

Print Quality Improvement Through Dot Synthesis and Optimization

*Lihu Chiu
Printronic, Inc.
Irvine, California, USA*

Abstract

The main control mechanism of impact digital printing systems can be synthesized using dots on a plane field. Using the synthesized images we can simulate real printing situations without having to prototype actual hardware. The effects of dot placement and individual dot attributes can be modeled effectively in a linear fashion with additive methods. Modeling the dot over-lap, dot edges, density profile, size and overall shape, individually will give the individual parameters for the dot attributes. The linearity is determined through direct synthesis of measurable objects such as barcodes. In this manner, we are able to verify the results of the dot generation algorithms. The method can, furthermore, be expanded to a more general case for all object types. The synthesis method is used to ascertain if defects are caused by the hardware placement problems or incompatibility of ink to the media surface. Examples are

given to demonstrate how to optimize the print quality by manipulating the dot attributes and the dot placement algorithms with barcodes, and the work being done to expand the method to a more generalized analysis system.

Biography

Lihu Chiu received his bachelor's degree in Electrical Engineering from Northeastern University. He has been working in image processing for eight years, and continues to be involved in print quality analysis at PRINTRONIX, Inc. Tony Jou received his Ph.D. degree in Chemical Engineering from UCLA. He has been working on ink and ink ribbon development and print quality analysis for line-matrix printer at PRINTRONIX, Inc. Grant Chang received his Ph.D. in Metallurgy from University of Utah and currently is Director of Engineering at PRINTRONIX, Inc.