'no'. How can pitch be detected then? And what is pitch anyway?

In order to allow a musical signal to be used for game control, new digital signal processing algorithms were developed for extracting pitch information from the musical performance of a single instrument or singer. These algorithms provide more accurate pitch determination, using fewer time-domain samples than existing methods. They also reflect the psychoacoustics of pitch perception.

We will discuss how we hear musical notes, and how we can use that information to construct an algorithm to do the same.

OPEN TO ALL INTERESTED PARTIES