CURRICULUM VITAE –

DAMON L. WOODARD, PH.D.

PERSONAL DATA

Director, Florida Institute for National Security (FINS)
(https://fins.institute.ufl.edu/)
Co-Director, Applied Artificial Intelligence Group (AAIG)
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RESEARCH INTERESTS

Artificial Intelligence, Applied Machine Learning, Image Analysis for Hardware Assurance, Biometrics, Cybersecurity, Computer Vision, and Natural Language Processing

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, 2022 – Present, Director of Florida Institute for National Security (FINS)
University of Florida 2022 – Present, Professor, Dept., of Electrical and Computer Engineering
University of Florida, 2020 – 2022, Director of AI Partnerships, Artificial Intelligence Initiative
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

American Association for the Advancement of Science (2020 -)

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

[BC11] R. Wilson, O. P. Dizon-Paradis, A. Bhandarkar, A. Swarup, D. Capecci, R.J. Fu, and D. L, Woodard, *AI Theories, Techniques, and Trends Shaping Business Innovation*, Artificial Intelligence, Machine Learning, and Robotics in General Business, (Fu, R.J. Ed.), Kendall Hunt Publishing, 2024.

[BC10] O. P. Dizon-Paradis, D. Capecci, T. Pan, R. J. C. Fu, and D. L. Woodard, *Machine Learning in Marketing Research*, Artificial Intelligence, Machine Learning, and Robot Applications in Hospitality Businesses, (R. J. C. Fu Ed.), Kendall Hunt Publishing, 2023.

[BC9] R. Wilson, O. P. Dizon-Paradis, D. Capecci, A. Bhandarkar, R. J. C. Fu, and D. L. Woodard, *Methods and Theories in AI and ML Approaches*, Artificial Intelligence, Machine Learning, and Robot Applications in Hospitality Businesses, (R. J. C. Fu Ed.), Kendall Hunt Publishing, 2023.

[BC8] H. Lu, D. Capecci, P. Ghosh, D. Forte, D. L. Woodard, *Computer Vision for Hardware Security*, Emerging Topics in Hardware Security, (M. Tehranipoor Ed.), Springer Publishing, 2021.

[BC7] D. L. Woodard, *Biometric Matching*, Encyclopedia of Cryptology, Security, and Privacy, (S. Jajodia, P. Samarati, and M. Yung Eds.), Springer Publishing, 2021.

[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, 2020.

[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

[J42] S. Wormald, M. K. Maldaner, K. D. O'Connor, O. P. Dizon-Paradis, and D. L. Woodard, *Abstracting General Syntax for XAI after Decomposing Explanation Sub-Components*, Springer, Artificial Intelligence Review, 2025.

[J41] O. P. Dizon-Paradis, D. S. Koblah, R. Wilson, D. Forte, and D. L. Woodard, *IC SEM Reverse Engineering Tutorial using Artificial Intelligence*, IEEE Design & Test, 2025.

[J40] J. Wu, O. Dizon-Paradis, S. Rahman, D. L. Woodard, and D. Forte, *Protecting Dynamically Obfuscated Scan Chain Architecture from DOSCrack with Trivium Pseudo-Random Number Generation*, Cryptography, vol. 9, no. 1., MDPI AG, p. 6, 2025.

[J39] A. Bhandarkar, R. Wilson, A. Swarup, G. D. Webster, and D. L. Woodard, *Bridging Minds and Machines: Unmasking the Limits in Text-based Automatic Personality Recognition for Enhanced Psychology-AI synergy*, British Journal of Psychology, Wiley, 2024

[J38] A. Swarup, A. Bhandarkar, O. P. Dizon-Paradis, R. Wilson and D. L. Woodard, *Maximizing Relation Extraction Potential: A Data-Centric Study to Unveil Challenges and Opportunities*, IEEE Access, vol. 12, pp. 167655-167682, 2024.

[J37] O. P. Dizon-Paradis, S. E. Wormald, D. E. Capecci, A. Bhandarkar, and D. L. Woodard, *Resource Usage Evaluation of Discrete Model-free Deep Reinforcement Learning Algorithms*, Reinforcement Learning Journal (RLJ), vol. 5, pp. 2162–2177, 2024.

[J36] M. Hasan, T. Hoque, F. Ganji, D. L. Woodard, D. Forte, S. Shomaji, *A Resource-Efficient Binary CNN Implementation for Enabling Contactless IoT Authentication*, Journal of Hardware and Systems Security (JHSS), pg. 1-14, 2024.

[J35] P. Ghosh, G. Lee, M. Zhu, O. P. Dizon-Paradis, U. J. Botero, D. L. Woodard, D. Forte, *MaGNIFIES: Manageable GAN Image Augmentation Framework for Inspection of Electronic Systems*, Journal of Hardware and Systems Security (JHSS), 2024.

[J34] R. Wilson, O. Dizon-Paradis, D. Forte, and D. L. Woodard, *SECURE: A Segmentation Quality Evaluation Metric on SEM images for Reverse Engineering on Integrated Circuits*, IEEE Access 11, pg. 137798-137809, 2023.

[J33] D. Koblah, S. Costello, O. P. Dizon-Paradis, F. Ganji, D. L. Woodard, and D. Forte, *A Fast Object Detection-Based Framework for Via Modeling on PCB X-Ray CT Images*, ACM Journal on Emerging Technologies in Computing Systems, Vol. 19, Issue 4, pp. 1 - 20, 2023.

