

## CURRICULUM VITAE -

DAMON L. WOODARD, PH.D.

### PERSONAL DATA

Director, Biometrics, Analytics, and Machine Learning Group  
Associate Professor  
Department of Electrical and Computer Engineering  
University of Florida  
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### RESEARCH INTERESTS

Applied Machine Learning for Biometrics, Identity Science, and Cybersecurity, Deep Learning, Data Analytics, Pattern Recognition, Image Analysis for Hardware Assurance, Signal Analysis, and Data Science.

### EDUCATION

Ph.D., University of Notre Dame, 2005, Computer Science and Engineering  
Dissertation: *Exploiting Finger Surface as a Biometric Identifier*  
Advisor: Patrick J. Flynn  
M.E., Penn State University, 1999, Computer Science and Engineering  
B.S., Tulane University, 1997, Computer Science and Computer Information Systems

### PROFESSIONAL EXPERIENCE

University of Florida, 2015 - Present, Associate Professor, Dept. of Electrical and Computer Engineering  
University of Florida, 2015 - 2015, Associate Professor, Dept. of Computer & Information Science & Engineering  
University of Notre Dame, 2014 - 2014, Visiting Associate Professor, Dept. of Computer Science and Engineering  
Clemson University, 2012 - 2014, Associate Professor, School of Computing  
Clemson University, 2012 - 2013, HCC Graduate Program Director, School of Computing  
Clemson University, 2006 - 2012, Assistant Professor, School of Computing  
University of Notre Dame, 2004 - 2006, Intelligence Community (IC) Post-Doctoral Fellow

### PROFESSIONAL MEMBERSHIPS

Association for the Advancement of Artificial Intelligence	(2018 -)
IEEE Systems, Man, & Cybernetics Society	(2009 -)
Upsilon Pi Epsilon (UPE) Honor Society	(2004 -)
Institute of Electrical and Electronics Engineers (IEEE)	
Senior Member	(2001 -)
IEEE Computer Society	(2001 -)

National Society of Black Engineers (NSBE) (1996 -)  
Association of Computing Machinery (ACM)  
Senior Member (1995 -)

## PUBLICATIONS

### Book Chapters

- [BC6] T. Neal, D. L. Woodard, *Adversarial Attacks in Mobile Environments, Securing Social Identity in Mobile Platforms, Advanced Sciences and Technologies for Security Applications*, (Thirmachos Bourlai, Panagiotis Karampelas, and Vishal Patel Eds.), Springer Publishing, 2019.
- [BC5] D. L. Woodard, J. Lyle, R. N. Tobias, K. Sundararajan, *Chapter 19: Periocular-Based Soft Biometric Classification Using Local Appearance and Keypoint Features, Iris and Periocular Biometrics* (Christian Rathgeb and Christoph Busch Eds.), Institution of Engineering and Technology (IET) Publishing, 2016.
- [BC4] T. Neal, D. L. Woodard, A. Striegel, *Chapter 2: Mobile Device Usage Data as Behavioral Biometrics, Mobile Biometrics* (Guodong Guo and Harry Weschler Eds.), Institution of Engineering and Technology (IET) Publishing, 2016.
- [BC3] D. L. Woodard, *Periocular-Based Biometrics, Encyclopedia of Biometrics Second Ed.* (Stan Z. Li Ed.), Springer Publishing, 2015.
- [BC2] D. L. Woodard, K. Ricanek, *Iris Databases, Encyclopedia of Biometrics* (Stan Z. Li Ed.), Springer Publishing, 2009.
- [BC1] G. Dozier, M. Savvides, K. Bryant, T. Munemoto, K. Ricanek, and D. L. Woodard, *Developing Iris Templates via Bit Inconsistency and GRIT, Encyclopedia of Biometrics* (Stan Z. Li Ed.), Springer Publishing, 2009.

### Refereed Journals

- [J20] R. Wilson, N. Asadizanjani, D. Forte, and D. L. Woodard, *First Auto-Magnifier Platform for Hardware Assurance and Reverse Engineering Integrated Circuits, Microscopy and Microanalysis*, 25 (S2), 2019.
- [J19] N. Karimian, F. Tehranipoor, D. L. Woodard, M. Tehranipoor, and D. Forte, *Noise Aware Cardiovascular Key Generation in Resource-Constrained Healthcare Systems and IoT*, IEEE Access, vol. 7, pp. 49135-49149, 2019.
- [J18] T. Neal, and D. L. Woodard, *You're Not Acting Like Yourself: A Study on Soft Biometric Classification, Person Identification, and Mobile Device Use*, IEEE Transactions on Biometrics, Behavior, and Identity Science, vol. 1, no. 2, pp. 109-122, April 2019.
- [J17] F. Ganji, N. Karimian, D. L. Woodard, and D. Forte, *Are Your Biometrics in Good Hands? BLOcKeR: Secure and Reliable Biometrics Access Control*, Homeland Defense and Security Information Analysis Center Journal, 2019.
- [J16] D. L. Woodard, D. Forte, N. Asadizanjani, and M. Tehranipoor, *The Power of Reverse Engineering for Hardware Trust and Assurance: A Perspective in Opportunities and Challenges in Image Analysis and Machine Learning*, Electronic Device Failure Analysis, 2019.

