

# CIHAN TUNC

## CONTACT INFO

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Assistant Professor and MS in Cybersecurity Coordinator  
Department of Computer Science & Engineering  
Cihan.Tunc@UNT.edu

University of North Texas  
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## RESEARCH INTERESTS

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- Cybersecurity • Cyber-resiliency • Intrusion detection/prevention • Cyber-threat analysis in social media
- Autonomic computing • Cloud computing • Internet of Things (IoT) • Smart cities • Zero Trust Architecture

## EDUCATION

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### University of Arizona, Tucson, AZ

Aug 2011 – Jan 2015

Ph.D. in Computer Engineering (Electrical and Computer Engineering)

Dissertation: “Autonomic Cloud Resource Management”

Research: Autonomic Power, Performance, and Security Management for Cloud Systems

Advisors: Salim Hariri and Ali Akoglu

### Northeastern University, Boston, MA

Sep 2008 – May 2010

M.Sc. in Computer Engineering (Electrical and Computer Engineering)

Thesis: “Variation and Defect Tolerance for Nano Crossbars”

Advisor: Mehdi B. Tahoori

### Bahcesehir University, Istanbul, Turkey

Sep 2003 – Jun 2008

B.Sc. in Electrical & Electronics Engineering

Graduation Project: “Carry Save Tree Generation”

Advisor: H. Fatih Ugurdag

## RESEARCH FUNDING AND GRANTS

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### Current Funding

- **Siemens Corporation, Technology**, “*Model Extraction for Zero-Trust Architecture (ZTA) based Internet of Things (IoT) Compliance*,” **C. Tunc (PI)**, Budget: \$43,642, Award Period: 07/01/2021 – 12/31/2021
- **National Security Agency (NSA)**, R. Dantu (PI), C. Tunc (Co-PI), “Research & Development of Microtranscript: Immersive Cybersecurity Workforce Development Program to Prepare Current and Future Workforce in Critical Infrastructure,” \$700,000 (2024 - 2027).
- **Department of Defense**, R. Dantu (PI), **C. Tunc, C. (Co-PI)**, “Research and Development of LLM-Based Platform for Matching DCWF Job Descriptions and Curriculums,” \$2,079,950 (2024 - 2026).
- **Department of Defense, C. Tunc (PI)**, R. Dantu, “Research and Development of a Private LLM for Finding Knowledge, Skills, Abilities and Tasks (KSAT) in Curriculum, Courses, Certificates, and Assessments” \$249,939 (9/6/2024 - 9/5/2026)

### Past Funding

- **National Science Foundation (NSF)**, “*TaMaLe – Testing and Machine Learning for Context-Driven Systems*,” R. Bryce (PI) and **C. Tunc (PI)**, Total Budget: \$405,000

- **Naval Air Warfare Center (Aircraft Division)**, SBIR N211-058 “*Autonomic Protection for UMAA services*,” S. Hariri (PI), **C. Tunc (Co-PI, subcontracted)**, Sub-Budget: \$40,000 (Total Budget: \$120,000), Award Period: 14/07/2021 – 01/24/2022
- **Siemens Corporation, Technology**, “*Model Extraction for Zero-Trust Architecture (ZTA) based Internet of Things (IoT) Compliance*,” **C. Tunc (PI)**, Budget: \$43,642, Award Period: 07/01/2021 – 12/31/2021
- **AF Office of Scientific Research**, “*Resilient DDDAS-based Cloud Services (rDaaS) for Cyber Battle Management Systems*,” S. Hariri (PI), **C. Tunc (Co-PI)**, Total Budget: \$453,404 (Perc: 50%), Period: 06/15/2018 - 06/14/2021
- **National Science Foundation**, “*FCTaaS: Federated Cybersecurity Testbed as a Service*,” S. Hariri (PI), **C. Tunc (Co-PI)**, Total Budget: \$300,000 (Perc: 11%), Award Period: 10/01/2018 - 09/30/2020
- **National Institute of Standards and Technology**, *Resilient Application as a Service (RAaaS)*,” S. Hariri (PI), **C. Tunc (Co-PI)**, Total Budget: \$150,000 (Perc: 50%), Award Period: 06/01/2018 - 05/31/2020
- **National Institute of Standards and Technology (NIST)**, “*Resilient Cloud Services (RCS): Design, Analysis, and Deployment*,” S. Hariri (PI), **C. Tunc (Co-PI, 20%)**, Total Budget: \$50,000 (Perc:20%), Period: 05/01/2016 - 04/30/2017

## PUBLICATIONS

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### Thesis & Dissertation

- [TD1] **C. Tunc**, “*Autonomic Cloud Resource Management*,” **PhD Dissertation**, Jan 2015.  
 [TD2] **C. Tunc**, “*Variation and Defect Tolerance for Nano Crossbars*,” **MS Thesis**, May 2010.

### Text Book

- [TB1] S. Hariri and **C. Tunc**, “*High Performance Distributed Computing Systems: Architecture, Networking, and Programming*,” Sentia Publishing, ISBN: 978-0-9990053-2-3, 2017.

