

ARTIFACT REDUCTION IN ELECTROPHOTOGRAPHIC (EP) PROCESSES

George T.-C. Chiu

School of Mechanical Engineering

Purdue University

Electrophotography (EP) is the basic imaging process used in paper copiers and laser printers. There are six key steps in the EP process: charging, exposure, developing, transferring, fusing, and cleaning. The final output qualities (print quality PQ) for any imaging process depends on process control, image processing and human visual perception. There are significant amounts of research focus in digital image processing to improve print quality for EP processes. However, EP process control, which has significant impact in process stability, is still in its infancy. In this talk, methods to reduce halftone-banding artifact will be introduced to illustrate unique aspects of EP process control. Halftone banding is one of the most visible artifacts for EP processes that appears as light and dark streaks across a printed page perpendicular to the paper moving direction. Process velocity variation and structure vibration are two major contributing factors of halftone banding. Since human visual perception is an important factor in determining PQ, printing process control will need to take into account of the human visual system. Two banding compensation approaches will be presented. An obvious way of incorporating the human visual system into one of the banding compensation approach will also be discussed. The talk will conclude with the discussion of some implementation and research issues relating to imaging (printing) process control.



Banding
Banding