- [J15] N. Vashistha, M. T. Rahman, H. Shen, D. L. Woodard, N. Asadi, and M. Tehranipoor, *Detecting Hardware Trojans Inserted by Untrusted Foundry using Physical Inspection and Advanced Image Processing Techniques*, Journal of Hardware Systems Security, 2018.
- [J14] K. Yang, U. Berto, H. Shen, D. L. Woodard, D. Forte, M. Tehranipoor, *UCR: An Unclonable Environment-Sensitive Chipless RFID Tag for Protecting Supply Chain*, ACM Transaction of Design Automation of Electronic Systems, 2018.
- [J13] N. Ebner, D. Ellis, T. Lin, H. Rocha, H. Yang, S. Domaraju, A. Soliman, D. L. Woodard, G. Turner, R. N. Spreng, and D. Oliveira, *Uncovering Susceptibility Risk to Online Deception in Aging*, Journal of Gerontology: Psychological Science, 2018.
- [J12] K. Sundararajan, D. L. Woodard, *Deep Learning for Biometrics – A Survey*, ACM Computing Surveys (CSUR), Vol. 51, No. 3, 2018.
- [J11] T. Neal, K. Sundararajan, A. Fatima, Y. Yan, Y. Xiang, D. L. Woodard. *Surveying Stylometry Techniques and Applications*, ACM Computing Surveys (CSUR), Volume 50, Issue 6, Article No. 86, 2017.
- [J10] T. Neal, D. L. Woodard, *Surveying Biometric Authentication for Mobile Device Security*, Journal of Pattern Recognition Research, Vol 11, No 1 (2016).
- [J9] S. Banerjee, D. L. Woodard, *Biometric Authentication and Identification Using Keystroke Dynamics: A Survey*, Journal of Pattern Recognition Research 7 (2012): pg. 116-139, 2012.
- [J8] K. P. Hollingsworth, S. S. Darnell, P. E. Miller, D. L. Woodard, K. W. Bowyer, and P. J. Flynn, *Human and Machine Performance on Periocular Biometrics Under Near-Infrared Light and Visible Light*, IEEE Transactions on Forensics and Information Security 7(2):pg. 588-601, 2012.
- [J7] J. Lyle, P. Miller, S. Pundlik, D. L. Woodard, *Soft Biometric Classification using Local Appearance Ocular Region Features*, Pattern Recognition 45(11): pg. 3877-3885, 2012.
- [J6] A. Alford, K. Bryant, T. Abegaz, G. Dozier, J. Kelly, J. Shelton, L. Small, J. Williams, and D. L. Woodard, *Genetic and Evolutionary Methods for Biometric Feature Reduction*, International Journal of Biometrics, Special Issue on Computational Intelligence in Biometrics: Theory, Methods, and Applications, Volume 4, Number 3, 2012.
- [J5] D. L. Woodard, S. Pundlik, P. Miller, J. Lyle, *Appearance Based Periocular Features in the Context of Face and Non-Ideal Iris Recognition*, H. Proença, E. Y. Du, and J. Scharcanski (Eds.); Springer Signal Image and Video Processing, Special Issue on Unconstrained Biometrics: Advances and Trends, Volume 5, Number 3, September, 2011.
- [J4] S. Pundlik, D. L. Woodard, and S. Birchfield, *Iris Segmentation in Non-Ideal Images*, Image and Vision Computing, Vol. 28, No. 12, pg. 1671-1681, December 2010.
- [J3] M. Savvides, K. Ricanek, D. L. Woodard, and G. Dozier, *Unconstrained Biometric Identification: Emerging Technologies*, IEEE Computer Special Issue on Biometrics, Vol. 43, No. 2, pg. 56-62, February 2010.
- [J2] K. L. Rice, T. M. Taha, A. M. Chowdhury, A. A. S. Awwal, and D. L. Woodard, *Design and Acceleration of Phase-Only Filter Based Optical Pattern Recognition for Fingerprint Identification*, Optical Engineering, 48:11), November 2009.

- [J1] D. L. Woodard, P. J. Flynn, *Finger Surface as a Biometric Identifier*, Journal of Computer Vision and Image Understanding (CVIU) 100 (3): pg. 357-384, December 2005. (Listed as #20 on CVIU's Top 25 Hottest Articles during 2005 4<sup>th</sup> quarter)

### Refereed Conferences/Workshops

- [C53] S. Shomaji, F. Ganji, D. L. Woodard, D. Forte, *Hierarchical Bloom Filter Framework for Security, Space-Efficiency, and Rapid Query Handling in Biometric Systems*, 2019 IEEE 11th International Conference on Biometrics Theory, Applications and Systems (BTAS 2019), Tampa, FL, Sept. 23-26, 2019.
- [C52] M. Azhagan, D. Mehta, H. Lu, V. Sai, S. Agrawal, D. L. Woodard, M. Tehranipoor, and N. Asadizanjani, *A New Framework for Automated Bill of Material Generation for PCB Assurance*, International Symposium for Testing and Failure Analysis (ITSFA), Portland, Oregon, 2019.
- [C51] R. Wilson, R. Acharya, D. Forte, N. Asadizanjani, D. L. Woodard, *A Novel Approach to Unsupervised Automated Extraction of Standard Cell Library for Reverse Engineering and Hardware Assurance*, International Symposium for Testing and Failure Analysis (ITSFA), Portland, Oregon, 2019.
- [C50] P. Ghosh, F. Ganji, D. Forte, D. L. Woodard, R. S. Chakraborty, *Automated Framework for Unsupervised Counterfeit Integrated Circuit Detection by Physical Inspection*, International Conference on Physical Assurance and Inspection of Electronics (PAINE), Washington, D.C., 2019.
- [C49] D. Mehta, S. Tajik, D. L. Woodard, N. Asadizanjani, and M. Tehranipoor, *On the Physical Security of AI Accelerators*, International Conference on Physical Assurance and Inspection of Electronics (PAINE), Washington, D.C., 2019.
- [C48] T. Neal, D. L. Woodard, 12<sup>th</sup> IAPR International Conference on Biometrics (ICB 2019), *Mobile Biometrics, Replay Attacks, and Behavior Profiling: An Empirical Analysis of Imposter Detection*, Crete, Greece, 2019.
- [C47] Q. Shi, N. Vashistha, H. Lu, B. Tehranipoor, H. Shen, D. L. Woodard, and N. Asadizanjani, *IEEE International Symposium on Hardware Oriented Security and Trust (HOST 2019), Golden Gates: A New Hybrid Approach for Rapid Hardware Trojan Detection Using Testing and Imaging*, Washington, D.C., 2019.
- [C46] T. Neal, D. L. Woodard, *IEEE 9<sup>th</sup> International Conference on Biometrics: Theory, Application and Systems, On the Use of Mobile Calling Patterns for Soft Biometric Classification*, Los Angeles, CA, October 22-25, 2018.
- [C45] M. T. Rahman, N. Vashista, Q. Shi, H. Shen, S. Tajik, D. L. Woodard, N. Asadizanjani, M. Tehranipoor, *Physical Attack and Inspection: New Frontier in Hardware Security*, IEEE 3<sup>rd</sup> International Verification and Security Workshop (IVSW), 2018.
- [C44] N. Vashistha, H. Shen, M. T. Rahman, D. L. Woodard, N. Asadi, and M. Tehranipoor, *Trojan Scanner: Detecting Hardware Trojans with Rapid Imaging Combined with Image Processing and Machine Learning*, ASM International Symposium for Testing and Failure Analysis (ISTFA), 2018.
- [C43] P. Ghosh, R. Chakraborty, D. L. Woodard, and D. Forte, *Automated Detection of Pin Defects on Counterfeit Microelectronics*, ASM International Symposium for Testing and Failure Analysis (ISTFA), 2018.