### Book Chapters

- [BC1] J. Pacheco, **C. Tunc**, and S. Hariri, “*Resilient Communications and Command and Control of Cyber-Physical Systems*,” in “*Enhancing Cyber Resilience of Communications, Command and Control of Large-Scale Systems with Moving Target Defense*”, (to appear).  
 [BC2] J. Pacheco, **C. Tunc**, and S. Hariri, “*Smart Cities*,” in “*Cyber Resilience of Systems and Networks*,” Springer, ISBN: 978-3-319-77491-6, 2019.  
 [BC3] **C. Tunc**, S. Hariri, and A. Battou, “*A Design Methodology for Developing Resilient Cloud Services (RCS)*,” in “*Handbook of System Safety and Security: Cyber Risk and Management, Cyber Security, Threat Analysis, Functional Safety, Software Systems, and Cyber Physical Systems*,” edited by Edward Griffor, Elsevier Inc., ISBN: 978-0-12-803773-7, 2016.

### Journals and Magazines

- [J1] F. Shibli, B. Tufekci, **C. Tunc**, and R. Laidig, “*Leveraging LLM Decision-Making in the Internet of Drone Things (IoDT) Ecosystem*,” *Journal on Autonomous Transportation Systems* (2025).  
 [J2] F. Shibli, B. Tufekci, **C. Tunc**, and R. Bryce. “*Streamlined internet of drone things (IoDT) simulator*.” *Cluster Computing* 28, no. 6 (2025): 390.  
 [J3] H. Namdari, V. Morales Avalos, A. Alshehri, **C. Tunc**, and R. Dantu, “*Enhanced trust in IoT environments: utilizing perfect Bayesian equilibrium, exponential smoothing, and machine learning*,” *Cluster Computing* 28, no. 9 (2025): 572.  
 [J4] C. Wu, S. Shao, **C. Tunc**, P. Satam, and S. Hariri, “*An explainable and efficient deep learning framework for video anomaly detection*,” *Cluster computing* 25, no. 4 (2022): 2715-2737.

- [J5] S. Shao, **C. Tunc**, A. Al-Shawi, and S. Hariri, “An Ensemble of Ensembles Approach to Author Attribution for Internet Relay Chat Forensics,” *ACM Transactions on Management Information Systems (TMIS)* 11, no. 4 (2020): 1-25.
- [J6] **C. Tunc**, E. Blasch, Y. Badr, and S. Hariri, “*Service-Oriented Infrastructure for Resilient DDDAS-based Cyber Battle Management*,” *submitted to Future Generation Computer Systems - Special Issue on Self-Protecting Systems*, 2019.
- [J7] S. Shao, **C. Tunc**, A. Al-Shawi, S. Hariri, “*Feature Engineering for Machine Learning-Based Author Identification in Internet Relay Chat*,” *submitted to IEEE Transactions on Information Forensics and Security*, 2019
- [J8] J. Bernard, S. Shao, **C. Tunc**, H. Kheddouci, and S. Hariri, “*Cyber-Threat Detection in Internet Relay Chat Channels through Quasi-cliques based Analysis*,” *submitted to Social Network Analysis and Mining, Springer*, 2019
- [J9] **C. Tunc**, D. Machovec, N. Kumbhare, A. Akoglu, S. Hariri, and H.J. Siegel, “*Value of Service Based Resource Management for Large-Scale Computing Systems*,” *Springer Cluster Computing*, vol. 20, no. 3, pp. 2013-2030, Sep. 2017.
- [J10] J. Pacheco, **C. Tunc**, P. Satam, and S. Hariri, “*Secure and Resilient Cloud Services for Enhanced Living Environments*,” *IEEE Transactions on Cloud Computing, Special Issue on Enhanced Living Environments: Algorithms, Architectures and Platforms (Cloud4ELE)*, vol. 3, no. 6, pp. 44-52, Nov. 2016.
- [J11] D. Machoveca, B. Khemkaa, N. Kumbhare, S. Pasrichaa, A.A. Maciejewska, H.J. Siegel, A. Akoglu, G.A. Koenig, S. Hariri, **C. Tunc**, M. Wright, M. Hilton, R. Rambharos, C. Blandin, F. Fargo, A. Louri, and N. Imam, “*Utility-Based Resource Management in an Oversubscribed Energy-Constrained Heterogeneous Environment Executing Parallel Applications*,” *Elsevier Parallel Computing (ParCo)*, Nov. 2016.
- [J12] S. Hariri, J. Pacheco, **C. Tunc**, and Y. Al-Nashif, “*A Methodology for Designing Resilient and Smart Critical Infrastructures*,” *Electrical and Computer Engineering Department Heads Association*, 2015.
- [J13] **C. Tunc** and S. Hariri, “*CLaaS: Cybersecurity Lab as a Service*,” *Journal of Internet Services and Information Security (JISIS)*, vol. 5, no. 4, pp. 41-59, Nov. 2015.

