

Olivia P. Dizon-Paradis

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Electrical and Computer Engineering
University of Florida

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RESEARCH INTERESTS

- Artificial Intelligence (AI): applied AI, context-aware AI
- Reinforcement Learning: imitation learning, agent reverse engineering, inverse goal planning
- Ethical and Trustworthy AI: explainable AI, causal AI, neuro-symbolic AI
- Applications in Intelligence and Defense

EDUCATION

2024	Ph.D., Electrical and Computer Engineering University of Florida (UF), Gainesville, FL
2022	M.S., Electrical and Computer Engineering University of Florida (UF), Gainesville, FL
2019	B.S., Biomedical and Electrical Engineering Rensselaer Polytechnic Institute (RPI), Troy, NY

PROFESSIONAL EXPERIENCE

2021 – 2024	Graduate Research Assistant, Florida Institute for National Security (FINS)
2019 – 2022	Graduate Research Assistant, Florida Institute for CyberSecurity (FICS)
2018	Undergraduate Research Assistant, Interdisciplinary Microsystems Group (IMG)

PROFESSIONAL MEMBERSHIPS

2021 – Present	Institute of Electrical and Electronics Engineers (IEEE)
2017 – Present	Eta Kappa Nu (HKN) Honor Society
2017 – Present	Tau Beta Pi (TBP) Honor Society

Journal Articles

- J11. 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*, ISBN 979-8-218-41163-3, 2024. Accepted.
- J10. P. Ghosh, G. Lee, M. Zhu, O. P. Dizon-Paradis, U. J. Botero, D. L. Woodard, and D. Forte, “Magnifies: Manageable gan image augmentation framework for inspection of electronic systems,” *Journal of Hardware and Systems Security*, vol. 8, p. 44–59, Feb. 2024
- J9. R. Wilson, O. P. 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*, vol. 11, p. 137798–137809, 2023
- J8. D. S. Koblah, U. J. Botero, S. P. 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, p. 1–20, Oct. 2023
- J7. D. S. Koblah, O. P. Dizon-Paradis, J. Schubeck, U. J. Botero, D. L. Woodard, and D. Forte, “A comprehensive taxonomy of visual printed circuit board defects,” *Journal of Hardware and Systems Security*, vol. 7, p. 25–43, Apr. 2023
- J6. N. T. Jessurun, O. P. Dizon-Paradis, J. Harrison, S. Ghosh, M. 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, p. 1–21, Apr. 2023
- J5. D. S. Koblah, R. Acharya, D. E. Capecci, O. P. Dizon-Paradis, S. Tajik, F. Ganji, D. L. Woodard, and 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, p. 1–57, Mar. 2023
- J4. M. Azhagan Mallaiyan Sathiaselvan, O. P. Dizon-Paradis, S. Taheri, and N. Asadizanjani, “Why is deep learning challenging for printed circuit board (pcb) component recognition and how can we address it?,” *Cryptography*, vol. 5, p. 9, Mar. 2021
- J3. D. Mehta, H. Lu, O. P. Dizon-Paradis, M. Azhagan Mallaiyan Sathiaselvan, M. T. Rahman, Y. Iskander, P. Chawla, D. L. Woodard, M. 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*, vol. 16, p. 1–25, Aug. 2020
- J2. N. T. Jessurun, O. P. Dizon-Paradis, A. Roberts, and N. Asadizanjani, “Component detection and evaluation framework (cdef): A semantic annotation tool,” *Microscopy and Microanalysis*, vol. 26, p. 1470–1474, July 2020
- J1. N. Varshney, H. Shen, O. P. Dizon-Paradis, and N. Asadizanjani, “He-ion beam imaging for accurate hardware trojan detection,” *Microscopy and Microanalysis*, vol. 26, p. 188–190, July 2020

