M. ABDULLAH CANBAZ, PH.D.

Assistant Professor, IEEE Senior Member
Director of AI in Complex Systems Laboratory
Department of Information Sciences and Technology
College of Emergency Preparedness, Homeland Security and Cybersecurity
University at Albany, SUNY

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RESEARCH INTERESTS

- **Data Science:** Applications of Machine Learning at the Tactical Edge, Data-Intensive Computing, Data Mining, Information Based Clustering, Natural Language Processing

- **Network Science:** Human Networks, Online Social Networks, Information Networks, Network Visualization, Graph Data Mining

- **Network Security:** IoT Networks, Anomaly detection, Firewalls, Intrusion detection, User Privacy

- **Network Measurements:** Computer Networking, Internet Topology, Network Sampling, Synthetic Graph Generation, Sensor Networks

EDUCATION

Doctor of Philosophy   *2014 - 2018*
Department of Computer Science and Engineering
University of Nevada Reno, Nevada
Dissertation: **"Internet Topology Mining: From Big Data to Network Science"**
*** Best Dissertation Award
Advisor: Dr. Mehmet Hadi Gunes

Master of Science   *2013 - 2014*
Department of Computer and Information Science
Indiana University Purdue University Indianapolis, Indiana
M.S. Thesis: **"Management System for Heterogeneous Wireless Sensor Networks"**
Advisor: Dr. Yao Liang

Bachelor of Science   *2006 - 2010*
Department of Computer Engineering
Fatih University, Istanbul, Turkey
Senior Project: **"Digital Authentication for Electronic Voting Systems"**
Advisor: Dr. Veli Hakkoymaz

APPOINTMENTS

College of Emergency Preparedness, Homeland Security and Cybersecurity, University at Albany   July 2022 - present
Assistant Professor, Undergraduate Program Director   *Albany, NY*

School of Sciences, Indiana University Kokomo   August 2018 - June 2022
Assistant Professor   *Kokomo, IN*

Department of Computer Science, University of Nevada, Reno   October 2017 - May 2018
Lecturer   *Reno, NV*

Department of Computer Science, University of Nevada, Reno   May 2014 - October 2017
Research & Teaching Assistant   *Reno, NV*

Department of Computer and Information Science, Indiana University Purdue University Indianapolis, Indiana January 2013 - April 2014

Graduate Research Assistant *Indianapolis, IN*

GRANTS

- **Current - PI - UAlbany Minerva Center**, *"Undergraduate Research Excellence: The Minerva Center Innovation Funding for Research & Creative Endeavors,"* **11/2023 - 11/2027**, $15,000.00

- **Current - Co-PI - USDA**, *"Optical CRISPR Nano-diagnostics Against Common Salmonella Serotypes Using Mobile-App Driven Image Analysis and Data Transmission,"* **11/2023 - 11/2027**, $611,000.00

- **Current - PI - Google Research**, *"Enhanced Satellite Image Segmentation and Classification Using Quantized Deep Learning on Google Maps,"* **10/2023 - 11/2026**, $50,000.00

- **Indiana University - Grant-in-Aid Research Fund**, *"Measuring the Cyber Resilience of Institutional Network Infrastructure ,"* **02/2021 - 04/2022**, $12,000.00

- **NIPSCO STEM Award**, *"Diversify CS - Underrepresented Groups Driven Computer Science Research Initiative,"* **12/2020 - 12/2021**, $5,000.00

- **Indiana University - Research Faculty Fellowship**, *"Proactive Anomaly Detection in Hybrid Institutional IT Environments,"* **04/2019 - 09/2021**, $20,500.00

Community Engagement Grants

- **PI - NYS DCJS**, *"Enhancing the Communities Against Hate Crime Award—Bosnian Community Center at Albany, NY"* **08/2023 - 08/2025**, $150,000.00

Grant Proposals Under Review

- **PI - NSF**, AISL/STEM/CISE - ExLENT, *"EducateAI: Explorations: AI in Justice Training Program (AI-JTP),"* Submitted February.'25, $1,000,000.00

- **PI - NSF**, STEM/CISE - CSForALL, *"EducateAI: Small: CSforALL: AI Pathways - Building Collaborative Partnerships for AI and Computational Thinking Education in PreK-8 ,"* Submitted February.'25, $300,000.00