### Conferences and Workshops

- [C1] R.K Pandit, K. Morozov, and **C. Tunc**, “Privacy-Preserving Medical Risk Assessment Using Homomorphic Encryption,” *2025 IEEE Secure Development Conference (SecDev)*, pp. 37-44. IEEE, 2025.
- [C2] R. Laidig, F. Shibli, B. Tufekci, F. Dürr, and **C. Tunc**, “Improving Drone Communication QoS Through Adaptive Redundancy,” *2025 34th International Conference on Computer Communications and Networks (ICCCN)*, pp. 1-9. IEEE, 2025.
- [C3] F.J. Alruwaili and **C. Tunc**, “A Lightweight and Efficient Intrusion Detection System for Drone Networks,” *2025 5th Intelligent Cybersecurity Conference (ICSC)*, pp. 219-226. IEEE, 2025.
- [C4] V.M. Avalos, and **C. Tunc**, “Trust Evaluation Based on a Risk Assessment and Game Theory for Virtual Machines in a Cloud Environment,” *2025 10th International Conference on Fog and Mobile Edge Computing (FMEC)*, pp. 58-65. IEEE, 2025.
- [C5] A.R. Fausak, **C. Tunc**, and A.T. Fausak, “Malicious Intent Detection Framework for Social Networks,” *2024 IEEE/ACS 21st International Conference on Computer Systems and Applications (AICCSA)*, pp. 1-6. IEEE, 2024.
- [C6] A. Alshehri, B. Tufekci, and **C. Tunc**, “Identification Management for Zero Trust Through Network Analysis,” *2024 IEEE/ACS 21st International Conference on Computer Systems and Applications (AICCSA)*, pp. 1-6. IEEE, 2024.

- [C7] A.T. Fausak, **C. Tunc**, and A.R. Fausak, "Crowd Counting Camera Array and Correction," 2024 IEEE/ACS 21st International Conference on Computer Systems and Applications (AICCSA), pp. 1-8. IEEE, 2024.
- [C8] B. Tufekci, V. Quach, **C. Tunc**, and R. Dantu, "DUDE-IDS: A Framework for Efficiently Detecting Network-Related Drone Cyberattacks," 2024 11th International Conference on Internet of Things: Systems, Management and Security (IOTSMS), pp. 240-247. IEEE, 2024.
- [C9] B. Tufekci, A.A. Burak, **C. Tunc**, and K. Morozov, "Enhancing the security of the mavlink with symmetric authenticated encryption for drones," 2024 11th International Conference on Internet of Things: Systems, Management and Security (IOTSMS), pp. 58-65. IEEE, 2024.
- [C10] V. Quach, B. Tufekci, **C. Tunc**, and R. Dantu, "Hazardous Area Aware Path-Planning for Drone Swarms," 2024 IEEE International Conference on Mobility, Operations, Services and Technologies (MOST), pp. 168-177. IEEE, 2024.
- [C11] A. Alshehri, and **C. Tunc**, "Zero trust engine for iot environments," 2023 20th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA), pp. 1-3. IEEE, 2023.
- [C12] S. Shaik, **C. Tunc**, and K. Morozov, "Intrusion Detection for Additive Manufacturing Systems and Networks," 2023 20th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA), pp. 1-3. IEEE, 2023.
- [C13] D. Petrou, V. Martinez-Gil, F. Castillo, **C. Tunc**, and R. Bryce, "Twitter Account Analysis for Drug Involvement Detection," In 2023 3rd Intelligent Cybersecurity Conference (ICSC), pp. 9-16. IEEE, 2023.
- [C14] H. Namdari, **C. Tunc**, and R. Dantu, "Phoenix: IoT Trust Evaluation Using Game Theory with Second Chance Protocol," 2023 10th International Conference on Internet of Things: Systems, Management and Security (IOTSMS), pp. 117-124. IEEE, 2023.
- [C15] E.B. Putnam, D.N. Senarath, G.R. Urquijo, **C. Tunc**, and R. Bryce, "A lightweight drone simulator," 2023 Tenth International Conference on Software Defined Systems (SDS), pp. 52-59. IEEE, 2023.
- [C16] B. Tufekci, **C. Tunc**, and R. Dantu, "Efficient Motion Control Strategy for Drone Swarms," 2023 10th International Conference on Recent Advances in Air and Space Technologies (RAST), pp. 01-06. IEEE, 2023.
- [C17] **C. Tunc**, J. Durflinger, C. Mahmoudi, and V. Formicola, "Autonomic zta-based network management engine (aznme)," 2022 IEEE International Symposium on Software Reliability Engineering Workshops (ISSREW), pp. 25-30. IEEE, 2022.
- [C18] **C. Tunc**, and S. Hariri, "Self-Protection for Unmanned Autonomous Vehicles (SP-UAV): Design Overview and Evaluation," 2022 IEEE International Conference on Autonomous Computing and Self-Organizing Systems Companion (ACSOS-C), pp. 128-132. IEEE, 2022.
- [C19] B. Tufekci, and **C. Tunc**, "Vulnerability and threat analysis of uavs," 2021 IEEE/ACS 18th International Conference on Computer Systems and Applications (AICCSA), pp. 1-2. IEEE, 2021.
- [C20] S. Shao, P. Satam, S. Satam, K. Al-Awady, G. Ditzler, S. Hariri, and **C. Tunc**, "Multi-layer mapping of cyberspace for intrusion detection." In 2021 IEEE/ACS 18th International Conference on Computer Systems and Applications (AICCSA), pp. 1-8. IEEE, 2021.
- [C21] H. Namdari and **C. Tunc**, "Toward Resilience Methods in Cloud Computing," 2021 IEEE/ACS 18th International Conference on Computer Systems and Applications (AICCSA), Tangier, Morocco, 2021, pp. 1-2, doi: 10.1109/AICCSA53542.2021.9686860
- [C22] F. Fargo, O. Franza, **C. Tunc**, and S. Hariri, "VM Introspection-based Allowlisting for IaaS," In 2020 7th International Conference on Internet of Things: Systems, Management and Security (IOTSMS), pp. 1-4. IEEE, 2020.
- [C23] C. Wu, S. Shao, **C. Tunc**, and S. Hariri, "Video anomaly detection using pre-trained deep convolutional neural nets and context mining," 2020 IEEE/ACS 17th International Conference on Computer Systems and Applications (AICCSA), pp. 1-8. IEEE, 2020.
- [C24] L. Yao, **C. Tunc**, P. Satam, and S. Hariri, "Resilient Machine Learning (rML) Ensemble Against Adversarial Machine Learning Attacks," International Conference on Dynamic Data Driven Application Systems, pp. 274-282. Springer, Cham, 2020.