[J32] D. Koblah, O. P. Dizon-Paradis, J. Schubeck, U. J. Botero, D. L. Woodard, D. Forte, *A Comprehensive Taxonomy of Visual Printed Security Board Defects*, Journal of Hardware and System Security, pg. 1-19, 2023.

[J31] N. Jessurun, O. P. Dizon-Paradis, J. Harrison, S. Ghosh, M. Tehranipoor, D. L. Woodard, and N. Asadizanjani, *FPIC: A Novel Semantic Dataset for Optical PCB Assurance*, ACM Journal on Emerging Technologies in Computing Systems, Vol. 19, No. 2, pg. 1-21, 2023.

[J30] D. Koblah, R. Acharya, O. Dizon-Paradis, S. Tajik, F. Ganji, D. L. Woodard, D. Forte, *A Survey and Perspective on Artificial Intelligence for Security-Aware Electronic Design Automation*, ACM Transactions on Design Automation of Electronic Systems, Vol. 28, No. 2, pg. 1-57, 2023.

[J29] S. Shomaji, P. Ghosh, F. Ganji, D. L. Woodard, D. Forte, *An Analysis of Enrollment and Query Attacks on Hierarchical Bloom Filter-Based Biometric Systems*, IEEE Transactions on Information Forensics and Security, Vol. 6, pg. 5294 – 5309, 2021.

[J28] R. Wilson, A. Bhandarkar, P. Lyons, D. L. Woodard, *SQSE: A Measure to Assess Sample Quality of Authorial Style as a Cognitive Biometric Trait*, IEEE Transactions on Biometrics, Behavior, and Identity Science, Vol. 3, No. 4, pg. 583 - 596, 2021.

[J27] R. Wilson, H. Lu, M. Zhu, D. Forte, and D. L. Woodard, *REFICS: Assimilating Data-Driven Paradigms into Reverse Engineering and Hardware Assurance on Integrated Circuits*, IEEE Access, Vol. 9, pg. 131955-131976, 2021.

[J26] S. Shomaji, Z. Guo, F. Ganji, N. Karimian, D. L. Woodard, and D. Forte, *BLOcKeR: A Biometric Locking Paradigm for IoT and the Connected Person*, Journal of Hardware Systems Security, Vol. 5, pg. 1-1, 2021.

[J25] U. Botero, R. Wilson, H. Lu, M. T. Rahman, M. Mallaiyan, F. Ganji, N. Asadizanjani, M. Tehranipoor, D. L. Woodard, and D. Forte, *Hardware Trust and Assurance Through Reverse Engineering: A Tutorial and Outlook from Image Analysis and Machine Learning Perspective*, ACM Journal on Emerging Technologies, and Computing Systems, Vol. 17, Issue 6, pg. 1-53, 2021.

[J24] N. Vashistha, H. Lu, Q. Shi, D. L. Woodard, N. Asadizanjani, and M. Tehranipoor, *Detecting Hardware Trojans Using Combined Self Testing and Imaging*, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, pg. 223 - 236, July 2021.

[J23] K. Reese, D. L. Woodard, *Peer-Reviewed Article in a Classified Journal*, Journal of Intelligence Community Research and Development (JICRD), 2021.

[J22] D. Mehta, H. Lu, O. Paradis, M. Azhagan, Y. Iskander, P. Chawla, D. L. Woodard, M. Tehranipoor, and N. Asadizanjani, *The Big Hack Explained: Detection and Prevention of PCB Supply Chain Implants*, ACM Journal on Emerging Technologies in Computing Systems (JETC), vol. 14 no. 4, pg. 1 – 42, 2020.

[J21] N. Karimian, D. L. Woodard, and D. Forte, *ECG Biometrics: Spoofing and Countermeasures*, IEEE Transactions on Biometrics, Behavior, and Identity Science, vol. 2 no. 3, pg. 257 – 270, 2020.

[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, *Unlock Your Heart: Next Generation Biometric in Resource-Constrained Healthcare Systems and IoT*, IEEE Access, vol. 7, pg. 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, pg. 109-122, 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, vol. 6, no. 1, pg. 4 – 8, 2019.

[J16] F. Ganji, D. Forte, N. Asadizanjani, M. Tehranipoor, and D. L. Woodard, *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, vol. 21 no. 2, pg. 30 – 36, 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, vol. 2 no. 4, pg. 1 – 12, 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, vol. 23 no. 6, pg. 1 – 24, 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, vol. 75 no. 3, pg. 522 – 533, 2018.

[J12] K. Sundararajan, D. L. Woodard, *Deep Learning for Biometrics – A Survey*, ACM Computing Surveys (CSUR), vol. 51, no. 3, article no. 65, pg. 1 – 34, 2018.

[J11] T. Neal, K. Sundararajan, A. Fatima, Y. Yan, Y. Xiang, D. L. Woodard. *Surveying Stylometry Techniques and Applications*, ACM Computing Surveys (CSUR), vol. 50, no. 6, article no. 86, pg. 1 – 36, 2017.

[J10] T. Neal, D. L. Woodard, *Surveying Biometric Authentication for Mobile Device Security*, Journal of Pattern Recognition Research, vol 11, no 1, pg. 74 – 110, 2016.

[J9] S. Banerjee, D. L. Woodard, *Biometric Authentication, and Identification Using Keystroke Dynamics: A Survey*, Journal of Pattern Recognition Research, vol 7 no. 1, 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, vol. 7 no. 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, vol. 45 no. 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, vol. 4 no. 3, pg. 220 – 245, 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, vol. 5 no. 4, pg. 443- 455, 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, 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, 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, vol. 48 no. 11, pg. 117 – 206, 2009.