- [C42] K. Sundararajan, D. L. Woodard, *What Constitutes "Style" in Authorship Attribution*, ICCL International Conference on Computational Linguistics (COLING), 2018.
- [C41] S. Baireddy, U. Botero, N. Asadizanjani, M. Tehranipoor, D. L. Woodard, and D. Forte, *Automated Detection of Counterfeit IC Defects Using Image Processing*, 2018 Government Microcircuit Applications and Critical Technology Conference (GOMACTech). Miami, FL, March 2018.
- [C40] T. Neal, K. Sundararajan, and D. L. Woodard, *Exploiting Linguistic Style as a Cognitive Biometric for Continuous Verification*, 11<sup>th</sup> IAPR International Conference on Biometrics (ICB), Gold Coast, Queensland, Australia, February 2018.
- [C39] K. Sundararajan, T. Neal, and D. L. Woodard *Style Signatures to Combat Biometric Menagerie in Stylometry*, 11<sup>th</sup> IAPR International Conference on Biometrics (ICB), Gold Coast, Queensland, Australia, February 2018.
- [C38] T. Neal, D. L. Woodard, *A Gender-Specific Analysis of Mobile Device Usage Data*, IEEE 4<sup>th</sup> International Conference on Identity, Security, and Behavior Analysis (ISBA), Singapore, pg. 1-8, January 2018.
- [C37] T. Neal, D. L. Woodard, *Spoofing Analysis of Mobile Device Data and Behavioral Biometric Modalities*, IEEE International Joint Conference on Biometrics (IJCB), Denver, CO, pg. 62-70, October 2017.
- [C36] T. Neal, D. L. Woodard, *Using Associative Classification to Authenticate Mobile Users*, IEEE International Joint Conference on Biometrics (IJCB), Denver, CO, pg. 71-79, October 2017.
- [C35] N. Karimian, D. L. Woodard, and D. Forte, *On the Vulnerability of ECG Verification to Online Presentation Attacks*, 2017 IEEE International Joint Conference on Biometrics (IJCB), Denver, CO, pg. 143-151, October 2017. **(Best Student Paper Award)**
- [C34] N. Karimian, M. Tehranipoor, D. Woodard, D. Forte, *Biometrics for Authentication in Resource-Constrained Systems*, International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), August 2016.
- [C33] T. Neal, D. L. Woodard, A. Striegel, *Mobile Device Application, Bluetooth, and Wi-Fi Usage Data as Behavioral Biometric Traits*, 2015 IEEE 7<sup>th</sup> International Conference on Biometrics Theory, Applications and Systems (BTAS 2015), Arlington, VA, pg. 1-6, Sept. 8-11, 2015.
- [C32] K. Sundararajan, D. L. Woodard, *Head Pose Estimation in the Wild Using Approximate View Manifolds*, Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), Boston, MA, pg. 50 - 58, June 7-12, 2015.
- [C31] S. B. Daily, C. Gardner-McCune, J. Gilbert, P. W. Hall, K. McMullen, S. Remy, and D. L. Woodard, *Alternate Pathways to Careers in Computing: Recruiting and Retaining Women Students*, Proceedings of the 2013 ASEE Annual Conference, Atlanta, GA, June 2013.
- [C30] Y. Li, Y. Dong, and D.L. Woodard, *Automatic Segmentation of Eyebrows for Biometric Recognition Using Modified Level Set*, 19<sup>th</sup> IEEE Conference on Image Processing, Orlando, FL, September 2012.
- [C29] Y. Dong, D. L. Woodard, *Eyebrow Shape-Based Features for Biometric Recognition and Gender Classification: A Feasibility Study*, 2011 IAPR/IEEE International Joint Conference on Biometrics (IJCB), Washington, D.C., October 11 - 13, 2011.