- [C25] S. Shao, **C. Tunc**, A. Al-Shawi, and S. Hariri, “Automated Twitter Author Clustering with Unsupervised Learning for Social Media Forensics,” 16th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2019), Abu Dhabi, UAE, Nov. 2019.
- [C26] S. Shao, **C. Tunc**, A. Al-Shawi, and S. Hariri, “One-class Classification with Deep Autoencoder Neural Networks for Author Verification in Internet Relay Chat,” 16th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2019), Abu Dhabi, UAE, Nov. 2019.
- [C27] J. H. Pacheco Ramirez, V. Benitez, **C. Tunc**, and C. Grijalva Lugo, “Anomaly Behavior Analysis for Fog Nodes Availability Assurance in IoT Applications,” Workshop on Automation of Cloud Configuration and Operations (ACCO 2019), co-located with AICCSA 2019, Abu Dhabi, UAE, Nov., 2018.
- [C28] F. Fargo, O. Franza, **C. Tunc**, and S. Hariri, “Autonomic Resource Management for Power, Performance, and Security in Cloud Environment,” Workshop on Automation of Cloud Configuration and Operations (ACCO 2019), co-located with AICCSA 2019, Abu Dhabi, UAE, Nov., 2018.
- [C29] M. Merzouki, C. Mahmoudi, R. Bohn, **C. Tunc**, “Security Automation for Cloud-Based IoT Platforms,” The 2019 IEEE International Conference on Internet of Things, Atlanta, USA, Jul. 2019.
- [C30] J. Bernard, S. Shao, **C. Tunc**, H. Kheddouci, and S. Hariri, “Quasi-Cliques Analysis for IRC Channel Thread Detection,” Complex Networks 2018, UK, Dec. 2018.
- [C31] S. Shao, **C. Tunc**, and S. Hariri, “Autonomic Author Identification in Internet Relay Chat (IRC),” 15th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2018), Aqaba, Jordan, Nov. 2018.
- [C32] J. Pacheco, **C. Tunc**, and S. Hariri, “Security Framework for IoT Cloud Services,” Workshop on Automation of Cloud Configuration and Operations (ACCO 2018), Jordan, Oct.-Nov., 2018.
- [C33] M. Yang, I.B. Djordjevic, **C. Tunc**, S. Hariri, and A. Akoglu, “An Optical Interconnect Network Design for Dynamically Composable Data Centers,” 19<sup>th</sup> IEEE International Conference on High Performance Computing and Communications (HPCC 2017), Bangkok, Thailand, Dec. 2017,
- [C34] N. Kumbhare, **C. Tunc**, D. Machovec, A. Akoglu, S. Hariri, and H.J. Siegel, “Value-Based Scheduling for Oversubscribed Power-Constrained Homogeneous HPC Systems,” IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2017), Tucson, Arizona, USA, Sep. 2017.
- [C35] **C. Tunc**, S. Hariri, and Y. Badr, “Resilient Dynamic Data Driven Application Systems as a Service (rDaaS): A Design Overview,” Workshop on InfoSymbiotics: DDDAS Dynamic Data Driven Applications Systems (InfoSymbiotic:DDDAS17) in IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2017), Tucson, Arizona, USA, Sep. 2017.
- [C36] S. Shao, **C. Tunc**, P. Satam, and S. Hariri, “Real-time IRC Threat Detection Framework,” The 1st International Workshop on Autonomics and Cloud Security (ACS) in IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2017), Tucson, Arizona, USA, Sep. 2017.
- [C37] **C. Tunc**, S. Hariri, M. Merzouki, C. Mahmoudi, F.J. de Vault, J. Chbili, R. Bohn, and A. Battou, “Cloud Computing Security Automation Framework,” The 1st International Workshop on Autonomics and Cloud Security (ACS) in IEEE Intn’l Conference on Cloud and Autonomic Computing (ICCAC 2017), Tucson, Arizona, USA, Sep. 2017.
- [C38] **C. Tunc**, F. Fargo, Y. Al-Nashif, and S. Hariri, “Autonomic Cross-Layer Management of Cloud Resources Framework,” The IEEE Workshop on Automation of Cloud Configuration and Operations (ACCO 2017) in IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2017), Tucson, Arizona, USA, Sep. 2017.
- [C39] A.T. Ozdemir, **C. Tunc**, and S. Hariri, “Autonomic Fall Detection System,” The IEEE Workshop on Automation of Cloud Configuration and Operations (ACCO 2017) in IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2017), Tucson, Arizona, USA, Sep. 2017.
- [C40] N. Kumbhare, **C. Tunc**, S. Hariri, I. Djordjevic, A. Akoglu, and H.J. Siegel, “Just In Time Architecture (JITA) for Dynamically Composable Data Centers,” 13<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2016), Agadir, Morocco, Nov. 2016,
- [C41] **C. Tunc**, N. Kumbhare, A. Akoglu, S. Hariri, D. Machovec, and H.J. Siegel, “Value of Service Based Task Scheduling for Cloud Computing Systems,” IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2016), Augsburg, Germany, Sep. 2016.

