Ahmet Emir Dirik (PhD.)

CONTACT INFORMATION	Uludag Uni., Muh. Fak. Bilgisayar Muhendisligi Bolumu Gorukle kampusu, 16059, Bursa Turkey	email: edirik {at} uludag.edu.tr phone: +90 (224) 29 40655 fax: +90 (224) 294 1903 web : edirik.home.uludag.edu.tr

RESEARCH INTERESTS

Image Processing, Multimedia Security, Multimedia Forensics, Data hiding, Steganography, Watermarking, Pattern Recognition, Signal processing, Biometrics, Behavior-metrics, Usable security, Graphical Passwords.

EDUCATION

Polytechnic Institute of NYU, USA   April 2010

Ph.D, Electrical & Computer Engineering,

- Dissertation: "New Techniques in Multimedia Forensics"
- Advisor: Nasir Memon

Uludag University, Turkey   July 2002

MS, Electronic Engineering,

- Thesis: "GPS based real time vehicle tracking system"

Uludag University, Turkey   July 2002

MBA, Institute of Social Sciences

Uludag University, Turkey   June 1999

B.A., Electronic Engineering

ACADEMIC EXPERIENCE

Bursa Uludag University, Turkey   Sept 2021 -
Professor in Dept. of Computer Engineering

Uludag University, Turkey   Jan 2015 - Sept 2021
Associate Professor in Dept. of Computer Engineering

Uludag University, Turkey   Oct 2015 - Jan 2015
Associate Professor in Dept. of Elect. and Electronic Engineering

Uludag University, Turkey   April 2012 - Oct 2015
Assistant Professor in Dept. of Elect. and Electronic Engineering

New York University, Abu Dhabi, UAE   July 2014 - Sept 2014
Visiting Research Scientist

New York University, Abu Dhabi, UAE   July 2013 - Sept 2013
Postdoctoral Research Associate

New York University, Abu Dhabi, UAE   June 2012 - Sept 2012
Postdoctoral Research Associate

Uludag University, Turkey   June 2001 - April 2012
Research assistant in Dept. of Electronic Engineering

Polytechnic Institute of NYU, Brooklyn, NY, US   Jan. 2006 - June 2010
Research fellow in Dept. of Electrical and Computer Engineering
Includes current Ph.D. research, and research/consulting projects.

Polytechnic University, Brooklyn, NY, US   June 2004 - June 2005
Visiting researcher
Research for NSF funded project on steganalysis.

PROFESSIONAL   **IBM**   Fall 2009
EXPERIENCE   T.J. Watson Research Center, Hawthorne, NY
- Research on video content analysis and OCR
- A video content analysis application demo was developed.
- The application demo was presented in Lotusphere 2010 Conference.
- Patent submitted.

Pitney Bowes   Summer 2008
AC&T, Advanced Concepts and Technology, Shelton, CT.
- Research on print-scan modelling, image encryption, counterfeit detection
- Patent application submitted to USPTO on Dec 2008.

Pitney Bowes   Summer 2007
AC&T, Advanced Concepts and Technology, Shelton, CT.
- Research on image and document security, print-scan channel modelling
- Patent application submitted to USPTO on Dec. 2008.

COURSES TAUGHT - Graduate
                    Pattern Recognition
                    Advanced Digital Image Processing

                - Undergraduate
                    Pattern Recognition
                    Digital Image Processing
                    Probability and Statistics
                    Signals and Systems
                    Digital Signal Processing
                    Computer Programming I
                    Computer Programming II

PROJECTS   - Media Forensics (MediFor), Media Forensics Integrity Analytics, Defense Advanced Research
                  Projects (DARPA), FA8750-16-2-0173, 2016-2020, (Consultant)

                - Image Source Anonymization, supported by The Scientific and Technological Research Council
                  of Turkey, Project 113E092, 2013-2014, (Principal Investigator)

                - "A Unified Steganalysis Framework", Air Force Office of Scientific Research (AFOSR), USA,
                  2008-2010, Grant number FA9550-09-1-0087, (Researcher)

                - "Source Camera Identification and Blind Tamper Detections for Images", Air Force Office of

Scientific Research (AFOSR), USA, 2005-2007, AFOSR Contract Number: FA9550-05-1-0130, (Researcher)

- "Source Camera Identification", National Institute of Justice (NIJ), USA, 2005-2007, Grant number 2006-92251-NY-IJ, (Researcher)

- "US-Turkey Cooperative Research: Steganalysis Techniques for Images and Audio", National Science Foundation (NSF), USA, 2002-2006, Grant number: #0218074, (Researcher)

PATENTS

- Anonymization system and method for digital images, WO 2014163597 A2, April 2014.

- Image Encryption For Print-And-Scan Channels Using Pixel Position Permutation, United States US8705736 B2, Issued April 22, 2014

- Automatic Video Summarization, United States US 20120106925 A1, Issued April 1, 2014.

- System And Method For Paper Independent Copy Detection Pattern, United States US8335744 B2, Issued December 18, 2012.