[J1] D. L. Woodard, P. J. Flynn, *Finger Surface as a Biometric Identifier*, Journal of Computer Vision and Image Understanding (**CVIU**) vol. 100 no. 3, pg. 357-384, 2005. (Listed as #20 on CVIU's Top 25 Hottest Articles during 2005 4th quarter)

Refereed Conferences/Workshops

[C78] T. Pan, D. L. Woodard, Efficient Generalization via Multimodal Co-Training under Data Scarcity and Distribution Shift, 2025 Conference on Neural Information Processing Systems (NeurIPS), To Appear, 2025.

[C77] A. Swarup, A. Bhandarkar, R. Wilson, T. Pan, and D. L. Woodard, *From Syntax to Semantics: Evaluating the Impact of Linguistic Structures on LLM-Based Information Extraction,* Proceedings of the 1st Joint Workshop on Large Language Models and Structure Modeling (XLLM 2025), pp. 36-48, 2025.

[C76] A. Bhandarkar, A. Swarup, G. D. Webster, and D. L. Woodard, *PsyTEx: A Knowledge-Guided Approach to Refining Text for Psychological Analysis*, Proceedings of the 5th International Conference on Natural Language Processing for Digital Humanities (NLP4DH), 2025.

[C75] S. Wormald, D. Koblah, M. K. Maldaner, D. Forte, and D. L. Woodard, *Global, Semi-Global, and Local Explanations Built Off the DiffLogic Architecture*, 22nd International Conference on Information Technology: New Generations (ITNG), Las Vegas, NV, 2025.

[C74] M. Zhu, R. Wilson, R. N. Dizon-Paradis, O. P. Dizon-Paradis, D. J. Forte, and D. L. Woodard, *Genetic Algorithm-Assisted Golden-Free Standard Cell Library Extraction from SEM Images*, International Symposium on Quality Electronic Design (ISQED), San Francisco, CA, 2025.

[C73] A. Bhandarkar, R. Wilson, and D. L. Woodard, *AAIG at GenAI Detection Task 1: Exploring Syntactically Aware, Resource-Efficient Small Autoregressive Decoders for AI Content Detection*, Association for Computational Linguistics (ACL), Proceedings of the 1st Workshop on GenAI Content Detection (GenAIDetect), Abu Dhabi, UAE, pp. 218-224, 2025.

[C72] A. Swarup, T. Pan, R. Wilson, A. Bhandarkar, and D. L. Woodard, *LLM4RE: A Data-centric Feasibility Study for Relation Extraction, Association for Computational Linguistics (ACL)*, Proceedings of the 31st International Conference on Computational Linguistics, Abu Dhabi, UAE, pp. 6670-6691, 2025.

[C71] P. Ghosh, S. Shomaji, M. Zhu, D. L. Woodard, and D. Forte, *Kin-Wolf: Kinship-established Wolfs in Indirect Synthetic Attack*, IEEE International Joint Conference on Biometrics (IJCB), Buffalo, NY, pg. 1 – 8, 2024.

[C70] J. Wu, O. Dizon-Paradis, S. Rahman, D. Woodard, D. Forte, *DOSCrack: Deobfuscation using Oracle-guided Symbolic Execution and Clustering of Binary Security Keys*, IEEE International Symposium on Hardware Oriented Security and Trust (HOST), 2024.

[C69] M. Kunzler-Maldaner, S. Wormald, O. Dizon-Paradis, D. Woodard, *Ethical Horizons in Neuro Symbolic AI: Pioneering Transparency Across Critical Sectors*, 37th International Florida Artificial Intelligence Research Society (FLAIRS) Conference, Miramar Beach, Florida, 2024.

[C68] A. Bhandarkar, R. Wilson, A. Swarup, D. Woodard, *Emulating Author Style: A Feasibility Study of Prompt-enabled Text Stylization with Off-the-Shelf LLMs*, European Association of Computational Linguistics (EACL), Proceedings of the 1st Workshop on Personalization of Generative AI Systems (PERSONALIZE 2024), St. Julians, Malta, pg. 76-82, 2024.

[C67] P. Ghosh, S. Shomaji, D. L. Woodard, and D. Forte, *KinfaceNet: A New Deep Transfer Learning based Kinship Feature Extraction Framework*, IEEE International Joint Conference on Biometrics (IJCB), Ljubljana, Slovenia, pg. 1 – 8, 2023.

[C66] B. Mather, I. Perera, V. Kazakova, D. Capecci, M. Garg, D. L. Woodard, B. Dorr, *Vision: Explainable Hidden Mental State as Influence Indicators*, 7th International Workshop on Social Sensing (SocialSens 2022), Atlanta, Georgia, pg. 1-3, 2022.

[C65] N. Jessurun, D. Capecci, O. Dizon-Paradis, D. Woodard, and N. Asadizanjani, *Semi-Supervised Semantic Annotator (S3A): Toward Efficient Semantic Labeling*, Proceedings of the SciPy 2022 Conference, Austin, TX, pg. 7 – 12, 2022.

[C64] R. Wilson, H. Lu, M. Zhu, D. Forte, D. L. Woodard, *REFICS: A Step Towards Linking Vision with Hardware Assurance*, 2022 IEEE Winter Conference on Applications of Computer Vision (WACV), Waikoloa, HI, pg. 4031 - 4040, 2022.