- [C42] J. Yu, **C. Tunc**, and S. Hariri, “Automated Framework for Scalable Collection and Intelligent Analytics of Hacker IRC Information,” IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2016), Augsburg, Germany, Sep. 2016.
- [C43] S. Gu, L. Yao, **C. Tunc**, A. Akoglu, S. Hariri, and E. Ritchie, “An Autonomic Workflow Performance Manager for Weather Research and Forecast Workflows,” IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2016), Augsburg, Germany, Sep. 2016.
- [C44] J. Pacheco, **C. Tunc**, and S. Hariri, “Design and Evaluation of Resilient Infrastructures Systems for Smart Cities,” IEEE International Smart Cities Conference (ISC2), Trento, Italy, Sep. 2016.
- [C45] D. Machovec, **C. Tunc**, N. Kumbhare, B. Khemka, A. Akoglu, S. Hariri, and H.J. Siegel, “Value-Based Resource Management in High-Performance Computing Systems,” 7<sup>th</sup> ACM Workshop on Scientific Cloud Computing (ScienceCloud’16), Kyoto, Japan, Jun. 2016.
- [C46] S. Hariri, **C. Tunc**, P. Satam, F. Al-Moualem, and E. Blasch, “DDDAS-Based Resilient Cyber Battle Management Services (D-RCBMS),” IEEE 22nd International Conference on High Performance Computing Workshops (HiPCW), Bangalore, India, Dec. 2015.
- [C47] J.H. Pacheco Ramirez, B. AlBaalbaki, **C. Tunc**, S. Hariri, and Y. Al-Nashif, “Anomaly Behavior Analysis System for ZigBee in Smart Buildings,” 12<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2015), Marrakech, Morocco, Nov. 2015.
- [C48] **C. Tunc**, S. Hariri, F. Montero, F. Fargo, and P. Satam, “CLaaS: Cybersecurity Lab as a Service -- Design, Analysis, and Evaluation,” IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2015), Boston, MA, USA, Sep. 2015.
- [C49] **C. Tunc**, S. Hariri, Y. Al-Nashif, F. Montero, F. Fargo, and P. Satam, “Teaching and Training Cybersecurity as a Cloud Service,” IEEE International Workshop on Autonomic Cloud Cybersecurity (ACC 2015) in 2015 International Conference on Cloud and Autonomic Computing (ICCAC 2015), Boston, MA, USA, Sep. 2015.
- [C50] B. Khemka, D. Machovec, C. Blandin, H.J. Siegel, S. Hariri, A. Louri, **C. Tunc**, F. Fargo, and A.A. Maciejewski. “Resource Management in Heterogeneous Parallel Computing Environments with Soft and Hard Deadlines,” The XI Metaheuristics International Conference (MIC 2015), Agadir, Morocco, Jun. 2015.
- [C51] **C. Tunc**, F. Fargo, Y. Al-Nashif, S. Hariri, and J. Hughes, “Autonomic Resilient Cloud Management (ARCM): Design and Evaluation,” 2014 International Conference on Cloud and Autonomic Computing (CAC 2014), London, United Kingdom, Sep. 2014.
- [C52] F. Fargo, **C. Tunc**, Y. Al-Nashif, A. Akoglu, and S. Hariri, “Autonomic Workload and Resources Management of Cloud Computing Services,” 2014 International Conference on Cloud and Autonomic Computing (CAC 2014), London, United Kingdom, Sep. 2014.
- [C53] F. Fargo, **C. Tunc**, Y. Al-Nashif, and S. Hariri, “Autonomic Performance-per-Watt Management (APM) of Cloud Resources and Services,” ACM Cloud and Autonomic Computing Conference, Miami, Florida, USA, Aug. 2013.
- [C54] B. Yuce, S. Korkmaz, V.B. Esen, F. Temizkan, **C. Tunc**, G. Guner, I.F. Baskaya, I. Agi, G. Dunder, and H.F. Ugurdag, “Synthesis of Clock Trees for Sampled-Data Analog IC Blocks,” East-West Design & Test Symposium, Rostov-on-Don, Russia, Sep. 2013.
- [C55] F. Ugurdag, O. Keskin, **C. Tunc**, F. Temizkan, G. Fici, and S. Dedeoglu, “RoCoCo: Row and Column Compression for High-Performance Multiplication on FPGAs,” East-West Design & Test Symposium, Sevastopol, Ukraine, Sep. 2011 (*outstanding paper award*).
- [C56] **C. Tunc** and M.B. Tahoori, “On-the-fly Variation Tolerant Mapping in Crossbar Nano-Architectures,” IEEE VLSI Test Symposium (VTS), Santa Cruz, California, USA, Apr. 2010.
- [C57] **C. Tunc** and M.B. Tahoori, “Variation Tolerant Logic Mapping for Crossbar Array Nano Architectures,” IEEE Asia and South Pacific Design Automation Conference (ASP-DAC), Taipei, Taiwan, Jan. 2010.