- **Co-PI - NSF**, STEM/ROL, *"Collaborative Research: CoGniZ for EducateAI: Informal AI Curriculum Development from Theory to Practice,"* Submitted January.'25, $2,000,000.00

- **PI - NSF**, TIP/CISE - PDaSP, *"PDaSP: Track 3: Multi-Institute Hierarchical FL Framework (MIH-FL)—Advancing Privacy-Preserving Data Sharing in Mental Health,"* Submitted September.'24, $1,499,806.00

- **Co-PI - USDA**, *"Synthetic Biology-based Visual Pathogen Detection Assay Using Deep Learning-assisted Image Analysis and Data Transmission,"* Submitted Aug.'24, $649,995.00

- **PI - NSF**, CISE - REU, *"REU Site: Interdisciplinary Science for Integrative Challenges in Cybersecurity (ISICC),"* Submitted Aug.'24, $462,921.00

- **PI - NSF**, CISE - RET, *"RET Site: (AI-EPIC) The AI-Ready Educators in Practice and Integrative Challenges of AI,"* Submitted Aug.'24, $597,621.00

- **SP - NSF**, CENTER, *"Theme 3: NSF AI-Institute: INSAIT: INstitute for Social-Artificial Intelligence Teaming,"* Submitted May.'24, $20,0000,000.00

- **Co-PI - NSF**, *" Collaborative Research: CoGniZ for EducateAI: Informal AI Curriculum Development from Theory to Practice,"* Submitted Jan.'25, $2,000,000.00

AWARDS AND RECOGNITIONS

Excellence in Research   *October 2024*
College of Emergency Preparedness, Homeland Security & Cybersecurity
University at Albany
Awarded in recognition of advanced machine learning research examining complex systems with applications in emergency response, healthcare, mental health, and legal and regulatory intelligence.

IEEE Senior Faculty Grade Elevation   *October 2024*
The Institute of Electrical and Electronics Engineers, United States
IEEE Senior Membership is an honor bestowed only to those who have made significant contributions to the profession.

PUBLICATIONS

Peer Reviewed Conferences

1. Mikail M Demir*, Hakan T. Otal*, and **M. Abdullah Canbaz**, *"LegalGuardian: A Privacy-Preserving Framework for Secure Integration of Large Language Models in Legal Practice,"* In PPAI-25: The 6th AAAI Workshop on Privacy-Preserving Artificial Intelligence, 3 March 2025, Philadelphia, PA, USA. [**Acceptance Rate: 20%**]

2. Hakan Otal* and **M. Abdullah Canbaz**, *"LLM Honeypot: Leveraging Large Language Models as Advanced Interactive Honeypot Systems,"* In The 2024 IEEE Conference on Communications and Network Security (CNS): Cyber Resilience Workshop (IEEE CNS), Taipei, Taiwan, Sept 30 - Oct. 2, 2024. [**Acceptance Rate: 22%**]

3. Hakan Otal* and **M. Abdullah Canbaz**, *"AI-Powered Crisis Response: Streamlining Emergency Management with LLMs,"* 2024 IEEE World Forum on Public Safety Technology (WF-PST), Washington DC, USA, May 2024. [**Acceptance Rate: 31%**]

4. Hakan Otal*, Elyse Zavar, Sherri B. Binder, Alex Greer, and **M. Abdullah Canbaz**, *"Harnessing Deep Learning and Satellite Imagery for Post-Buyout Land Cover Mapping,"* In 2024 IEEE Conference on Artificial Intelligence (CAI), Singapore, June 2024.