[C63] T. Farheen, U. Botero, N. Varshney, H. Shen, D. L. Woodard, M. Tehranipoor, and D. Forte, *Proof of Reverse Engineering Barrier: SEM Image Analysis on Covert Gates*, International Symposium for Testing and Failure Analysis (ITSFA), Phoenix, AZ, pg. 179 - 189, 2021.

[C62] D. Koblah, U. Botero, F. Ganji, D. L. Woodard, and D. Forte, *Via Modeling on X-Ray Images of Printed Circuit Boards Through Deep Learning*, 2021 Government Microcircuit Applications and Critical Technology Conference (GOMACTech). Virtual Conference, 2021.

[C61] O. Paradis, D. Capecci, D. L. Woodard, M. Tehranipoor, N. Asadizanji, *Framework for Automatic PCB Marking Detection and Recognition for Hardware Assurance*, 2021 Government Microcircuit Applications and Critical Technology Conference (GOMACTech). Virtual Conference, 2021.

[C60] S. Morrison-Smith, A. Aloba, H. Lu, D. L. Woodard, J. Ruiz, L. Anthony, *MMGatorAuth: A Novel Multimodal Dataset for Authentication Interactions in Gesture and Voice*, In Proceedings of the 22nd ACM International Conference on Multimodal Interaction (ICMI), Nicolaaskerk, Utrecht, Netherlands, pg. 370 - 377, 2020.

[C59] R. Wilson, D. Forte, N. Asadizanjani, D. L. Woodard, *LASRE: A Novel Approach to Large area Accelerated Segmentation for Reverse Engineering on SEM images*, International Symposium for Testing and Failure Analysis (ITSFA), Pasadena, CA, pg. 180 – 187, 2020.

[C58] U. Berto, D. Koblah, D. Capecci, F. Ganji, N. Asadi, D.L. Woodard, D. Forte, *Automated Via Detection for PCB Reverse Engineering*, International Symposium for Testing and Failure Analysis (ITSFA), Pasadena, CA, pg. 157 – 171, 2020.

[C57] H. Lu, R. Wilson, N. Vashistha, N. Asadizanjani, M. Tehranipoor, D. L. Woodard, *Knowledge-based Object Localization in Scanning Electron Microscopy Images for Hardware Assurance*, International Symposium for Testing and Failure Analysis (ITSFA), Pasadena, pg. 20 – 28, 2020.

[C56] U. Berto, F. Ganji, N. Asadizanjani, D. L. Woodard, and D. Forte, *Semi-Supervised Automated Layer Identification of X-ray Tomography Imaged PCBs*, IEEE International Conference on Physical Assurance and Inspection of Electronics (PAINE), Washington, D.C., pg. 1 - 6, 2020.

[C55] P. Ghosh, U. Botero, F. Ganji, D. L. Woodard, R. Chakraborty, and D. Forte, *Automated Detection and Localization of Counterfeit Chip Defects by Texture Analysis in Infrared (IR) Domain*, IEEE International Conference on Physical Assurance and Inspection of Electronics (PAINE), Washington, D.C., 2020.

[C54] U. Botero, N. Asadizanjani, D. L. Woodard, and D. Forte, *A Framework for Automated Alignment and Layer Identification of X-Ray Tomography Imaged PCBs*, 2020 Government Microcircuit Applications and Critical Technology Conference (GOMACTech). Mountain View, 2020.

[C53] S. Shomaji, F. Ganji, D. L. Woodard, D. Forte, *Hierarchical Bloom Filter Framework for Security, Space-Efficiency, and Rapid Query Handing in Biometric Systems*, 2019 IEEE 11th International Conference on Biometrics Theory, Applications and Systems (BTAS 2019), Tampa, FL, pg. 1 - 8, 2019.

[C52] M. Azhagan, D. Mehta, H. Lu, V. Sai, S. Agrawal, D. L. Woodard, M. Tehranipoor, and N. Asadizanjani, *A Review on Automatic Bill of Material Generation and Visual Inspection on PCBs*, International Symposium for Testing and Failure Analysis (ITSFA), Portland, Oregon, pg. 256 – 265, 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, pg. 249 – 255, 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., pg. 1 – 8. 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., pg. 1 – 7. 2019.

[C48] T. Neal, D. L. Woodard, 12th IAPR International Conference on Biometrics (ICB 2019), *Mobile Biometrics, Replay Attacks, and Behavior Profiling: An Empirical Analysis of Imposter Detection,* Crete, Greece, pg. 1 – 8, 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,* McLean, VA, pg. 61 – 71, 2019.

[C46] T. Neal, D. L. Woodard, IEEE 9th International Conference on Biometrics: Theory, Application and Systems, *On the Use of Mobile Calling Patterns for Soft Biometric Classification,* Los Angeles, CA, pg. 1 – 6, 2018.

[C45] M. T. Rahman, N. Vashista, Q. Shi, H. Shen, S. Tajik, D. L. Woodard, N. Asadijanzani, M. Tehranipoor, *Physical Attack and Inspection: New Frontier in Hardware Security*, IEEE 3rd International Verification and Security Workshop (IVSW), Costa Brava, Spain, pg. 93 – 102, 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), pg. 1 – 8, 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), Santa Fe, NM, pg. 2814 – 2822, 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*, 11th IAPR International Conference on Biometrics (ICB), Gold Coast, Queensland, Australia, pg. 270 – 276, 2018.