## WORK EXPERIENCE

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### The University of North Texas, Denton, Texas

#### Assistant Professor

Aug 2020 – Present

#### Research:

- Research interests include cybersecurity, cloud computing, autonomic computing, cloud resiliency, cyber-threat analysis and prevention systems, Internet of Things (IoT), industrial IoT, Unmanned Vehicles (UV) including drones and their management and security, power and performance management for large-scale systems, social media analysis for cyber-threats.

#### Teaching:

- CSCE 4555/5555 – Computer Forensics (Fall 2025): 38 students)
- CSCE 3560/5562 – Cloud Security (Spring 2025): 44 students
- CSCE 6933 – Advanced Topics in Computer Science and Engineering (Spring 2025): 12 students
- CSCE 5550 – Introduction to Computer Security (Fall 2024): 21 students
- CSCE 3560/5562 – Cloud Security (Spring 2024): 29 students
- CSCE 6933 – Advanced Topics in Computer Science and Engineering (Spring 2024): 4 students
- CSCE 5550 – Introduction to Computer Security (Fall 2023): 62 students
- CSCE 3560/5933 – Computer Systems Security (Spring 2023): 36 students
- CSCE 5550 – Introduction to Computer Security (Fall 2022): 71 students
- CSCE 5933 – Topics in CSCE (Spring 2022): 11 students
- CSCE 3560 – Computer Systems Security (Spring 2022): 16 students
- CSCE 6940 – Individual Research (Spring 2022): 2 students
- CSCE 5950 – Master's Thesis (Spring 2022): 1 students
- CSCE 3600 – Principles of Systems Programming (Fall 2021): 48 students
- CSCE 3600 – Principles of Systems Programming *Recitations* (Fall 2021): 115 students
- CSCE 6940 – Individual Research (Fall 2021): 2 students
- CSCE 5550 – Introduction to Computer Security (Spring 2021): Hybrid due to COVID-19, 63 students
- CSCE 5550 – Introduction to Computer Security (Fall 2020): Completely online due to COVID-19, 18 students

#### Service:

- MS in Cybersecurity Coordinator: Jan 2025 – Present
- Alternate PoC for BS in Cybersecurity and BS in Computer Science with Security Certificate program of studies designated by NSA: Jan 2024 – Present
- College-level IT Support committee member: Aug 2024 – Present
- Grade Appeal committee member: Aug 2021 – Present
- Graduate committee member: Sep 2020 – Present
- Distinguished Speaker Organizer: Aug 2021 – Present
- Clinical Professor Search committee member: Oct 2021 – Nov 2022
- Department representative at CMD-IT/ACM Richard Tapia Conference, September 16-18, 2020

### The University of Arizona, Tucson, Arizona

#### Research Assistant Professor

May 2015 – Aug 2020

#### Research Experiences:

- Autonomic computing, cloud resiliency, cybersecurity, cyber-threat analysis and prevention systems, Cybersecurity Lab as a Service (CLaaS), Internet of Things (IoT), power and performance management for large-scale systems. (For more information, please refer to the Projects section)
- Development of research projects and assisting in and writing technical proposals.
- Coordination of various international conferences, workshops, meetings.

- Management and maintenance of the platforms and infrastructures at the Autonomic Computing Lab (ACL).
- Assist in developing cybersecurity, cloud, IoT based testbeds for research and experimentation.

**Teaching Experiences:**

- Instructor for “ECE 509 – Cybersecurity: Concept, Theory, and Practice” during Fall 2019 – this is a completely *online class* with 19 grad-level students
- Co-instructing (teaching, lecturing, and advising) students (together with Prof. Salim Hariri) through the following grad-level courses (with both in-class and online students):
  - ECE 524 – Fundamentals of Cloud Security (Spring 2018)
  - ECE 677 – Distributed Computing System (Fall 2015, 2016, and 2017)
  - ECE 509 – Cybersecurity: Concept, Theory, and Practice (Spring 2015, 2016, 2017, and 2018)
- Supervision/mentoring graduate- (both PhD and MS) and undergraduate-level students (more info below)

**National Institute of Standards and Technology (NIST), Gaithersburg, Maryland**

**Guest Researcher**

**Sep 2016 – Present**

- Research and development on the cloud computing system management and security automation.
- Data collection from all the entities in a cyber-environment for the analysis and security.

**Avirtek, Inc., Tucson, Arizona**

**Research Scientist Consultant**

**May 2015 – May 2017**

- Avirtek AIM (Automated & Integrated Management) system development and integration.
- Automation of the system installation and configuration.
- Development of new technologies for Avirtek systems
  - Securing commercial AIM products that operate under a licensed environment only.
  - Building autonomic computing-based management modules.
  - Collection of the cyber-environment data including network, computers, and users.
- Guiding/mentoring software engineers.
- Assisting in the preparation of the proposals between Avirtek and The University of Arizona.

**The University of Arizona, Tucson, Arizona**

**Graduate Research Assistant**

**Aug 2011 – Jan 2015**

- Research on autonomic power and performance management for cloud computing systems.
- Development of AskCyPert – Cybersecurity as a Service (CLaaS) backend.
- Research and development of acceleration of hypothetical LDPC decoders using FPGAs.
- Responsible for the platforms and infrastructures of the ACL lab at The University of Arizona.