- [C28] J. Shelton, G. Dozier, K. Bryant, L. Small, J. Adams, K. Popplewell, T. Abegaz, D.L. Woodard, and K. Ricanek, *Genetic and Evolutionary Feature Extraction via X-TOOLSS*, Proceedings of the 2011 International Conference on Genetic and Evolutionary Methods, (GEM 2011), Las Vegas, NV, July 18 - 21, 2011.
- [C27] T. Abegaz, G. Dozier, K. Bryant, J. Adams, V. McLean, J. Shelton, A. Alford, K. Ricanek, and D. L. Woodard, *Applying GEC in Feature Selection and Weighting for LBP, oLBP, and Eigenface*, Proceedings of the 2011 International Conference on Genetic and Evolutionary Methods, (GEM 2011), Las Vegas, NV, July 18 - 21, 2011.
- [C26] A. Alford, K. Popplewell, G. Dozier, K. Bryant, J. Kelly, J. Adams, T. Abegaz, J. Shelton, D.L. Woodard, and K. Ricanek, *Hybrid GEC-Based Techniques for Multi-Biometric Recognition via X-TOOLSS*, Proceedings of the 2011 International Conference on Genetic and Evolutionary Methods, (GEM 2011), Las Vegas, NV, July 18 - 21, 2011.
- [C25] T. Abegaz, G. Dozier, K. Bryant, J. Adams, J. Shelton, K. Ricanek, D. L. Woodard, *SSGA and EDA Based Feature Selection and Weighting for Face Recognition*, 2011 IEEE Congress on Evolutionary Computation (IEEE CEC 2011), New Orleans, LA, June 5 - 8, 2011.
- [C24] A. Alford, K. Popplewell, G. Dozier, K. Bryant, J. Kelly, J. Adams, T. Abegaz, Shelton, K. Ricanek, and D. L. Woodard, *A Comparison of GEC-Based Feature Selection and Weighting for Multimodal Biometric Recognition*, 2011 IEEE Congress on Evolutionary Computation (IEEE CEC 2011), New Orleans, LA, June 5 - 8, 2011.
- [C23] A. Alford, C. Hansen, G. Dozier, K. Bryant, J. Kelly, T. Abegaz, K. Ricanek, and D. L. Woodard, *GEC-Based Multi-Biometric Fusion*, 2011 IEEE Congress on Evolutionary Computation (IEEE CEC 2011), New Orleans, LA, June 5 - 8, 2011.
- [C22] J. Shelton, G. Dozier, K. Bryant, L. Smalls, J. Adams, K. Popplewell, T. Abegaz, D. L. Woodard, and K. Ricanek, *Comparison of Genetic-based Feature Extraction Methods for Facial Recognition*, 2011 Midwest Artificial Intelligence and Cognitive Science Conference (MAICS), Special Session on Artificial Intelligence in Biometrics and Identity Sciences, Cincinnati, OH, April 16 - 17, 2011.
- [C21] T. Abegaz, G. Dozier, K. Bryant, J. Adams, B. Baker, J. Shelton, K. Ricanek, and D. L. Woodard, *Genetic-Based Selection and Weighting for LBP, oLBP, and Eigenface Feature Extraction*, 2011 Midwest Artificial Intelligence and Cognitive Science Conference (MAICS), Special Session on Artificial Intelligence in Biometrics and Identity Sciences, Cincinnati, OH, April 16 - 17, 2011.
- [C20] G. Dozier, K. Purrington, K. Popplewell, J. Shelton, T. Abegaz, K. Bryant, J. Adams, D. L. Woodard, and P. Miller, *GEFeS: Genetic & Evolutionary Feature Selection for Periocular Biometric Recognition*, 2011 IEEE Workshop on Computational Intelligence in Biometrics and Identity Management, Paris, France, April 11- 15, 2011.
- [C19] T. Abegaz, G. Dozier, K. Bryant, J. Adams, K. Popplewell, J. Shelton, K. Ricanek, D. L. Woodard, *GEFeS: Hybrid Gas for Eigen-Based Facial Recognition*, 2011 IEEE Workshop on Computational Intelligence in Biometrics and Identity Management, Paris, France, April 11 - 15, 2011.
- [C18] J. Shelton, G. Dozier, K. Bryant, J. Adams, K. Popplewell, T. Abegaz, K. Purrington, D. L. Woodard, and K. Ricanek, *Genetic Based LBP Feature Extraction and Selection for Facial Recognition*, Proceedings of 2011 ACM Southeast Conference, Kennesaw, GA, March 24-26, 2011.

- [C17] S. Darnell, I. Alvarez, J. Ekendem, D. L. Woodard, and J. E. Gilbert, *MyDash: The Biometric Digital Dashboard*, In Proceedings of the 3<sup>rd</sup> Workshop on Multimodal Interfaces for Automotive Applications of the 2011 International Conference on Intelligent User Interfaces, Palo Alto, CA, pg. 53-56, February 13 - 16, 2011.
- [C16] P. Miller, J. Lyle, S. Pundlik, D. L. Woodard, *Performance Evaluation of Local Appearance Based Periocular Recognition*, IEEE 4<sup>th</sup> International Conference on Biometrics Theory, Applications, and Systems, Arlington, Virginia, Sept. 27 - Sept. 29, 2010.
- [C15] J. Lyle, P. Miller, S. Pundlik, D. L. Woodard, *Soft Biometric Classification Using Periocular Region Features*, IEEE 4<sup>th</sup> International Conference on Biometrics Theory, Applications, and Systems, Arlington, Virginia, Sept. 27 - Sept. 29, 2010.
- [C14] D. L. Woodard, S. Pundlik, P. Miller, R. Jillela, A. Ross, *On the Fusion of Periocular and Iris Biometrics in Non-ideal Imagery*, Proceedings of the IAPR 20<sup>th</sup> International Conference on Pattern Recognition (ICPR 2010), Istanbul, Turkey, August 23-26, 2010.
- [C13] J. Adams, D. L. Woodard, G. Dozier, K. Bryant, P. Miller, G. Glenn, *Genetic-Based Type II Feature Extraction for Periocular Biometric Recognition: Less is More*, Proceedings of the IAPR 20<sup>th</sup> International Conference on Pattern Recognition (ICPR 2010), Istanbul, Turkey, August 23-26, 2010.
- [C12] L. Simpson, G. Dozier, J. Adams, D. L. Woodard, P. Miller, G. Glenn, K. Bryant, *Genetic and Evolutionary Type II Feature Extraction for Periocular-Based Biometric Recognition*, Proceeding of 2010 IEEE Congress on Evolutionary Computation, Barcelona, Spain, July 18-23, 2010.
- [C11] G. Dozier, J. Adams, D. L. Woodard, K. Bryant, P. Miller, *A Comparison of Two Genetic and Evolutionary Feature Selection Strategies for Periocular-Based Biometric Recognition via X-TOOLSS*, International Conference of Genetic and Evolutionary Methods (GEM' 10), Las Vegas, Nevada, July 12-15, 2010.
- [C10] D. L. Woodard, S. Pundlik, J. Lyle, P. Miller, *Periocular Region Appearance Cues for Biometric Identification*, IEEE Conf. Computer Vision and Pattern Recognition 2010 IEEE Biometrics Council Workshop on Biometrics, San Francisco, CA, June 18, 2010.
- [C9] J. Adams, D.L. Woodard, G. Dozier, P. Miller, G. Glenn, K. Bryant, *GEFE: Genetic & Evolutionary Feature Extraction for Periocular-Based Biometric Recognition*, Proceedings of 2010 ACM Southeast Conference, Oxford, MS, April 15-17, 2010.
- [C8] P. Miller, A. Rawls, S. Pundlik, D. L. Woodard, *Personal Identification Using Periocular Skin Texture*, Proceedings of the 2010 ACM Symposium on Applied Computing, Session: Applied Biometrics Track, Sierre, Switzerland, pg. 1496 - 1500, March 22-24, 2010.
- [C7] W. Ryan, D. L. Woodard, A. Duchowski, and S. Birchfield, *Adapting Starburst for Elliptical Iris Segmentation*, IEEE 2<sup>nd</sup> International Conference on Biometrics Theory, Applications, and Systems, Arlington, Virginia, Sept. 29 - Oct. 1, 2008.
- [C6] S. Pundlik, D. L. Woodard, S. Birchfield, *Non-Ideal Iris Segmentation Using Graph Cuts*, IEEE Conf. Computer Vision and Pattern Recognition 2008 (CVPRW) Workshop on Biometrics, Anchorage, Alaska, June 23-30, 2008.