5. Hakan Otal*, Eric Stern, and **M. Abdullah Canbaz**, *"LLM-Assisted Crisis Management: Building Advanced LLM Platforms for Effective Emergency Response and Public Collaboration,"* In 2024 IEEE Conference on Artificial Intelligence (CAI), Singapore, June 2024. [**Acceptance Rate: 28%**]

6. Venkatakrishnan, Radhakrishnan*, Emrah Tanyildizi, and **M. Abdullah Canbaz**, *"Advancing Legal Intelligence: AI-Powered Semantic Knowledge Graph Construction: A Case Study on Immigration Law,"* In 2024 ACM Web Conference (ACM WEB '24), Singapore, May 2024. [**Acceptance Rate: 18%**]

7. Venkatakrishnan, Radhakrishnan*, Mahsa Goodarzi*, and **M. Abdullah Canbaz**, *"Exploring Large Language Models' Emotion Detection Abilities: Use Cases From the Middle East.,"* In 2023 IEEE Conference on Artificial Intelligence (CAI), pp. 241-244. IEEE, 2023.[**Acceptance Rate: 37%**]

8. KeeJoh O'Hearon**, Michael McKee**,Md Nour Hossain and **M. Abdullah Canbaz**, *"IoT Privacy and Security in Teaching Institutions: Inside The Classroom and Beyond, "* The 128th annual ASEE Annual Conference and Exposition - Engineering Education, 2021. [**Acceptance Rate: 38%**]

9. Zachary Patterson**, Sarah Richeson**, and **M. Abdullah Canbaz**, *"Networks of Hospitals, Patients and Organ Donations within the US, "* Complex Networks 2019: The 8th International Conference on Complex Networks and Their Applications, December 10-12, 2019, Lisbon, Portugal. [**Acceptance Rate: 32%**]

10. **M. Abdullah Canbaz**, Kalid Bakhshaliyev and Mehmet Hadi Gunes, *"Internet Characteristics in Large Scale: Router Level Topologies,"* Complex Networks 2018: The 7th International Conference on Complex Networks and Their Applications, December 11-13, 2018, Cambridge, United Kingdom. [**Acceptance Rate: 33%**]

11. **M. Abdullah Canbaz** and Mehmet Hadi Gunes, *"The Autonomous System(AS) Mapping System,"* ACM IMC 2018: The 2018 Internet Measurement Conference , October 31 - November 2 2018, Boston, MA, USA. [**Acceptance Rate: 18%**]

12. Prasun Dey, **M. Abdullah Canbaz**, Murat Yuksel, and Mehmet Hadi Gunes, *"On Correlating ISP Topologies to Their Businesses,"* IEEE ICC 2018: IEEE International Conference on Communications, Communications QoS, Reliability, and Modeling Symposium, 20-24 May 2018, Kansas City, MO, USA. [**Acceptance Rate: 36%**]

13. **M. Abdullah Canbaz**, Kalid Bakhshaliyev and Mehmet Hadi Gunes, *"Network Analysis of Router Level Topologies of Autonomous Systems,"* CompleNet 2018: International Conference on Complex Networks, 5-8 March 2018, Boston, MA. [**Acceptance Rate: 18%**]

14. **M. Abdullah Canbaz**, Kalid Bakhshaliyev, and Mehmet Hadi Gunes, *"Analysis of Path Stability within Autonomous Systems,"* IEEE M&N 2017: The 4th IEEE International Measurements and Networking Workshop, 27-29 September 2017, Naples, IT.(**Best Poster Award**) [**Acceptance Rate: 32%**]

15. **M. Abdullah Canbaz**, Murat Yuksel, and Mehmet Hadi Gunes, *"Analysis of Router Topology Effects on ISPs' Value in The Stock Market,"* NetSci 2017: International School and Conference on Network Science, June 19-23, 2017, Indianapolis, IN, USA.

16. **M. Abdullah Canbaz** and Mehmet Hadi Gunes, *"Comparative Analysis of Internet Topology Datasets,"* IEEE GI 2017: IEEE Global Internet Symposium 2017 (In conjunction with IEEE INFOCOM 2017), May 1st 2017, Atlanta, USA.

17. **M. Abdullah Canbaz** and Mehmet Hadi Gunes, *"Mapping Internet Backbones,"* ACM IMC 2016: The 2016 Internet Measurement Conference (Work-in-Progress Session), November 14-16 2016, Santa Monica, CA, USA.

18. Ibrahim Ethem Coskun, **M. Abdullah Canbaz**, Mehmet Hadi Gunes, *"Efficient Network Topology Measurement Based on Ingress to Subnet Reachability,"* IEEE WNM 2016, The 10th IEEE Workshop on Network Measurements, November 7-10, 2016, Dubai, UAE.