**Graduate Teaching Assistant**

**Aug 2013 – Dec 2014**

- Teaching MPI and OpenMP for “ECE677 – Distributed Computing System” (Fall 2013 and Fall 2014). Responsibilities included setup, configuration, and maintenance of the systems required during the class, as well as grading homework, term papers, and projects.
- Grading homework and projects for “ECE506 – Reconfigurable Computing” (Spring 2014).

**Samsung Research America, Dallas, Texas**

**R&D Engineering Intern**

**May 2013 – Aug 2013**

- Design and optimization of a MIMO detector architecture based on K-Best algorithm for Xilinx Virtex-6 (XCVLX550T) to be used in next-generation WiFi systems.
- Implementation of the required blocks using Verilog and Xilinx CoreGen to achieve very high throughput.
- Optimization of the algorithm and implementation for the high-performance requirements.

**Ozyegin University, Istanbul, Turkey**

**Research Assistant**

Sep 2010 – Aug 2011

- Research on computer arithmetic, specifically on row and column compressors, to accelerate the summation and multiplication operations.

**Instructor/Teaching Assistant**

Jan 2011 – Jul 2011

- Teaching 23 high-school students on making a line-following robot (its designing, electronics components, and programming) in two weeks from scratch during RoboKamp at 2011.
- Grading and assisting Java based “CS 101 – Computer Programming”.
- Assisting “EE 564 – Computer Architecture & Performance”.

**Vestel Corporation, Manisa, Turkey**

Lab Instructor

Sep 2010 – Dec 2010

- Instruction of lab session of the “Embedded Systems Design” course, which included Computer Architecture, PIC programming, and Embedded System Design using FriendlyARM boards.

**Northeastern University, Boston, MA****Research Assistant**

Sep 2008 – May 2010

- Research on “Variation and Defect Tolerance for Nano Crossbars”, (*Please refer to the Projects section*)

**Teaching Assistant**

Sep 2008 – May 2010

- Instruction “EECE 2413 – Electronics Lab” (Fall 2009 and Spring 2010).
- Grading “EECE 3324 – Computer Architecture and Organization” (Spring 2009).
- Grading “EECE 2312 – Digital Logic Design” (Fall 2008).

**Bahcesehir University, Istanbul, Turkey**

Undergraduate Lab Assistant

Feb 2007 – Jun 2007

- Research on FPGA design and design automation.
- Helping students in the FPGA-based “Digital System Design Lab” (Fall 2007).

**POSTERS, PRESENTATIONS, TALKS**

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**Talks**

- AI summer research program, July 15, 2025 (organized by Mark Albert)
- **Invited Speaker:** “Internet of Drone Things (IoDT) Ecosystem: Problems and Research,” Ozyegin University, Istanbul, Turkey, Oct 17, 2024
- **Invited Speaker:** “Cybersecurity for Internet of Drone Things (IoDT) Environments,” Atlas University, Istanbul, Turkey, Oct 15, 2024
- **Keynote Speaker:** “Cybersecurity - A growing concern not only for end-users,” Intel Software Professionals Conference (SWPC), Oct 2022
- **Keynote Speaker:** “*Growing Concern of Information Technologies: Cybersecurity*”, Intel Software Professionals Conference (SWPC), Oct. 18, 2021
- **Keynote Speaker:** “*Cloud Computing & IoT Challenges and Approaches*,” 4th International Conference on Life and Engineering Sciences (ICOLES 2021), Sep. 24, 2021
- **Invited Guest Speaker:** “*Cloud Computing for IoT: Challenges and Approaches*,” MS program in IoT and AI at Universidad de Sonora (University of Sonora), Oct. 14, 2020
- **Talk:** “*Welcome to Cybersecurity*”, Navajo Technical University, Crownpoint, New Mexico, Dec. 2019
- **Talk:** “*Cloud Computing Infrastructure and Security*”, American University of Malta, Malta, Nov. 2019
- **Project presentation:** “*IRC User Identification for Threat Detection*”, Franco-American Workshop, Lyon, France, Jul. 2018
- **Project presentation:** “*Cloud Security Automation*”, Franco-American Workshop, Lyon, France, Dec. 2017

- **Project presentation:** “*IRC Chat Analysis for Hacker Behavior*”, Franco-American Workshop, Lyon, France, Dec. 2017
- **Project presentation:** “*Cloud Computing Resiliency Through Dynamic Redundancy*,” Simposio Internacional de Ingeniería, Sistemas y Tecnología, Hermosillo, Mexico, Feb. 2014 (presentation)
- **Invited lecturer:** “*Parallel Distributed Computing*,” Simposio Internacional de Ingeniería, Sistemas y Tecnología, Hermosillo, Mexico, Feb. 2014
- **Talk:** “*Autonomic Computing Lab*,” Arizona GenCyber Cybersecurity Camp, The University of Arizona, 2014 and 2015 (talk)
- **Talk:** “*Autonomic Management and Cybersecurity*” during CAT Vehicle research experience for undergraduate program seminar talk, 2014, 2015, and 2017, PI: Jonathan Sprinkle