- [C5] D. L. Woodard, T. C. Faltemier, Ping Yan, P. J. Flynn, K. W. Bowyer, *A Comparison of 3D Biometric Modalities*, IEEE Conf. Computer Vision and Pattern Recognition 2006 (CVPRW) Workshop on Multi-modal Biometrics, New York, NY, pg. 57-62, June 17-22, 2006.
- [C4] D. L. Woodard, P. J. Flynn, *Personal Identification Utilizing Finger Surface Features*, Proc. IEEE Conf. Computer Vision and Pattern Recognition 2005 (CVPR), San Diego, CA, pg. II: 1030-1036, June 20-25, 2005.
- [C3] D. L. Woodard, P. J. Flynn, *Identity Verification Utilizing Finger Surface Features*, Audio- and Video-based Biometric Person Authentication 2005 (AVBPA), Rye Town, NY, pg. 544-554, July 20-22, 2005.
- [C2] K. Chang, D. L. Woodard, P. J. Flynn, and K. W. Bowyer, *Three-Dimensional Face and Finger Biometrics*, (EUSIPCO) 12<sup>th</sup> European Signal Processing Conference, Vienna, Austria, pg. 1225-1228, September 7-10, 2004.
- [C1] D. L. Woodard, P. J. Flynn, *3D Finger Biometrics*, The 8th European Conference on Computer Vision (ECCV 2004) Biometric Authentication Workshop (BioAW), Prague, Czech Republic, pg. 238-247, May 11-16, 2004.

#### **Abstracts/Extended Abstracts (Peer Reviewed)**

- [A3] D. L. Woodard, P. J. Flynn. *3D Finger Biometrics*, Richard Tapia Celebration of Diversity in Computing Conference 2005, Albuquerque, NM October 19-22, 2005.
- [A2] D. L. Woodard, P. J. Flynn. *Finger Surface as a Biometric Identifier*, Biometric Consortium Conference, Crystal City, VA Sept. 2004.
- [A1] D. L. Woodard, P. J. Flynn. *Hand Silhouette Curvature Measurements as a Biometric Identifier*, Biometric Consortium Conference, Crystal City, VA Sept. 2003.

#### **PRESENTATIONS**

- [P21] *Image Analysis and Machine Learning for Hardware Assurance: Opportunities and Challenges*, International Conference on Physical Assurance and Inspection of Electronics (PAINE), Washington, D.C., 2019.
- [P20] *The Application of Artificial Intelligence and Machine Learning for Automatic Insider Threat Detection*, National Counterintelligence and Security Center (NCSC)/National Insider Threat Task Force Forum, Washington, D.C., May 2019.
- [P19] *Biometrics Research at the University of Florida*, CIA Summer Symposium, Langley, VA, May 2018
- [P18] *Automatic Hardware Trojan Detection Using Backside Imaging*, NSWC Crane, IN, May 2018.
- [P17] *Applied Machine Learning for Identity Science*, Army Research Lab, Raleigh, NC, June 2017.
- [P16] *Periocular-Based Biometrics: Methods, Capabilities, and Future Research Directions*, University of Notre Dame, Notre Dame, IN, November 2013.
- [P15] *Exploiting Periocular Features for Biometric and Forensic Applications*, Face Collaboration Meeting (IX) Sponsored by MITRE, McLean, VA, June 27, 2011.



- [P14] *Center of Advanced Studies in the Identity Sciences: A Model for Research, Education, and Outreach*, ORAU Council of Sponsoring Institutions Annual Meeting: Research and Education Partnerships Opportunities in Security and Intelligence, Oak Ridge, TN, March 8-9, 2011.
- [P13] *Periocular Based Recognition and Classification*, University of Notre Dame, Notre Dame, IN, November 2010.
- [P12] *Local Appearance Features for Periocular Based Biometrics*, Office of the Director of National Intelligence (ODNI) Intelligence Community Centers of Academic Excellence Executive Advisory Board Meeting, Lansdowne, VA, March 2010.
- [P11] *Exploiting Finger Surface as a Biometric Identifier*, University of North Carolina Wilmington, Wilmington, NC, November 2009.
- [P10] *Overview of Biometric Research/Periocular Based Biometrics*, Office of the Director of National Intelligence (ODNI) Intelligence Community Centers of Academic Excellence Executive Advisory Board Meeting, Lansdowne, VA, March 2009.
- [P9] *Ocular-Region Based Biometric Identification*, North Carolina A&T State University, Greensboro, NC, October 2008.
- [P8] *Biometrics: Identity Technologies* (Panel Chair), National Academy of Sciences Eighteenth Annual Kavli Frontiers of Science Symposium, Irvine, CA, November 2-4, 2006.
- [P7] *An Overview of Biometric Research at the University of Notre Dame*, Supercomputing 2005, Seattle, WA, November 12-17, 2005.
- [P6] *3D Finger Biometrics*, Richard Tapia Celebration of Diversity in Computing Conference 2005, Albuquerque, NM, October 19-22, 2005.
- [P5] *Exploiting Finger Surface as a Biometric Identifier*, Auburn University, Auburn, AL July 12, 2005.
- [P4] *An Introduction to Biometrics*, Albion College, Albion, MI, April 14, 2005.
- [P3] *Iris Recognition Utilizing High Resolution Images*, DCI Postdoctoral Research Fellowship Colloquium, Tyson's Corner, VA April 6, 2005.
- [P2] *Finger Surface as a Biometric Identifier*, Biometric Consortium Conference, Crystal City, VA, Sept. 2004.
- [P1] *Hand Silhouette Curvature Measurements as a Biometric Identifier*, Biometric Consortium Conference, Crystal City, VA Sept. 2003.