19. **Muhammed Abdullah Canbaz** and Mehmet Hadi Gunes, *"Data-Driven Large Scale Network-Layer Internet Simulation,"* IEEE INFOCOM 2016, IEEE International Conference on Computer Communications Student Workshop, April 10-15 2016, San Francisco, CA, USA.

** *Indicates the undergraduate students* ***** *Indicates the Ph.D. students*

Peer Reviewed Book Chapters

1. Hakan Otal*****, Steven Faraone, and **M. Abdullah Canbaz**, *" A New Perspective on ADHD Research: Knowledge Graph Construction with LLMs and Network Based Insights,"* Complex Networks & Their Applications XIII, In Proceedings of The 13th International Conference on Complex Networks and Applications (CNA 2024), December, 2024. [**Acceptance Rate: 28%**]

2. Mahsa Goodarzi*****, and **M. Abdullah Canbaz**, *" Exploring Consumer Bias Patterns in Fashion E-Commerce through LLM-Based Sentiment and Network Analysis,"* Complex Networks & Their Applications XIII, In Proceedings of The 13th International Conference on Complex Networks and Applications (CNA 2024), December, 2024. [**Acceptance Rate: 28%**]

3. Rawan Al Makinah*****, **M. Abdullah Canbaz**, and Abdulhamit Subasi, *" Depression Detection from Wearables us-ing Machine Learning Techniques,"* In Digital Healthcare, Digital Transfor-

mation and Citizen Empowerment in Asia-Pacific and Europe for a Healthier Society, Elsevier, May 2024. [**Acceptance Rate: 24%**]

4. Hakan T. Otal*, Abdulhamit Subasi, Furkan Kurt, **M. Abdullah Canbaz**, and Yasin Uzun, " *Analysis of Gene Regulatory Networks from Gene Expression Using Graph Neural Networks,*" In Digital Healthcare, Digital Transformation and Citizen Empowerment in Asia-Pacific and Europe for a Healthier Society, Elsevier, May 2024. [**Acceptance Rate: 24%**]

5. Mahsa Goodarzi*, Venkatakrishnan, Radhakrishnan*, and **M. Abdullah Canbaz**, " *Untangling Emotional Threads: Hallucination Networks of Large Language Models,*" Complex Networks & Their Applications XII, Proceedings of The Twelfth International Conference on Complex Networks and their Applications: COMPLEX NETWORKS 2023, Volume 4, March 2024. [**Acceptance Rate: 29%**]

6. Abdulhamit Subasi, Siba Smarak Panigrahi, Bhalchandra Sunil Patil, **M. Abdullah Canbaz**, and Riku Klén, " *Advanced pattern recognition tools/computer vision algorithm for the disease diagnosis,*" Elsevier Series: Intelligent Data-Centric Systems, 2022. [**Acceptance Rate: 27%**]

7. Abdulhamit Subasi, Manar Alomania, Rahaf Alsobhya, **M. Abdullah Canbaz**, " *Anomaly based intrusion detection using Ensemble Models,*" Elsevier Series: Intelligent Systems with Applications, 2021. [**Acceptance Rate: 34%**]

* *Indicates the Ph.D. students*

Peer Reviewed Journals

1. Rawan Al Makinah*, Mahsa Goodarzi*, Betul Tok** and **M. Abdullah Canbaz**, " *Decoding AI Bias: Charting AI's Bias Pathways Through Literature Insights,*" Springer Nature, AI and Ethics Journal, October 2024. [**Impact Factor: 2.2**]

2. **M. Abdullah Canbaz**, Kalid Bakhshaliyev and Mehmet Hadi Gunes, *"Investigating Characteristics of Internet Paths,"* ACM Transactions on Modeling and Performance Evaluation of Computing Systems (ToMPECS), 2019. [**Impact Factor: 1.9**]

3. Abdulhamit Subasi, **M. Abdullah Canbaz** and Jasmin Kevric, *"Epileptic seizure detection using hybrid machine learning methods,"* Neural Computing and Applications, 2019. [**Impact Factor: 1**]

4. Umit Karabiyik, **M. Abdullah Canbaz**, Tayfun Tuna, Ahmet Aksoy, Esra Akbas, Bilal Gonen, Ramazan Aygun, *"A Survey of Social Network Forensics,"* International Journal of Digital Crime and Forensics (IJDCF), 2017.