[C39] K. Sundararajan, T. Neal, and D. L. Woodard *Style Signatures to Combat Biometric Menagerie in Stylometry*, 11th IAPR International Conference on Biometrics (ICB), Gold Coast, Queensland, Australia, pg. 263 – 269, 2018.

[C38] T. Neal, D. L. Woodard, *A Gender-Specific Analysis of Mobile Device Usage Data*, IEEE 4th International Conference on Identity, Security, and Behavior Analysis (ISBA), Singapore, pg. 1-8, 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, 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, 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), pg. 1 – 10, 2016.

[C33] T. Neal, A. Striegel, and D. L. Woodard, *Mobile Device Application, Bluetooth, and Wi-Fi Usage Data as Behavioral Biometric Traits*, 2015 IEEE 7th 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, 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*, 19th 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., pg. 1 - 8, 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, pg. 1 - 8, 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, pg. 1375 – 1381, 2011.

[C24] A. Alford, K. Popplewell, G. Dozier, K. Bryant, J. Kelly, J. Adams, T. Abegaz, J. 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, pg. 2725 - 2728, 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, pg. 2071 – 2074, 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, pg. 216 - 220, 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, pg. 221 – 224, 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, pg. 152 - 156, 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, pg. 127 - 130, 2011.

[C18] J. Shelton, G. Dozier, K. Bryant, J. Adams, K. Popplewell, T. Abegaz, K. Purington, 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 3rd Workshop on Multimodal Interfaces for Automotive Applications of the 2011 International Conference on Intelligent User Interfaces, Palo Alto, CA, pg. 53-56, 2011.

[C16] P. Miller, J. Lyle, S. Pundlik, D. L. Woodard, *Performance Evaluation of Local Appearance Based Periocular Recognition*, IEEE 4th 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 4th 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 20th International Conference on Pattern Recognition (ICPR 2010), Istanbul, Turkey, pg. 210 – 204, 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 20th International Conference on Pattern Recognition (ICPR 2010), Istanbul, Turkey, pg. 205 – 208, 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 the 2010 IEEE Congress on Evolutionary Computation, Barcelona, Spain, pg. 1 – 4, 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, pg. 162 - 169, 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, pg. 1 – 4, 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 2nd International Conference on Biometrics Theory, Applications, and Systems, Arlington, Virginia, pg. 1 – 7, 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)** 12th 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)

[A4] T. Pan, D. L. Woodard. *Efficient Generalization via Multimodal Co-Training under Data Scarcity and Distribution Shift.* The 42nd ICML Conference Affinity Workshop New In ML, Vancouver, Canada July 15, 2025.

[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.

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[PT12] D. L. Woodard, T. Pan, D. Forte, *Multimodal Retrieval-Augmented Generation System for Creative Production (MuseRAG): Cross-Modal Indexing, Generative Retrieval/Re-Ranking, and Attributed Output,* Disclosed September 2025.

[PT 11] D. L. Woodard, S. Wormald, D. Forte, *Logic-Based Networks to Accelerate Basecalling with Field Programmable Gate Arrays in Bioinformatics*, Disclosed September 2025.

[PT10] D. L. Woodard, T. Pan, *MACO: Multimodal Agreement-Aware Co-Training with Dual-Threshold Pseudo-Labeling, Geometric Convergence, and Generalization Guarantees,* disclosed September 2025.

[PT9] D. L. Woodard, T. Pan, *Lyapunov-Stable Control for Multimodal Learning System Adaptation to Concept Drift,* Filed September 2025.

[PT8] D. L. Woodard, D. Forte, R. Wilson, O. Dizon-Paradis, D. Capecci, David Koblah, Mengdi Zhu, Pallabi Ghosh, Rabin Acharya, *Hands-On Introduction to AI in Hardware Security: IC Reverse Engineering using Image Processing, Computer Vision, and Machine Learning*, disclosed Dec. 2024.

[PT7] N. Asadizanjani, N. Jessurun, S. Ghosh, M. Tehranipoor, D. L. Woodard, O. P. Dizon-Paradis, J. Harrison, *PCB Optical Database*, Filed May 2023.

[PT6] D. Forte, D. L. Woodard, F. Ganji, and S. Shomaji, *Biometric Locking Methods and Systems for the Internet of Things and the Connected Person*, US Patent 11,989,273.

[PT5] D. L. Woodard, N. Asadizanjani, M. Tehranipoor, H. Lu, R. Wilson, N. Vashistha, *Knowledge-Based Object Localization in Images for Hardware Assurance*, US Patent 17,491,150.

[PT4] D. L. Woodard, N. Asadizanjani, D. Forte, and R. Wilson, *Method and Apparatus for Automatic Extraction of Standard Cells to Generate a Standard Cell Candidate Library*, US Patent 11,157,675.

[PT3] D. L. Woodard, N. Asadizanjani, D. Forte, and R. Wilson, *Automatic Sharpness Adjustment for Imaging Modalities*, US Patent 11,776,093.

[PT2] D. L. Woodard, D. Forte, N. Asadizanjani, R. Wilson, *Accelerated Segmentation for Reverse Engineering of Integrated Circuits*, US Patent 11,893,742.

[PT1] M. Tehranipoor, H. Shen, N. Vashistha, N. Asadizanjani, M. T. Rahman, D. L. Woodard, *Hardware Trojan Scanner*, US Patent 11,030,737.

PRESENTATIONS

[P28] *Artificial Intelligence in Law Enforcement: Understanding the Landscape of Emerging Technologies*, Florida Department of Law Enforcement (FDLE), May 2025.