## STUDENT PRESENTATIONS

- [SP2] *Automated Framework for Unsupervised Counterfeit Integrated Circuit Detection by Physical Inspection*, P. Ghosh, R. S. Chakraborty, F. Ganji, D. L. Woodard, and D. Forte. International Conference on Physical Assurance and Inspection of Electronics (PAINE), Washington, D.C., July 2019.
- [SP1] *On the Physical Security of AI Accelerators*, D. Mehta, S. Tajik, D. L. Woodard, N. Asadizanjani, and M. Tehranipoor. International Conference on Physical Assurance and Inspection of Electronics (PAINE), Washington, D.C., July 2019.

## HONORS AND AWARDS

University of Florida Term Professorship	(2019 – 2022)
William R. Jones Outstanding Mentor Award	(2019)
Elevated to ACM Senior Member	(2012)
Elevated to IEEE Senior Member	(2011)
Kavli Frontier Fellow, National Academy of Science	(2006)
Intelligence Community Postdoctoral Fellowship Recipient	(2004 – 2006)
Procter and Gamble Grant Recipient , Procter and Gamble Inc.	(2002 – 2003)
Minority Engineering Program Mentor, University of Notre Dame	(2001)
Technical Minority Scholarship, Xerox Inc.	(2000, 2001)
Ph.D. Fellowship Recipient, National Consortium for Graduate Degrees for Minorities in Engineering and Science ( <b>GEM</b> )	(1999)
Masters Fellowship Recipient, National Consortium for Graduate Degrees for Minorities in Engineering and Science ( <b>GEM</b> )	(1997)
Highest Senior GPA Award, National Soc. of Black Engineers ( <b>NSBE</b> )	(1997)
Emerging Leaders Member, Tulane University	(1994)
Garvin Shands Saunder Scholarship, Tulane University	(1993)
Dean's List/Honor Roll, Tulane University	(1992 – 1995)

## PATENTS

- [PT4] D. Woodard, N. Asadizanjani, D. Forte, and R. Wilson, *A Novel Approach to Unsupervised Automated Extraction of Standard Cell Library for Reverse Engineering and Hardware Assurance*, Filed June 2019.
- [PT3] D. Woodard, N. Asadizanjani, D. Forte, and R. Wilson, *AutoMaG: A Novel Approach to Automatic Magnification for Hardware Assurance and Reverse Engineering Integrated Circuits*, Filed May 2019.
- [PT2] D. Woodard, D. Forte, N. Asadizanjani, R. Wilson, *Histogram-based Auto Segmentation: A Novel Approach to Segmenting Integrated Circuit Structures from SEM Images*, Filed October 2018.
- [PT1] M. Tehranipoor, H. Shen, N. Vashistha, N. Asadi Zanjani, M. T. Rahman, D. L. Woodard, *Hardware Trojan Scanner*, Filed August 2018.

## SPONSORED RESEARCH

**(TOTAL AWARDS: \$5,166,177)**

- [G13] *Uncovering and Surveilling Financial Deception Risk in Aging*, National Institute of Health/National Institute on Aging, Co-Principal Investigator with N. Ebner, B. Spreng, and D. Oliveria, \$1,617,457, (\$256,699), (2018 – 2023).
- [G12] *CIBAR@UF: A Holistic Approach to Authorship Attribution via Handwriting and Cognitive Biometrics*, U.S. Government, Principal Investigator, \$580,000, (\$580,000), (2018 – 2021).
- [G11] *Internet-of-Things Sensor Test Lab*, Industry Partner, Co-Principal Investigator with L. Anthony and J. Ruiz, \$106,021, (\$35,340), (2018 – 2019).
- [G10] *MRI: Acquisition of a High-Resolution Photon Emission/Electro-Optical Microscope for Non-invasive Evaluation of Electronic Devices and Systems Security*, National Science Foundation, Co-Principal Investigator with M. Tehranipoor, N. Asadi, D. Forte, and S. Bhunia, \$999,804, (\$199,760), (2017-2020).

- [G9] *Author Cyber Analysis and Advise Tool (AUTHORCAAT) (As Part of DNI S&T Center of Academic Excellence: Center for Academic Studies in Identity Sciences (CASIS))*, US Dept. of Defense, Principal Investigator, \$629,835, (\$629,835), (2015 - 2018).
- [G8] *Algorithm and Decision Support for Multi-sensor Handheld Explosive Hazard Detection Systems*, Army Research Office, Co-Principal Investigator with J. Wilson, P. Gader, A. Banerjee, \$1,057,332, (\$223,386), (2014 - 2016).
- [G7] *Automatic Visual Inspector: Phase 1*, BMW Manufacturing Co. LLC, Principal Investigator with S. Birchfield, \$64,977, (\$32,488), (2012 - 2013).
- [G6] *On the Use of Periocular Based Features for Biometric Recognition*, Federal Bureau of Investigation, Principal Investigator, \$600,096, (\$600,096), (2012 - 2014).
- [G5] *Human-Centered Computing Scholars: Fostering a New Generation of Underrepresented and Financially Disadvantaged Researchers*, National Science Foundation, Co-Principal Investigator with J. Gilbert and L. Hodges, \$552,000, (\$184,000), (2011 - 2016).
- [G4] *Ear Feature Analysis, Extraction Tools, and Classification for Improved Recognition*, Intelligence Community Postdoctoral Research Fellowship Program, Central Intelligence Agency, Principal Investigator, \$355,373, (\$353,373), (2013 - 2015).
- [G3] *Ocular Region Biometrics (As Part of DNI S&T Center of Academic Excellence: Center for Academic Studies in Identity Sciences (CASIS))*, Army Research Office, Principal Investigator, \$2M, (\$2M), (2008-2014).
- [G2] *Eye Region Based Biometric Identification*, Department of Defense/Unisys, Principal Investigator, \$57,000, (\$57,000), (2008-2008).
- [G1] *An Experimental Supercomputer from Commodity Components*, University Research Fund, Co-Principal Investigator with J. Westall, R. Geist, B. Dean, R. Schalkoff, and P. Srimani, \$100,000, (\$14,000), (2007-2008).