5. Tayfun Tuna, Ahmet Aksoy, **M. Abdullah Canbaz**, Esra Akbas, Umit Karabiyik, Bilal Gonen, Ramazan Aygun, *"User Characterization for Online Social Networks,"* Springer Social Network Analysis and Mining (SNAM), 2016.

* *Indicates the Ph.D. students*

Under Review

1. [**Conference**] Christoph J. Schwartz *, Hakan T. Otal * and **M. Abdullah Canbaz**, *"Game Network Fingerprinting: Approaches for Malicious Traffic Detection and Synthesis,"* In 2025 IEEE International Conference on Communications, 8–12 June 2025, Montreal, Canada. (Under Review)

2. [**Conference**] Payam Saeedi* , Mahsa Goodarzi* and **M. Abdullah Canbaz**, *"Heuristics and Biases in AI Decision-Making: Implications for Responsible AGI,"* In 2025 IEEE Conference on Artificial Intelligence (CAI), Los Angeles, CA, June 2025. (Under Review)

3. [**Conference**] Rumeysa Kara**, Betul Tok**, and **M. Abdullah Canbaz** *"BananaGuard: A Comparative Analysis of AI Models for Firearm Detection in Crowded Environments,"* In 2025 IEEE Conference on Artificial Intelligence (CAI), Los Angeles, CA, June 2025. (Under Review)

4. [**Journal**] Emmett J Hanson**, Betul Tok**, Mikail M Demir *,**M. Abdullah Canbaz**, and Mehmet Yigit, *"CRISPR-responsive reprogrammable label-free fluorescent nanoclusters for ML-assisted pathogenic genome detection in liquid matrices or solid substrate,"* In Nature Chemical Engineering, January 2025. (Under Review)

5. [**Journal**] Rawan Al Makinah*, Andrea Norcini-Pala, Lindsey Disney, and **M. Abdullah Canbaz**, *" Enhancing Mental Health Support through Human-AI Collaboration: Toward Secure and Empathetic AI-Enabled Chatbots,"* In The Springer Journal of Healthcare Informatics Research, November 2024. (Under Review)

6. [**Journal**] Venkatakrishnan, Radhakrishnan*, Mahsa Goodarzi*, Hakan Otal*, and **M. Abdullah Canbaz**, *" From Evaluation to Impersonation: LLMs in Stress Detection,"* In The Springer of Machine Learning with Applications, October 2024. (Under Review)

7. [**Conference**] Hao Jian Huang**, Bekzod Iskandarov**, Mizanur Rahman*, Hakan T. Otal*, and **M. Abdullah Canbaz**, *" Federated Learning in Adversarial Environments: Testbed Design and Poisoning Resilience in Cybersecurity,"* In IEEE/IFIP Network Operations and Management Symposium 12–16 May 2025, Honolulu, HI, USA. (Under Review)

**** *Indicates the undergraduate students* * *Indicates the Ph.D. students*

TEACHING EXPERIENCES

- **Assistant Professor** (June 2022 - Present)
  Department of Information Sciences and Technology,
  College of Emergency Preparedness, Homeland Security and Cybersecurity,
  University at Albany, SUNY, Albany, NY

  - *CINF 624 - Predictive Modeling*

  - *CINF 202 - Introduction to Data and Databases*

  - *CINF 320 - Ethical Considerations of Artificial Intelligence*

  - *CINF 135 - Concepts of Artificial Intelligence*

- **Assistant Professor** (Fall 2018 - June 2022)
  Indiana University Kokomo, Indiana

  - *Data Structures for Data Science*

  - *Introduction to Data Mining*

  - *Computer Networks*

  - *Analysis of Algorithms*

  - *Computer Programming 1 and 2*

- **Lecturer**
  CS 302 - Data Structures, University of Nevada, Reno, Nevada, Spring 2018

- **Teaching Assistant**
  Introduction to Engineering, University of Nevada, Reno, Nevada, 2014-2016