- User Authentication For Devices With Touch Sensitive Elements, Such As Touch Sensitive Display Screens, filed in U.S. Patent and Trademark Office on Jan. 2010, US2010/0225443 A1, Sept. 2010.

BOOK CHAPTER

- A. E. Dirik, Source Attribution Based on Physical Defects in Light Path, Digital Image Forensics, in H.T. Sencar and N.D. Memon (eds.), Springer, New York, 2012.

SELECTED
PUBLICATIONS

- S. Vatansever, A. E. Dirik and N. Memon, "Analysis of Rolling Shutter Effect on ENF-Based Video Forensics," in *IEEE Transactions on Information Forensics and Security*, vol. 14, no. 9, pp. 2262-2275, Sept. 2019, doi: 10.1109/TIFS.2019.2895540.

- S. Vatansever, A. E. Dirik and N. Memon, "Detecting the Presence of ENF Signal in Digital Videos: A Superpixel-Based Approach," in *IEEE Signal Processing Letters*, vol. 24, no. 10, pp. 1463-1467, Oct. 2017, doi: 10.1109/LSP.2017.2741440.

- A. E. Dirik, H. T. Sencar, N. Memon, Analysis of Seam-Carving Based Anonymization of Images Against PRNU Noise Pattern Based Source Attribution, *IEEE Transactions on Information Forensics and Security*, Vol. 9, No. 12, p. 2277 - 2290, Oct. 2014.

- A. E. Dirik, A. Karaküçük, Forensic Use Of Photo Response Non-Uniformity Of Imaging Sensors And A Counter Method, *Optics Express*, Vol. 22, No. 1, p. 470-481, 2014.

- A. E. Dirik, B. Haas, Copy Detection Pattern Based Document Protection for Variable Media, *IET Image Processing*, Vol. 6, No. 8, p. 1102-1113, Nov. 2012.

- M. Topkara, S. Pan, J. Lai, A. E. Dirik, S. Wood, J. Boston, "You've got Video": Increasing clickthrough when sharing enterprise video with email", ACM SIGCHI Conference on Human Factors in Computing Systems, CHI 2012, Austin, TX. (23% acceptance rate)

- S. Bayram, A. E. Dirik, H. T. Sencar, N. Memon. An Ensemble of Classifiers Approach to Steganalysis, ICPR 2010, International Conference on Pattern Recognition, 2010, Istanbul. (18%

acceptance rate)

- A. E. Dirik, N. Memon. Image Tamper Detection Based on Demosaicing Artifacts, IEEE ICIP 2009, Egypt. (45% acceptance rate)

- A. E. Dirik, H. T. Sencar, N. Memon. Flatbed Scanner Identification Based On Dust and Scratches Over Scanner Platen, IEEE ICASSP 2009.

- A. E. Dirik, H. T. Sencar, N. Memon. Camera identification based on sensor dust traces, *IEEE Transactions of Information Security and Forensics*, Sept, 2008.

- A. E. Dirik, S. Bayram, H. T. Sencar, N. Memon. New features to identify computer generated images, Proc. of IEEE ICIP, 2007.

- A. E. Dirik, N. Memon, J. C. Birget, Modeling User Choice in the PassPoints Graphical Password Scheme, Symposium on Usable Privacy and Security 2007 (SOUPS 2007). (31% acceptance rate)

- A. E. Dirik, H. T. Sencar, N. Memon. 2007. Source Camera Identification Based on Sensor Dust Characteristics, SAFE 2007: Workshop on Signal Processing Applications for Public Security and Forensics, April, 2007.

SOFTWARE DEVELOPMENT	• A signature authentication software developed for iPhone/iPod Touch. (2009) The project page: http://identouch.com

PRESS COVERAGE	• The National UAE, Your prints are all over your photos, April 27, 2014.
	• The New York Times, Logging In With a Touch or a Phrase (Anything but a Password), December 24, 2011.
	• Thomson, The Security Newsletter, N 13, Spring 2009.

REFEREED FOR	• IEEE Transactions of Information Forensics and Security • IEEE Transactions of Image Processing • IEEE Transactions on Multimedia • IEEE International Conference on Image Processing • IET Image Processing • Elsevier, Computers and Electrical Engineering Journal • Elsevier, Signal Processing Journal • Springer, Signal, Image and Video Processing • Computer/Human Interaction Conference, CHI

HONORS AND AWARDS	• 2nd prize winner of TET R&D Project Brokerage Event 3, Istanbul, 2014. • 2nd prize winner of Uludag University Research Poster Competition, 2014. • 3rd prize winner of CSAW 2007 Research Poster Competition, 2007. • Polytechnic Institute of NYU, ECE Research Fellowship, 2006-2010. • Polytechnic Institute of NYU, CATT (Center for Advanced Technology) Graduate Research Fellowship, 2005-2006. • YOK (Turkish Higher Education Council) PhD Scholarship, 2006-2009. • Uludag University, Graduated with highest GPA,1999.

- TOFAS A.S, Undergraduate scholarship, 1996.