Conference Proceedings

- C9. J. Wu, O. P. Dizon-Paradis, S. Rahman, D. L. Woodard, and D. Forte, “Doscraack: Deobfuscation using oracle-guided symbolic execution and clustering of binary security keys,” in *IEEE International Symposium on Hardware Oriented Security and Trust (HOST)*, May 2024
- C8. N. T. Jessurun, D. E. Capecci, O. P. Dizon-Paradis, D. L. Woodard, and N. Asadizanjani, “Semi-supervised semantic annotator (s3a): Toward efficient semantic labeling,” in *Python in Science Conference (SciPy)*, 2022
- C7. A. Pasunuri, N. T. Jessurun, O. P. Dizon-Paradis, and N. Asadizanjani, “A comparison of neural networks for pcb component segmentation,” in *IEEE International Symposium on Hardware Oriented Security and Trust (HOST)*, Dec. 2021
- C6. M. Azhagan Mallaiyan Sathiaselvan, O. P. Dizon-Paradis, R. Rai, S. V. Pandurangi, M. Y. Vutukuru, S. Taheri, and N. Asadizanjani, “Logo classification and data augmentation techniques for pcb assurance and counterfeit detection,” in *International Symposium for Testing and Failure Analysis (ISTFA)*, ASM International, Oct. 2021
- C5. O. P. Dizon-Paradis, D. E. Capecci, N. T. Jessurun, D. L. Woodard, M. M. Tehranipoor, and N. Asadizanjani, “Framework for automatic pcb marking detection and recognition for hardware assurance,” in *Government Microcircuit Applications and Critical Technology Conference (GOMACTech)*, 2021
- C4. N. T. Jessurun, O. P. Dizon-Paradis, M. M. Tehranipoor, and N. Asadizanjani, “Shade: Automated refinement of pcb component estimates using detected shadows,” in *IEEE Physical Assurance and Inspection of Electronics (PAINE)*, Dec. 2020
- C3. O. P. Dizon-Paradis, N. T. Jessurun, M. M. Tehranipoor, and N. Asadizanjani, “Color normalization for robust automatic bill of materials generation and visual inspection of pcbs,” in *International Symposium for Testing and Failure Analysis (ISTFA)*, ASM International, Dec. 2020
- C2. O. P. Dizon-Paradis, N. Varshney, M. T. Rahman, M. Strizich, H. Shen, and N. Asadizanjani, “In-situ thickness measurement of die silicon using voltage imaging for hardware assurance,” in *Government Microcircuit Applications and Critical Technology Conference (GOMACTech)*, 2020
- C1. N. Vashistha, M. T. Rahman, O. P. Dizon-Paradis, and N. Asadizanjani, “Is backside the new backdoor in modern socs?,” in *IEEE International Test Conference (ITC)*, Nov. 2019

Book Chapters

- B2. R. Wilson, O. P. Dizon-Paradis, D. E. Capecci, A. Bhandarkar, R. J. Fu, and D. L. Woodard, *Methods and Theories in AI and ML Approaches*, ch. 13. Kendall Hunt, 1 ed., 2024
- B1. O. P. Dizon-Paradis, D. E. Capecci, T. B. Pan, R. J. Fu, and D. L. Woodard, *Machine Learning in Marketing Research*, ch. 4. Kendall Hunt, 1 ed., 2024

Patents and Disclosures

- P5. O. P. Dizon-Paradis, R. Wilson, D. E. Capecci, D. Forte, and D. L. Woodard, “Hands-on introduction to ai in hardware security: Ic reverse engineering using image processing, computer vision, and machine learning,” 12 2023. University of Florida Disclosure T19288
- P4. N. Asadizanjani, N. T. Jessurun, S. Ghosh, M. M. Tehranipoor, D. L. Woodard, O. P. Dizon-Paradis, and J. Harrison, “PCB optical database,” 5 2023. University of Florida Disclosure T19074
- P3. N. Asadizanjani, N. T. Jessurun, M. M. Tehranipoor, and O. P. Dizon-Paradis, “Techniques for printed circuit board component detection,” Feb. 2021. U.S. Patent No. 11,520,967, issued Dec. 2022
- P2. M. M. Tehranipoor, N. Asadizanjani, O. P. Dizon-Paradis, and N. Varshney, “Hardware deprocessing using voltage imaging for hardware assurance,” Feb. 2021. U.S. Patent No. 11,604,912, issued Mar. 2023
- P1. N. Asadizanjani, M. M. Tehranipoor, O. P. Dizon-Paradis, and N. Varshney, “He-ion imaging for accurate trojan scanning,” 2 2020. University of Florida Disclosure T18084

