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Computer Science Dept. Seminar Series

Computational Models for Degraded Document Enhancement

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Mar 22nd Tuesday, 12:30 to 1:30pm

209 Computer Science Building

Abstract - Rapid evolution of scanning and computing technologies in recent years has led to the creation of large collections of scanned historical documents. Usually, these scanned documents suffer from some form of degradation. Large degradations make documents hard to read and substantially deteriorate the performance of automated document processing systems.

Enhancement of degraded document images is normally performed assuming global degradation models. When the degradation is large, global degradation models do not perform well. In contrast, we propose to learn local degradation computational models for binarization and enhancement. We approach the task of document enhancement from a machine learning perspective by generating computational models using both unsupervised and supervised learning techniques and applying them in a principled manner.

When enhancing document images with the goal of improving readability, it is important to understand human perception of quality. Hence, we also propose a novel method for learning and estimating human perception of document image quality. Experimental results obtained demonstrate the advantage of our proposed methods to current state of the art techniques.

Brief Bio - Tayo Obafemi-Ajayi is currently a research associate at Illinois Institute of Technology (IIT), Chicago, IL. She received her BS and MS degree in Electrical Engineering from IIT in 2000 and 2001 respectively. She obtained her PhD degree in Computer Science in Dec. 2010 from IIT under the supervision of Drs. Ophir Frieder and Gady Agam. Her research interests include document image processing, machine learning, information retrieval and data mining.