Seminar Series
2008—2009

FACULTY OF COMPUTER SCIENCE

Tuesday June 2, 2009

3:00pm

Gillin Hall E Level, Room 126

www.cs.unb.ca

The Mathematics of Mathematical Handwriting Recognition
By

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With the increased popularity of pen-based personal devices, Tablet PCs and digital whiteboards, it becomes increasingly attractive to enter and manipulate mathematical expressions using a pen, rather than a computer keyboard. Mathematical handwriting is quite different, however, than other recognition problems. Characters come from many different alphabets, are usually made up of a small number of strokes and there is no fixed dictionary of mathematical "words" to rank choices. Many symbols are quite similar, differing only in some subtleties in individual strokes.

This talk presents the approach we have taken to deal with these challenges. We show how mathematical symbols may be represented using orthogonal series related to coordinate functions and their derivatives. The handwritten symbols are then points in a low-dimensional vector space with many useful geometric properties. Recognition can then be achieved in real time using simple device-independent numerical methods. The geometry of the vector space also leads to a natural confidence measure allowing recognition results for individual symbols to be ranked using n-gram statistics derived from empirical data.

STUDENTS ARE ENCOURAGED TO ATTEND