[P27] *eXplainable Artificial Intelligence (XAI)*, University of Notre Dame, April 2024.

[P26] *Commencement Speaker*, Summer 2023 Commencement, University of Florida, August 2023.

[P25] *Nowhere to Run, Nowhere to Hide: The Use of a Cognitive Biometric to Establish Identity in Cyberspace*, The Future of AI Speaker Series, University of Florida, April 2022.

[P24] *Nowhere to Run, Nowhere to Hide: The Use of a Cognitive Biometric to Establish Identity in Cyberspace*, Duke University, March 2022.

[P23] Artificial Intelligence in Biometrics: Past, Present, and Future Challenges, Metron Inc. and George Mason University, February 2022.

[P22] *Computer Vision for Hardware Security*, National Microelectronics and Security Trainings Center (MEST), May 2020.

[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.

HONORS AND AWARDS

University of Florida Leadership Academy	(2020 – 2021)
University of Florida Term Professorship	(2019 – 2021)
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, Proctor 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 (**GEM**)	(1999)
Masters Fellowship Recipient, National Consortium for Graduate Degrees for Minorities in Engineering and Science (**GEM**)	(1997)
Highest Senior GPA Award, National Soc. of Black Engineers (**NSBE**)	(1997)
Emerging Leaders Member, Tulane University	(1994)
Garvin Shands Saunder Scholarship, Tulane University	(1993)
Dean's List/Honor Roll, Tulane University	(1992 – 1995)

SPONSORED RESEARCH

TOTAL FUND: $25,557,143 **(FACULTY PORTION: $10,007,197)**

[G31] Low-Light Rolling Shutter Imagery with Robot Motion, Amazon.com Inc., Co-Principal Investigator, $220,000, ($60,000), (2025 – 2026).

[G30] Research Experience for Undergraduates (REU) Participant Support for SaTC: TTP: Medium: I-C-U: AI-Enabled Recovery and Assurance of Semiconductor IP from SEM Images, National Science Foundation, Principal Investigator, $20,000, ($20,000), (2022 – 2026).

[G29] *Causal AI for Interpretable and Robust AMS Topology Synthesis and Optimization*, Semiconductor Research Group, Co-Principal Investigator, $315,000, ($161,549) (2024 – 2026)

[G28] Multi-modal Image Fusion for Improved Automated Detection of Manmade Objects, Huntington Ingalls, Co-Principal Investigator, $147,280.23, ($16,639), (2024 – 2024).

[G27] *Artificially Intelligent SKEPTIC for Context-Aware Decision Validation*, U. S. Government, Principal Investigator, $1,729,368, ($1,123,253), (2023 – 2025).

[G26] *PvP: Multi-lingual Soft Biometric Profiling and Privacy using Psycho-linguistic markers from Natural Language Text*, Principal Investigator, $825,911, ($775,419), (2023 – 2025).

[G25] *SaTC: TTP: Medium: I-C-U: AI-Enabled Recovery and Assurance of Semiconductor IP from SEM Images*, National Science Foundation, Principal Investigator, $1,199,042, ($701,768), (2022 – 2025).

[G24] *Automated Prediction of Dark Triad Personality Traits via Natural Language Processing and Computational Behavior Analytics*, U.S. Government, Principal Investigator, $996,090, ($915,227), (2021 – 2024)

[G23] *Center of Aerospace Resilience*, Co-Principal Investigator, Embry-Riddle Aeronautical University, $822,500, ($50,893), (2020 – 2021)

[G22] *STAMP: A Holistic Backward/Forward Trust Framework for Protecting Microelectronics*, Co-Principal Investigator, U.S. Air Force Research Laboratory (AFRL), $5,374,215, ($199,997), (2020 – 2022).

[G21] *Stylometry and Situational Assessment for Large-Scale Relationship Extraction from Unstructured Data*, Principal Investigator, Sandia National Lab/UF Campus Executive Program, $100,000, ($100,000), (2020 – 2021).

[G20] *Deep Fake Face Detection: Capabilities and Limitations (20DFFD)*, Principal Investigator, Department of Justice/WVU, $272,064, ($272,064), (2020 – 2021).

[G19] *STV for Solution for Threat Assessment, Mitigation, and Prevention (STAMP)*, Co-Principal Investigator, Edaptive Computing/U.S. Airforce, $500,004, ($95,626), (2020 – 2020).

[G18] *Automated Capacitor and Resistor Detection on PCBs for Auto-BoM Generation*, Co-Principal Investigator, Edaptive Computing/U.S. Airforce, $700,005, ($109,109), (2020-2020).

[G17] *Edaptive AutoBoM Phase 2*, Co-Principal Investigator, Edaptive Computing / U.S. Airforce, $2,760,005, ($404,679), (2019 – 2023).

[G16] *2D/3D Data Collection of PCB Surface Mount Components for Automated Bill of Material Generation*, Co-Principal Investigator, Edaptive Computing / U.S. Airforce, $239,999, ($43,469), (2019 – 2020).

[G15] *Solutions for Threat Assessment, Mitigation, and Prevention (STAMP)*, Edaptive Computing/U.S. Air Force, Co-Principal Investigator, $239,920, ($45,000), (2019 -2020).

[G14] *A Knowledge-Guided Approach for Automated PCB Inspection*, Co-Principal Investigator, Lockheed Martin/U.S. Airforce Research Lab, $298,000, ($46,077), (2019-2019).