## GRADUATE STUDENT ADVISING

### Current Graduate Advising

Wilson, FNU Ronald (ECE, Ph.D.), Computer Vision Based IC Defect Detection, (May 2021)  
 Lu, Hangwei (ECE, Ph.D.), Image Analysis for Hardware Assurance, (May 2021)  
 Bhandarkar, Avanti (ECE, Ph.D.), Authorship Attribution via NLP (May 2021)  
 Lyon, Princess (ECE, Ph.D.), TBD (May 2022)  
 Capecci, Daniel (ECE, Ph.D.), TBD (May 2022)

### Post-Doctoral Research Advisees

Washington, Gloria, *Ear Feature Analysis, Extraction Tools, and Classification*, (2013 - 2014).  
 Pundlik, Shrinivas, *Periocular Based Biometric Recognition Systems*, (2009 - 2010).

### Past Graduate Advising/Committees

Sundararajan, Kalaivani (CISE, Ph.D.)	(December 2018)	(Role: Advisor)
Neal, Tempestt (CISE, Ph.D.)	(August 2018)	(Role: Advisor)
Tasneem, Zaid (ECE, M.S)	(May 2018)	(Role: Committee Member)

Lyle, Jamie (SoC, Ph.D.)	(December 2014)	(Role: Advisor)
Abegaz, Tamirat (HCC, Ph.D.)	(July 2014)	(Role: Co-Advisor)
Ekandem, Joshua (HCC, Ph.D.)	(July 2014)	(Role: Co-Advisor)
Lakko, Poornapragna (ECE, M.S.)	(July 2014)	(Role: Co-Advisor)
Ravindran, Satish (ECE, M.S.)	(May 2014)	(Role: Co-Advisor)
Martin, Aquessha (SoC, CS Ph.D.)	(May 2014)	(Role: Co-Advisor)
Pradhan, Ninad (ECE, Ph.D.)	(July 2013)	(Role: Committee Member)
Willimon, Robert (ECE, Ph.D.)	(May 2013)	(Role: Committee Member)
Huang, Xiaoxia (ECE, Ph.D.)	(May 2013)	(Role: Committee Member)
Tobias, Nicole (SoC, M.S.)	(December 2012)	(Role: Advisor)
Ramamurthy, Balu (SoC, M.S.)	(August 2012)	(Role: Advisor)
Rice, Kenneth (ECE, Ph.D.)	(December 2011)	(Role: Committee Member)
Gado, Harshad (ECE, M.S.)	(August 2011)	(Role: Committee Member)
Guntaka, Srinayani (SoC, M.S.)	(May 2011)	(Role: Advisor)
Chen, Zhichao (ECE, Ph.D.)	(July 2010)	(Role: Committee Member)
Apte, Akshay (ECE, M.S.)	(July 2010)	(Role: Committee Member)
Gidla, Vinay (ECE, M.S.)	(May 2010)	(Role: Committee Member)
Miller, Philip (SoC, M.S.)	(May 2010)	(Role: Advisor)
Lyle, Jamie (SoC, M.S.)	(December 2009)	(Role: Advisor)
Pundlik, Shrinivas (ECE, Ph.D.)	(August 2009)	(Role: Committee Member)
Steele, Jay (SoC, Ph.D.)	(May 2009)	(Role: Committee Member)
Zacharia, Ron (ECE, M.S.)	(May 2009)	(Role: Committee Member)
Tharkre, Uttara (ECE, M.S.)	(May 2009)	(Role: Committee Member)

## UNDERGRADUATE STUDENT ADVISING

### Current Honors Student Advising

Chesley, Britton (ECE) (Fall 2018 – Fall 2019)

### Past Honors Student Advising

Segars, Albert (SoC) (Fall 2008 – Fall 2009)  
 Miller, Philip (SoC) (Fall 2007 – Spring 2008)  
 Dixon, Rob (SoC) (Fall 2006 – Spring 2007)

## TEACHING

### Courses Taught

CpSc-101 Computer Science I	(S11, S12)
CpSc-102 Computer Science II	(S09)
CpSc-881 Introduction to Biometrics	(F07, F08, F09)
CpSc-881 Computer Vision	(S07)
CpSc-810 Introduction to Artificial Intelligence	(F06)
CpSc-8770 Fundamental of Biometric Systems	(F10, F11, F12, F13, F14)
CpSc-881 Applied Pattern Recognition	(S13)
CSE-60277 Applied Pattern Recognition (UND)	(S14)
EEL-6935/CIS-6930 Fundamental of Biometric Identification	(F15)
EEL-6935 Fundamentals of Biometric Identification	(S16, S17)
EEL-5840/EEL-4930 Elements of Machine Intelligence	(F16)
EEE-6512 Image Processing and Computer Vision	(F17, F18, F19)
EEE-6561 Fundamentals of Biometric Identification	(S18)

**New Course Development**

CpSc-877 Fundamentals of Biometric Systems  
CpSc-881 Computer Vision  
CpSc-881 Applied Pattern Recognition  
EEL-6935 / EEE-6561 Fundamentals of Biometric Identification  
EEL-6935 Machine Learning for Natural Language Processing

**UNIVERSITY SERVICE****University**

Member, C. Tycho Howle Endowed Chair in Collaborative Computing Environments Search Committee (2012 - 2013)

**College**

Member, Engineering Faculty Council, (2015 - 2018)

**Department/School**

Florida Institute for Cybersecurity (FICS) Research Diversity Co-Chair  
Graduate Recruitment and Admissions Committee (2015 - Present)  
Cybersecurity Faculty Search Committee (2015)  
CISE Department Chair Search Committee (2015)  
Systems Facilities Committee (2015)  
Graduate Recruitment and Admissions Committee (2015 - Present)  
Personalized Learning Faculty Search Committee (2015)  
School of Computing Director Search Committee (2013 - 2013)  
HCC Tenure, Promotion, and Retention Committee (2013 - 2013)  
HCC Tenure, Promotion, and Retention Committee Chair (2012 - 2013)  
HCC Portfolio Review Committee Chair (2011- 2013)  
Graduate Advisory Committee, (2011 - Present)  
School Director Advisory Committee, (2010 - 2012)  
Department Web Site Committee, (2010 - 2011)  
Graduate Student Recruitment Committee Member, (2008 - 2010)  
Faculty Co-Advisor, Upsilon Pi Epsilon (**UPE**) Honor Society, (2007-2008)  
Faculty Co-Advisor, Association of Computing Machinery (**ACM**), (2007-2008)

