

Basak Oztan

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OBJECTIVE Full-time research and development scientist position in color imaging, halftoning, multimedia security, document processing, and image processing areas

EDUCATION

- 09/04– **Ph.D. (Electrical and Computer Engineering)** (Expected: Fall 2009)
University of Rochester, Rochester, NY
Thesis Title: “Clustered-Dot Periodic Halftones: Modeling, Modulation, and Applications”
Advisor: Prof. Gaurav Sharma
- 09/03–09/04 **M.S. (Electrical and Computer Engineering)**
University of Rochester, Rochester, NY **GPA:** 4.0/4.0
- 09/99–06/03 **B.S. (Electrical and Electronics Engineering)**
Middle East Technical University, Ankara, Turkey **GPA:** 3.72/4.0

◇ Relevant Coursework

- Digital Image Processing
- Wireless Communications
- Random Processes
- Detection and Estimation Theory
- Information Theory
- Digital Signal Processing
- Digital Communications
- Computer Networks
- Statistical Inference
- Introduction to Medical Imaging

TECHNICAL INTERESTS Color imaging, color halftoning, multimedia security, multidimensional sampling theory, multidimensional signal processing, document processing, image binarization

WORK

EXPERIENCE

- ◇ **Research Assistant**, University of Rochester, Rochester, NY (May 2004 – Present)
- Analyzed misregistration sensitivity in periodic clustered-dot color halftones. Specifically provided novel insights into the conditions for insensitivity.
 - Developed a computational model for evaluating misregistration-induced color shifts that is useful for halftone design.
 - Proposed a new clustered-dot halftoning method that enables modulations in halftone phase and frequency. Presented applications in watermarking and content adaptive halftoning. Received a student paper award in IEEE ICASSP 2006 based on this project.
 - Invented a method for estimating CMYK halftones from RGB scans. Proposed framework for clustered-dot color halftone watermarks. An invention disclosure based on this technique is filed with University of Rochester.
 - Developed document image processing toolkit for WaferFicheTM archival technology developed by NanoArk Corporation.
- ◇ **Research Intern**, Xerox Research Center Webster, Webster, NY (Summer 2006)
Analyzed *Color Misregistration Sensitivities of Next Generation Xerographic Halftone Geometries* in collaboration with Dr. Robert P. Loce and Dr. Shen-ge Wang. I particularly helped identify the halftone geometries less sensitive to misregistration for the Xerox iGen3TM printer family.

- ◇ **Research Intern**, Xerox Research Center Webster, Webster, NY (Summer 2005)
Invented a low-computation technique for the *Removal of JPEG Artifacts from Document Images* in collaboration with Dr. Zhigang Fan and Dr. Reiner Eschbach. A patent (US Patent No. 7,532,767) is granted based on my invention.
- ◇ **Teaching Assistant**, University of Rochester, Rochester, NY (2003–2007)
Conducted recitations, held office hours, designed and graded problem sets and laboratory projects for courses: Signals and Systems, Communications, Digital Signal Processing, Detection and Estimation Theory.
- ◇ **Instructor**, Rochester Scholars Program, Rochester, NY (Spring 2004)
Designed and lectured *Mobile Robotics* course for high school students.
- ◇ **Summer Intern**, Tubitak BILTEN, Ankara, Turkey (Summer 2002)
Studied data hiding/watermarking techniques for digital images. Assessed performances of Least Significant Bit (LSB) modulation and Quantization Index Modulation (QIM) watermarking methods under supervision of Prof. Aydin Alatan.
- ◇ **Summer Intern**, Ericsson Telecommunications, Istanbul, Turkey (Summer 2001)
Attended on-site Radio Base Station (RBS) installations for Turkey’s first GSM 1800 service provider: ARIA. Studied fundamentals of mobile networks and mobile communications.