Informally Published Works

- X4. O. P. Dizon-Paradis, *Framework for Applying Imitation Learning Methods on Reinforcement Learning Demonstrations*. PhD thesis, University of Florida, Aug. 2024. Embargoed access for two years
- X3. O. P. Dizon-Paradis, S. E. Wormald, D. E. Capecci, A. Bhandarkar, and D. L. Woodard, “Investigating the practicality of existing reinforcement learning algorithms: A performance comparison.” DOI 10.36227/tehrxiv.23739099.v1, July 2023
- X2. D. Mehta, J. True, O. P. Dizon-Paradis, N. T. Jessurun, D. L. Woodard, N. Asadizanjani, and M. M. Tehranipoor, “FICS PCB x-ray: A dataset for automated printed circuit board inter-layers inspection.” Paper No. 2022/924, 2022
- X1. H. Lu, D. Mehta, O. P. Dizon-Paradis, N. Asadizanjani, M. M. Tehranipoor, and D. L. Woodard, “FICS-PCB: A multi-modal image dataset for automated printed circuit board visual inspection.” Paper No. 2020/366, 2020

TEACHING

Other Teaching Experience, University of Florida

- F’23 Course Designer, “IC SEM Reverse Engineering Tutorial using AI”, NSF Award # 2131480 - SaTC: TTP: Medium: I-C-U: AI-Enabled Recovery and Assurance of Semiconductor IP from SEM Images
- Su’22 Co-Instructor, “How Do Computers Add?”, CPET Pre-College Scholars Program

Graduate Teaching Assistant, University of Florida

- F’20 EEE6512: Image Processing and Computer Vision

Undergraduate Teaching Assistant, Rensselaer Polytechnic Institute

S'18, F'18, S'19	ENGR4300: Electronic Instrumentation
S'17, S'19	BIOL2120: Introduction to Cellular and Molecular Biology
S'19	CSCI1190: Beginning Programming for Engineers
F'18	ECSE2010: Electric Circuits

LEADERSHIP, SERVICE, AND VOLUNTEERING

Reviewer Activities:

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)
- BMVA British Machine Vision Conference (BMVC)
- IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits (IPFA)
- Scientific Computing with Python Conference (SciPy)

Student Organization Activities, University of Florida

2021 – 2023	Graduate Peer Mentor, ECE Graduate Student Wellness Group
2021 – 2023	Graduate Curriculum Chair, Eta Kappa Nu (HKN)
2021 – 2023	Vice President, CyberGatorz Student Org.
2021 – 2022	Treasurer, Graduate Society of Women Engineers (SWE)
2021 – 2022	Representative, Engineering Graduate Student Council (EGSC)
2020 – 2021	Tutoring Chair, Eta Kappa Nu (HKN)
2019 – 2021	Industry Outreach Chair, ECE Graduate Student Org.

HONORS, AWARDS, AND SCHOLARSHIPS

2019 – 2024	Grad. School Preeminence Award, UF Electrical and Computer Engr. Dept.
2024	Emerging Scholar Honorable Mention Award, UF Association for Academic Women
2023	Anette Cornwell Bauer Scholarship, Inspiring Women Leaders Conference
2020 – 2021	Gwin Graduate Award in Electrical Engineering, UF
2019	Wynant James Williams Prize, RPI Electrical Engineering Department
2015 – 2019	Rensselaer Leadership Scholarship, RPI
2015 – 2019	Rensselaer Merit Scholarship, RPI

PROFESSIONAL CERTIFICATIONS

2022	Great Teaching Certificate, UF
2022	Great Online Teaching Certificate, UF
2022	Center for Integration of Research, Teaching and Learning (CIRTL) Associate
2021	Machine Learning Graduate Certificate, UF Electrical and Computer Engr. Dept.
2021	Engineering Innovation Graduate Certificate, UF College of Engineering

SKILLS

- Programming Languages: Python, MALAB, C++
- Machine Learning and Deep Learning: PyTorch, Keras, TensorFlow, scikit-learn
- Reinforcement Learning and Imitation Learning: OpenAI Gym, stable-baselines, imitation
- Computer Vision: OpenCV, Pillow (PIL), Insight Toolkit (ITK), scikit-image
- High-Performance Computing: Simple Linux Utility for Resource Management (SLURM)
- Collaboration and Project Management: Git/Github, Sphinx, ClickUp, Notion

[CV compiled on August 26, 2024 for the website <https://oliviadizonparadis.com/>]

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