**PROFESSIONAL SERVICE****Editor Positions**

Guest Editor, Special Issue of IEEE Transactions on Biometrics, Behavior, and Identity Science (2019)  
Associate Editor, ACM Computing Surveys (2019 - Present)  
Associate Editor, IEEE Access (2019 - Present)

**Chair Positions**

Program Co-Chair of IEEE Intl. Conference Biometrics: Theory, Applications, and Systems

**(BTAS 2019)**  
Doctoral Consortium Co-Chair of IEEE/IAPR International Joint Conference on Biometrics  
**(IJCB 2017)**  
Publication Co-Chair of IEEE Intl. Conference on Biometrics: Theory, Applications, and Systems  
**(BTAS 2015)**  
Publicity Co-Chair of IEEE Intl. Conference on Biometrics: Theory, Applications, and Systems  
**(BTAS 2012)**  
Special Session Chair: Artificial Intelligence in Biometrics and Identity Sciences (**AIBIS**),  
The 22<sup>nd</sup> Midwest Artificial Intelligence and Cognitive Science Conference (**MAICS 2011**)  
Publicity Co-Chair of 6<sup>th</sup> IEEE Biometrics Symposium 2008 (**BSYM**)  
Biometrics Technology Panel Chair for National Academy of Sciences Frontier of Science  
Conference (2006)

### Program Committees

IEEE International Conference on Identity, Security, and Behavior Analysis (**ISBA 2015, ISBA 2016, ISBA 2018**)  
IAPR Intl. Conference on Pattern Recognition (**ICPR 2014**)  
IEEE Intl. Conference on Image Processing (**ICIP 2014, ICIP 2015, ICIP 2017, ICIP 2018**)  
IEEE/IAPR International Joint Conference on Biometrics (**IJCB 2011, IJCB 2014, IJCB 2017**)  
IEEE/IAPR International Conference on Biometrics (**ICB2012, ICB2013, ICB 2015, ICB 2018, ICB 2019**)  
IEEE International Conference on Hand-Based Biometrics (**ICHB2011**)  
IEEE 9<sup>th</sup> Conference on Automatic Face and Gesture Recognition (**FG 2011**)  
The 22<sup>nd</sup> Midwest Artificial Intelligence and Cognitive Science Conference (**MAICS 2011**)  
Biometric Technology for Human Identification V Conference, Part of the SPIE International  
Defense and Security Symposium (**SPIE 2008, 2011**)  
IEEE Intl. Conference on Biometrics: Theory, Applications, and Systems (**BTAS 2009 - 2018**)  
IEEE/IAPR First Intl. Workshop on Emerging Techniques and Challenges for Hand-Based  
Biometrics (**ETCH 2010**)  
IEEE International Conference on Computer Vision (**ICCV 2007**)

### Reviewer

IEEE Transactions on Evolutionary Computation (**TEVC**)  
IEEE Transactions on Multi-Scale Computing Systems (**TMSCS**)  
IEEE Intl. Conference on Image Processing (**ICIP 2010 - ICIP 2013, ICIP 2016, ICIP 2017 - 2019**)  
IAPR Intl. Conference on Pattern Recognition (**ICPR 2010, ICPR 2012, ICPR 2018**)  
IEEE International Conference on Computer Vision (**ICCV 2009**)  
IEEE Conf. of Computer Vision and Pattern Recognition (**CVPR 2007-2017**)  
IEEE Transactions of Pattern Analysis and Machine Intelligence (**PAMI**)  
Journal of Robotics and Computer-Integrated Manufacturing (**RCIM**)  
Journal of Computer Vision and Image Understanding (**CVIU**)  
Journal of Signal Processing Systems  
Journal of Pattern Recognition Research  
Journal of Applied Sciences  
IEEE Transactions on Systems, Man, and Cybernetics--Part A: Systems and Humans (**SMCA**)  
IEEE Transactions on Systems, Man, and Cybernetics--Part B: Cybernetics (**SMCB**)  
IAPR/IEEE International Conference on Biometrics  
European Association for Signal, Speech and Image Processing Journal on Advances in Signal  
Processing  
European Association for Signal, Speech and Image Processing Journal on Information Security

IEEE Transactions on Human-Machine Systems  
IEEE Transactions on Information Forensics & Security (TIFS)  
Information Fusion  
Pattern Recognition  
Pattern Recognition Letters  
IEEE Transactions on Image Processing (TIP)  
IEEE Transactions on Dependable and Secure Computing (TDSC)  
IEEE Transactions on Emerging Topics in Computational Intelligence  
IEEE Sensors  
Image and Vision Computing  
Computers and Security  
Machine Vision and Applications  
Digital Signal Processing  
ACM Transactions on Computer-Human Interaction  
ACM Transactions on Information and System Security (TISSEC)  
ACM Transactions on Privacy and Security (TOPS)

## **Other**

NAVY CRANE Computer Vision and Machine Learning for Hardware Assurance Technical Working Group Member  
IEEE Computational Intelligence Society Intelligent System Application Technical Committee (2019 - Present)  
IEEE Biometrics Council Vice President of Finance (2018 - 2020)  
National Academy of Science Ford Foundation Fellowship Panel Reviewer  
IEEE Biometrics Council Education Committee Member  
National Institute of Justice OST/OIFS Sensor, Surveillance, and Biometrics Technologies for Criminal Justice Applications - Biometrics Review Panel Member  
Contributor to IEEE Education Activities Board Professional Biometric Certification Program (Subject Matter Expert)  
National Science Foundation Review Panel Member

## **CONSULTING**

Meaningbot, Technical Advisor (2019 - Present)  
LeaderLync, Advisory Board Member, Technical Advisor (2019 - Present)

## **MISCELLANEOUS**

Press Coverage, Online Article, IEEE Engineering 360, *Biometric Security: Your Body as Your Password* (2017).  
Press Coverage, Article, Signal Magazine, *Universities Develop New-School Biometrics* (2012).  
Press Coverage, Online Article, Daily Finance, *Microsoft Kinect Heats Race Debate: Does Face-Recognition Software Discriminate?* (2010).