

Final Project

Pick a research paper presenting an algorithm on a topic relevant to this class (i.e. forensics, steganography, or watermarking). This algorithm should be one that was *not* presented in class.

Prepare a 15 minute PowerPoint presentation summarizing the algorithm presented in the paper. Discuss the motivation for this work, provide an overview of how the algorithm operates, and briefly discuss the experimental validation. This presentation will be given during the the last class period and the time allocated for the final exam. After your presentation, you should be prepared to answer questions about the paper you presented on.

Additionally, prepare a report on the paper which you have chosen. This report should include the motivation for the paper, along with a more detailed summary of the algorithm and the algorithm's experimental validation. The report portion of this assignment is due by **11:59 p.m. on Thursday, March 17**. All reports should be submitted as PDFs. Only one report must be submitted per team, but all team member's names must appear on the report.

For students enrolled in ECES 690, as part of your report you must implement the algorithm presented in your paper and use it to experimentally validate its performance. Details of your simulation and the code for your implementation must be included in your final report. **You may not use code downloaded from the Internet unless I have given you approval.**

Below is a list of pre-approved research papers that you may choose for your final project. You can find these papers by searching for them on Google Scholar (www.scholar.google.com).

- X. Pan, and S. Lyu, "Region Duplication Detection Using Image Feature Matching," *IEEE Transactions on Image Processing* vol. 5, no. 4, pp. 857–867, Dec. 2010.
- M. Kirchner and J. Fridrich, "On Detection of Median Filtering in Digital Images," in *Proc. SPIE Electron. Imaging Media Forensics and Security XII*, 2010, pp. 10-1-10-12.
- M. K. Johnson and H. Farid, "Exposing digital forgeries by detecting inconsistencies in lighting," in *Proc. 7th Workshop Multimedia Security*, 2005, pp. 1-10.
- H. Farid, and S. Lyu, "Higher-Order Wavelet Statistics and Their Application to Digital Forensics," In *IEEE Workshop on Statistical Analysis in Computer Vision*, vol. 8, p. 94. 2003.
- D. Fu, Y. Q. Shi, and Q. Su, "A Generalized Benfords Law for JPEG Coefficients and its Applications in Image Forensics" in *Proc. SPIE Electronic Imaging, Security and Watermarking of Multimedia Contents IX*, 2007, vol. 6505, pp. 1L1–1L11.
- M. Kirchner and R. Böhme, "Hiding Traces of Resampling in Digital Images," *IEEE Transactions on Information Forensics and Security*, vol. 3, no. 4, pp. 582–592, Dec. 2008.
- G. Valenzise, V. Nobile, M. Tagliasacchi, and S. Tubaro, "Countering JPEG Anti-Forensics," in *Proc. IEEE International Conference on Image Processing*, 2011, pp. 1949–1952.
- S. Lai and R. Böhme, "Countering Counter-Forensics: The Case of JPEG Compression," in *Proc. International Conference on Information Hiding*, 2011, pp. 285–298.

- H. Farid and S. Lyu, “Higher-order wavelet statistics and their application to digital forensics,” in *Proc. IEEE Conference on Computer Vision and Pattern Recognit. Workshop*, vol. 8. Jun. 2003, p. 94.
- M. C. Stamm, X. Chu, and K. J. R. Liu, “Forensically determining the order of signal processing operations,” in *IEEE International Workshop on Information Forensics and Security*, Nov. 2013, pp.162–167.
- T. Pevný, P. Bas, J. Fridrich, “Steganalysis by subtractive pixel adjacency matrix,” in *IEEE Transactions on Information Forensics and Security*, vol. 5, no. 2, pp. 215–224 Jun. 2010.

Additionally, you may present on a paper that is not included in this list. If you wish to do this, however, you must discuss this paper with me and I must approve the paper in advance of the due date. Furthermore, if you are interested in a topic that does not appear to be covered in the list of pre-approved papers, we can arrange a meeting and I can help you find a research paper that aligns with your interests.