[G13] *Uncovering and Surveilling Financial Deception Risk in Aging,* National Institute of Health/National Institute on Aging, Co-Principal Investigator, $1,617,457, ($83,374), (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, $106,021, ($48,946), (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, $999,804, ($199,760), (2017-2020).

[G9] *Author Cyber Analysis and Advisement 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, $1,057,332, ($223,386), (2014 – 2016).

[G7] *Automatic Visual Inspector: Phase 1*, BMW Manufacturing Co. LLC, Principal Investigator, $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, $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, $100,000, ($14,000), (2007-2008).

GRADUATE STUDENT ADVISING

Current Graduate Advising

- Lyon, Princess (ECE, Ph.D.), Cross-Lingual Authorship Attribution (December 2025)
- Wormald, Stephen, (ECE, Ph.D.), Explainable Artificial Intelligence (August 2026)
- Pan, Tianyu (ECE, Ph.D.) Multimodal Artificial Intelligence (August 2026)
- Cole, Alexa (ECE, Ph.D.) Explainability in Reinforcement Learning, (May 2028)
- Bowman, Wavid (ECE, Ph.D.), Artificial Intelligence Security and Assurance, (May 2028)

Post-Doctoral Research Advisees

- Dizon-Paradis, Olivia, *Computer Vision for Hardware Assurance*, (2025 – Present)
- Dizon-Paradis, Reiner, *Computer Vision for Hardware Assurance*, (2024 – Present)
- Wilson, Ronald, *Dark Triad Detection via Natural Language Processing*, (2021 – 2023)
- Washington, Gloria, *Ear Feature Analysis, Extraction Tools, and Classification,* (2013 - 2014).
- Pundlik, Shrinivas, *Periocular Based Biometric Recognition Systems*, (2009 - 2010).

Past Graduate Advising

Zhu, Mengdi (ECE, Ph.D.)	(August 2025)	(Role: Advisor)
Swarup, Anushka (ECE, Ph.D.)	(August 2025)	(Role: Advisor)
Bhandarkar, Avanti (ECE, Ph.D.)	(May 2025)	(Role: Advisor)
Crump, Christopher (ECE, M.S.)	(December 2024)	(Role: Advisor)
Ghosh, Pallabi (ECE, Ph.D.)	(August 2024)	(Role: Co-Advisor)
Dizon-Paradis, Olivia (ECE, Ph.D.)	(August 2024)	(Role: Advisor)
Esposito, Mira, (ECE, M.S.),	(December 2023)	(Role: Advisor)
Lu, Hangwei (ECE, Ph.D.)	(August 2021)	(Role: Advisor)
Wilson, Ronald (ECE, Ph.D.)	(August 2021)	(Role: Advisor)
Sundararajan, Kalaivani (CISE, Ph.D.)	(December 2018)	(Role: Advisor)
Neal, Tempestt (CISE, Ph.D.)	(August 2018)	(Role: Advisor)
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)
Tobias, Nicole (SoC, M.S.)	(December 2012)	(Role: Advisor)
Ramamurthy, Balu (SoC, M.S.)	(August 2012)	(Role: Advisor)
Guntaka, Srinayani (SoC, M.S.)	(May 2011)	(Role: Advisor)
Miller, Philip (SoC, M.S.)	(May 2010)	(Role: Advisor)
Lyle, Jamie (SoC, M.S.)	(December 2009)	(Role: Advisor)

UNDERGRADUATE STUDENT ADVISING

Honors Student Advising

Bronstein, Olivia (UF, CISE)	(Fall 2022 – Spring 2024)
Chesley, Britton (UF, ECE)	(Fall 2018 – Fall 2019)
Segars, Albert (Clemson, SoC)	(Fall 2008 – Fall 2009)
Miller, Philip (Clemson, SoC)	(Fall 2007 – Spring 2008)
Dixon, Rob (Clemson, SoC)	(Fall 2006 – Spring 2007)

Undergraduate Research Advising

Cole, Alexa (CPE)	(Fall 2023 – Spring 2024)
McLoon, Connor (CISE)	(Fall 2023 – Present)
O'Connor, Kristian (CPE)	(Fall 2023 – Present)
Kunzler-Maldaner, Matheus (DS)	(Fall 2023 – Present)
Ambrose, Kian (DS)	(Fall 2023 – Present)
Pu, Rachel (CS)	(Fall 2024 – Present)
Patel, Saagar (CS)	(Fall 2024 – Present)
Bloomquist, Erik (EE)	(Fall 2024 – Present)

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, F20, S24, S25)
EEL-4930 Image Processing and Computer Vision	(S24)
EEE-6561 Fundamentals of Biometric Identification	(S18, S20)
EEL-6935 Machine Learning for Natural Language Processing	(S19)
EEL-6825 Pattern Recognition and Intelligent Systems	(F24, F25)

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
EEL-4930 Image Processing and Computer Vision

UNIVERSITY SERVICE

University

Member, National Security Leadership Committee, (2023 – Present)
External Member, AI in Hospitality and/or Event Management Faculty Search Committee, Department of Tourism, Hospitality, and Event Management (THEM), (2021 – 2022)
Chair, AI Corporate and Foundations Program Committee, (2020 – 2022)
Member, AI Leadership Committee, (2020 – 2020)
Member, AI Academic Committee, 2020 – Present)
Member, C. Tycho Howle Endowed Chair in Collaborative Computing Environments Search Committee (2012 – 2013)