- **Teaching Assistant**
  Data Structures, University of Nevada, Reno, Nevada, Spring 2015

- **Tutor** (2007-2009)
  Math and Science, FEM Tutoring Centers, Avcilar, Istanbul, Turkey

SERVICE

University at Albany, State University of New York

- Member, AI Cluster Hire Search Committee (2023)

- Steering Committee Member, Global Center for AI in Mental Health

- Faculty Member, AI Plus Institute at UAlbany

College of Emergency Preparedness, Homeland Security, and Cybersecurity at UAlbany

- Member, Information Science Ph.D. Program Admission Committee (2023, 2024)

Departmental Committees

- Member, Departmental Curriculum Committee (2022-2023)

- Member, Departmental Ad-hoc Committee (2022-2023)

- Member, Tenure and Promotion Committee (2023)

Leadership Roles

- Undergraduate Director, Informatics Degree Program (Since July 2023)

- Director, Informatics Honors Program (Since July 2023)

Professional Service

- TPC Member, IEEE International Conference on Omni-Layer Intelligent Systems, 2025.

- TPC Member, IEEE Conference on Local Computer Networks (LCN), **since 2022**.

- TPC Member, The Conference on Empirical Methods in Natural Language Processing (EMNLP), **since 2021**.

- TPC Member, The Annual Meeting of the Association for Computational Linguistics (ACL), **since 2020**.

- TPC Member, International Conference on Complex Networks and Their Applications (CNA), **since 2018**.

- Reviewer, The 2021 IEEE Global Communications Conference (GLOBECOM), 7 -11 December 2021, Madrid, Spain.

- Reviewer, IEEE International Conference on Computer Communications (IEEE INFOCOM) 2020, Beijing, China, 2020.

- Reviewer, Elsevier/Academic Press.

- Reviewer, International School and Conference on Network Science.

- Volunteer, IEEE International Conference on Computer Communications (IEEE INFOCOM) 2016, San Francisco, California, 2016.

- Founder, Rumi Club, University of Nevada-Reno, Nevada, 2015-2016.

- Secretary, Sierra Foundation, Reno, Nevada, 2014-2015.

- Volunteer, The 20th IEEE International Workshop on Local and Metropolitan Area Networks (LANMAN) 2014, Reno, Nevada, 2014.

- Panelist, Mutual Understanding and Dialog Project, Indianapolis, Indiana, 2013.

- Executive Director, Turkish American Society of Indiana, Indianapolis, Indiana, 2012-2014.

HONORS AND AWARDS

Dissertation Awards

- **Best Dissertation Award**, Department of Computer Science and Engineering, University of Nevada Reno, with the Dissertation Title: **"Internet Topology Mining: From Big Data to Network Science"**, 2018.

- **Best Dissertation Award**, Department of Engineering , Computer Engineering Bachelor's Degree, Fatih University, 2010.

Conference and Workshop Awards

- **Best Poster Award**, The 4th IEEE International Measurements and Networking Workshop, 2017.

Travel Grants

- The Graduate Student Association Travel Grant, UNR, Fall 2017.

- **ACM SIGMETRICS** Student Travel Grant, SIGMETRICS/PERFORMANCE, 2017.

- **Network Traffic Measurement and Analysis Conference** Travel Grant, TMA, 2017.

- **International School and Conference on Network Science** Travel Grant, NetSci, 2017.

- The Graduate Student Association Travel Grant, UNR, Spring 2017.

- **IEEE INFOCOM**, NetSciCom Student Travel Grant, 2017.

- **ACM SIGMETRICS** Student Travel Grant, SIGMETRICS/PERFORMANCE, 2016.

- The Graduate Student Association Travel Grant, UNR, 2015.

Scholarships and Assistantships

- Graduate Student Full Assistantship, UNR, 2014-2018.

- The Graduate Access Grant, UNR, 2017.

- The Graduate Access Grant, UNR, 2016.

MEMBERSHIPS AND CERTIFICATES

- **Since 2014:** ACM Lifetime, IEEE; **Since 2015:** European Alliance for Innovation; **Since 2016:** ICST (The Inst. for Comp. Sciences, Social Informatics and Telecom. Engineering)

REFERENCES

Available upon request.