PUBLICATIONS

- JOURNAL
- “Processing of Documents for Long-Term Archival using Waferfiche™ Technology”, (*in preparation*).
 - “Clustered-Dot Halftone Watermarks using Spatial Frequency and Color Separability”, (*in preparation*).
 - “Continuous Phase-Modulated Halftones”, B. Oztan and G. Sharma, *IEEE Transactions on Image Processing*, December 2009.
 - “Misregistration Sensitivity in Clustered-Dot Color Halftones”, B. Oztan, G. Sharma, and R. P. Loce, *Journal of Electronic Imaging*, January–April 2008.
- CONFERENCE
- “Clustered-Dot Color Halftone Watermarks using Spatial Frequency and Color Separability”, B. Oztan and G. Sharma, (*accepted for presentation*) *SPIE Color Imaging XV 2010*.
 - “Processing of Degraded Documents for Long-Term Archival using Waferfiche™ Technology”, B. Oztan, G. Sharma, A. Pasupuleti, and P. R. Mukund, *in Proc. IS&T Archiving 2009*.
 - “Clustered-Dot Color Halftone Watermarks”, B. Oztan and G. Sharma, *in Proc. IS&T/SID Color Imaging Conference 2008*.
 - “Data Embedding in Hardcopy Images Via Halftone-Dot Orientation Modulation”, O. Bulan, V. Monga, G. Sharma, and B. Oztan, *in Proc. SPIE: Security, Forensics, Steganography, and Watermarking of Multimedia Contents X 2008*.
 - “Conditions for Color Misregistration Sensitivity in Clustered-Dot Halftones”, B. Oztan, G. Sharma, and R. P. Loce, *in Proc. of IEEE Int. Conf. on Image Proc. (ICIP) 2007*.
 - “Removal of Artifacts from JPEG Compressed Document Images”, B. Oztan, A. Malik, Z. Fan, and R. Eschbach, *in Proc. SPIE: Color Imaging XII 2007*.
 - “Self-Modulated Halftones, B. Oztan and G. Sharma”, *in Proc. of IEEE Int. Conf. on Image Proc. (ICIP) 2006*.
 - “Continuous Phase Modulated Halftones and Their Application to Halftone Data Embedding”, B. Oztan and G. Sharma, *in IEEE Proc. of Int. Conf. on Acoustics, Speech, and Sig. Proc. (ICASSP) 2006*.
 - “Analysis of Misregistration Induced Color Shifts in the Superposition of Periodic Screens”, B. Oztan, G. Sharma, and R. P. Loce, *in Proc. SPIE: Color Imaging XI 2006*.

“Quantitative Evaluation of Misregistration Induced Color Shifts in Color Halftones”, B. Oztan, G. Sharma, and R. P. Loce, *in Proc. SPIE: Color Imaging X 2005*.

SEMINARS &
TALKS

“Continuous Phase-Modulated Halftones: Methodology and Applications”, Xerox Webster Research Center, Webster, NY, 18 Sept. 2009.

“Restoration of Degraded Documents for Long-Term Archival using Waferfiche™ Technology”, CEIS University Technology Showcase Event, Rochester, NY, 12 Feb. 2009.

“Clustered-Dot Periodic Halftones: Modeling, Modulation, and Applications”, invited seminar at Sharp Labs, Camas, WA, 12 Nov. 2008.

“Exploiting Spatial Frequency Separability for Clustered-Dot Color Halftone Watermarking”, Cyber Security Awareness Week (CSAW) Research Poster Presentation, Brooklyn, NY, 14 Oct. 2008.

“Exploiting Spatial Frequency Separability for Clustered-Dot Color Halftone Watermarking”, IEEE Western NY Image Proc. Workshop, Rochester, NY, 29 Sept. 2008.

“Halftone Watermarking Using Continuous Phase Modulated Halftones”, Cyber Security Awareness Week (CSAW) Research Poster Presentation, Brooklyn, NY, 4 Dec. 2007.

“Conditions for Color Misregistration Insensitivity in Clustered-Dot Halftones”, IEEE Western NY Image Proc. Workshop, Rochester, NY, 28 Sept. 2007.

“Continuous Phase Modulated Halftones”, IEEE Western NY Image Proc. Workshop, Rochester, NY, 29 Sept. 2006.

“Continuous Phase Modulated Halftones and Their Application to Halftone Data Embedding”, invited seminar at Department of Electrical and Electronics Engineering, Koç University, Istanbul, Turkey, 30 May 2006.

HONORS &
AWARDS

◇ Recipient of Jury Special Award at 2008 Cyber Security Awareness Week (CSAW) Research Poster Competition.

◇ Recipient of the Student Paper Award at 2006 IEEE Western New York Image Processing Workshop.

◇ Recipient of the Student Paper Award at 2006 IEEE Int. Conf. on Acoustics Speech and Sig. Proc. (ICASSP) in the Image and Multidimensional Signal Processing Category.

◇ Awarded full-tuitionship for graduate studies by University of Rochester, 2003.

◇ Recipient of 2003 Best Senior Design Project Award at Department of Electrical and Electronics Engineering, Middle East Technical University.

◇ Listed 6 times in High Honors and 2 times in Honors List, Middle East Technical University.

◇ Ranked in the top 0.01% in the two-stage nationwide University Entrance Examinations in Turkey in 1998.

SKILLS

◇ Strong theoretical background and hands-on experience in digital image/signal processing

◇ **Programming:** C/C++ (experience with OpenCV and TIFF Libraries), MATLAB

◇ **Applications:** Visual C++, LaTeX, Microsoft Office, Adobe CS, HTML

◇ **Operating Systems:** Windows, Linux/Unix, Mac OS

◇ **Languages:** Turkish (native), English (fluent), German (beginner)

ACTIVITIES

◇ **Member** IEEE, IEEE Signal Processing Society, IS&T, SPIE

◇ **Reviewer** IEEE TIP, IEEE TIFS, IEEE SPL, IS&T/SPIE JET, Elsevier SPIC, IEEE ICIP, IEEE ICASSP, IS&T CIC, EUSIPCO

◇ **Extracurricular** Playing volleyball, cycling, traveling, and ballroom/latin dancing