College

External Member, AI Computer Architecture Faculty Search Committee, Computer & Information Science & Engineering (CISE), (2021 – 2022)
External Member, AI Digital Twin Platforms for Complex Built and Natural Systems Faculty Search Committee, Engineering School of Sustainable Infrastructure, and the Environment (ESSIE), (2021 - 2022)
External Member, AI Real-Time Data Integration and Machine Learning for Digital Twins Faculty Search Committee, Department of Mechanical and Aerospace Engineering (MAE), (2021 – 2022)

External Member, AI Computational Orthopedic Biomechanics Faculty Search Committee, Department of Mechanical and Aerospace Engineering (MAE), (2021 – 2022)
Member, Fully Homomorphic Encryption Faculty Search Committee (2021)
Member, Research and Engineering Education Facility (REEF) Regional Director Search Committee (2021 – Present)
Chair, Herbert Wertheim College of Engineering AI Committee, (2020 – 2022)
Member, Engineering Faculty Council, (2015 – 2018)

Department/School

Member, ECE Self-aware AI Computing Systems Faculty Search Committee (2021 – 2022)
Member, ECE Artificial Intelligence of Things (AIOT) Faculty Search Committee (2021 – 2022)
Member, ECE Cognitive Architectures AI Faculty Search Committee (2021 – 2022)
Member, ECE Machine Learning and Climate Faculty Search Committee (2021 – 2022)
Member, ECE AI Taskforce Committee (2020 – Present)
Member, Graduate Recruitment and Admissions Committee (2015 – 2020)
Member, Signal and Systems Area Committee (2015 – 2021)
Member, Cybersecurity Faculty Search Committee (2015 - 2015)
Member, CISE Department Chair Search Committee (2015 - 2015)
Member, Systems Facilities Committee (2015 - 2015)
Member, Graduate Recruitment and Admissions Committee (2015 - 2019)
Member, Personalized Learning Faculty Search Committee (2015 - 2015)
Member, School of Computing Director Search Committee (2013 – 2013)
Chair, HCC Tenure, Promotion, and Retention Committee (2012 – 2013)
Chair, HCC Portfolio Review Committee (2011- 2013)
Member, Graduate Advisory Committee, (2011 – 2014)
Member, School Director Advisory Committee, (2010 - 2012)
Member, Department Web Site Committee, (2010 – 2011)
Member, Graduate Student Recruitment Committee, (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 – 2021)
Associate Editor, IEEE Access (2019 – 2020)

Chair Positions

Area Chair of IAPR International Joint Conference on Biometrics (**IJCB 2020, IJCB2021**)
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 22nd Midwest Artificial Intelligence and Cognitive Science Conference (**MAICS 2011**)

Publicity Co-Chair of 6th IEEE Biometrics Symposium 2008 (**BSYM**)
Biometrics Technology Panel Chair for National Academy of Sciences Frontier of Science Conference (2006)

Program Committees

IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV 2026**)
40th AAAI Conference of Artificial Intelligence (**AAAI-2026**) Senior Program Committee
39th AAAI Conference of Artificial Intelligence (**AAAI-2025**)
37th AAAI Conference of Artificial Intelligence (**AAAI-2023**)
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, ICIP 2019, ICIP 2022, ICIP 2024, ICIP 2025**)
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 9th Conference on Automatic Face and Gesture Recognition (**FG 2011**)
The 22nd 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 - 2019**)
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

ACM Transactions on Privacy and Security (**TOPS**)
ACM Transactions on Information and System Security (**TISSEC**)
IEEE Transactions on Biometrics, Behavior, and Identity Science (**TBIOM**)
Computers and Security
IEEE Transactions on Information Forensics & Security (**TFIS**)
IEEE Transactions on Evolutionary Computation (**TEVC**)
IEEE Intl. Conference on Image Processing (**ICIP 2010 – ICIP 2013, ICIP 2016, ICIP 2017 – 2020**)
IAPR Intl. Conference on Pattern Recognition (**ICPR 2010, 2012, 2018, 2020, 2022**)
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 Computer Vision and Image Understanding (**CVIU**)
Journal of Pattern Recognition Research
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
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
Machine Vision and Applications
Digital Signal Processing

Other

Leon County Sheriff Office Artificial Intelligence Working Group Member
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

Waffle Video, LLC, Technical Advisory Board	(2025 -)
Meraglim Holdings Corporation, Technical Advisory Board	(2021 -)
Meaningbot, Technical Advisor	(2019 – 2020)
LeaderLync, Advisory Board Member, Technical Advisor	(2019 – 2020)

EXPERT WITNESS (Client Underlined)

CPC Patent Technologies vs. Apple Inc., *U.S. District Court Western District of Texas, Waco Division*, 2021

MISCELLANEOUS

How Artificial Intelligence is Transforming National Security, Panelist, University of South Florida Global and National Security Institute, (2024).

AI Workforce Readiness: Equipping Students with the Necessary Skills, Knowledge, and Resources to Embrace and Thrive in the AI-enabled Workforce, Panelist, AI Days Event, University of Florida, 2023.

D. L. Woodard, *Tech Friend or Foe? Augmented Reality Further Blurs the Line Between Reality and the Digital World*, The Messenger, https://themessenger.com/opinion/tech-friend-or-foe-augmented-reality-further-blurs-the-line-between-reality-and-the-digital-world, (2023).

Panel Member, NVIDIA GPU Technology Conference, *Building AI Across the US: What it Takes to Create an AI Workforce and Research Ecosystem that Includes all Americans* (2021).

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).