### Posters

- **C. Tunc**, S. Hariri, “*Autonomic Security Compliance Framework*”, NSF CAC Semiannual Meeting, Lubbock, Texas, Oct. 2017
- **C. Tunc**, S. Hariri, and F. Montero, “*Autonomic Security Compliance Engine (ASCE)*,” Semi-annual NSF Cloud and Autonomic Computing Center Meeting, Tucson, Arizona, Apr. 2017
- F. Fargo, **C. Tunc**, Y. Al-Nashif, S. Hariri, and A. Akoglu, “*Autonomic Cloud Management System*,” Franco-American Workshop, Tucson, Arizona, USA, 2014
- Z. Li, F. Fargo, **C. Tunc**, Y. Al-Nashif, S. Hariri, and A. Akoglu, “*Cloud Autonomic Manager (CAM)*”, NSF CAC Semiannual Meeting, Tucson, AZ, 2011

## PROFESSIONAL ACTIVITIES

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### Journal Associate Editor

- Associate Editor for Springer Cluster Computing

### Journal Reviewer

- Springer Cluster Computing
- IEEE Transactions on Cloud Computing
- IEEE Pervasive Computing
- ACM Transactions on Management Information Systems
- Elsevier Computer Standards & Interfaces
- Elsevier Future Generation Computer Systems
- Elsevier Computers and Electrical Engineering
- Elsevier Computers & Security
- IEEE Transactions on Sustainable Computing

### Conference Program Chair & Co-Chair

- Program Co-Chair, *The IEEE Workshop on Automation of Cloud Configuration and Operations (ACCO 2019, co-located with AICCSA 2019)*, Abu Dhabi, AUE, 2019
- Program Co-Chair, *The IEEE Workshop on Automation of Cloud Configuration and Operations (ACCO 2018, co-located with AICCSA 2018)*, Aqaba, Jordan, 2018
- Program Co-Chair, *The IEEE Workshop on Automation of Cloud Configuration and Operations (ACCO 2017, co-located with ICCAC 2017)*, Tucson, AZ, USA, 2017
- Program Co-Chair, *IEEE International Workshop on Big Data Analytics for Cybersecurity Computing (BDAC 2016, co-located with Intelligence and Security Informatics (ISI 2016))*, Tucson, AZ, USA, 2016

### Conference Chair

- General chair for 21<sup>st</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)
- Publication and Finance Chair: 22<sup>nd</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)
- Publication and Finance Chair: 21<sup>st</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)
- Publication and Finance Chair: 20<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2023), Giza, Egypt
- Program Co-Chair and Publication Chair: 19<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2022), Abu Dhabi, UAE
- Registration, Finance, and Publication Chair, *18<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2021)*, Morocco, 2021 (online)
- Registration, Finance, and Publication Chair, *17<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2020)*, Antalya, Turkey, 2020 (Online)
- Publicity Chair, The IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS), Washington DC, 2020
- Registration, Finance, and Publication Chair, *16<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2019)*, Abu Dhabi, UAE, 2019
- Proceedings Chair, *The International Conference on Big Data & Cybersecurity Intelligence (BDCSIntell'2018)*, Beirut, Lebanon, 2018
- Registration, Finance, and Publication Chair, *15<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2018)*, Aqaba, Jordan, 2018
- Registration, Finance, and Publication Chair, *14<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2017)*, Hammamet, Tunisia, 2017
- Registration, Finance, and Publication Chair, *IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2017)*, Tucson, AZ, USA, 2017
- Registration, Finance, and Publication Chair, *13<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2016)*, Agadir, Morocco, 2016
- Publication Chair, *IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2016)*, Augsburg, Germany, 2016
- Registration and Finance Chair, *12<sup>th</sup> ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2015)*, Marrakech, Morocco, 2015
- Registration and Publication Chair, *IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2015)*, Boston, MA, USA, 2015

#### **Conference Technical Program Committee member**

- 2021 Springer Symposium on Intelligent and Autonomous Systems (SIAS 2021), Tallinn, Estonia, 2021
- The 11th IEEE International Conference on Cloud Computing Technology and Science (CloudCom'19), Sydney, Australia, 2019
- 2018 Artificial Intelligence and Cloud Computing Conference (AICCC 2018), Tokyo, Japan, 2018
- IEEE Global Communications Conference 2018, UAE, 2018
- Foundation and Applications of Self\* Systems (FAS\* 2018) Posters and Demos Session, Trento, Italy, 2018
- 6th International Conference on Control Engineering & Information Technology (CEI'18), Istanbul, Turkey, 2018
- International Workshop on Architectures for Future Mobile Computing and Internet of Things (FMCIoT'2018), Tangier, Morocco, 2018
- 10<sup>th</sup> IEEE International Conference on Cloud Computing Technology and Science (CloudCom'18), Cyprus, 2018

- 9<sup>th</sup> IEEE International Conference on Cloud Computing Technology and Science (CloudCom'17), Hong Kong, 2017
- IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2017), Tucson, AZ, USA, 2017
- IEEE International Workshop on Autonomic Cloud Cybersecurity (ACC 2015, co-located with ICCAC 2015), Boston, MA, USA, 2015

#### **Additional Duties**

- Subreviewer for various conferences, such as IEEE Global Communications Conference (GlobCom 2018), International World Wide Web Conference (WWW 2016), The International Conference on Information and Communication Systems (ICICS 2014 and 2015), International Conference on Very Large-Scale Integration (VLSI-SoC 2013, 2014, and 2015), NASA/ESA Conference on Adaptive Hardware and Systems (AHS 2013 and 2007)
- PhD forum mentor for the students attending AICCSA 2019 and AICCSA 2018

### **EDUCATIONAL ACTIVITIES**

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#### **Graduated Supervised Students**

- **PhD students:** Amal Alshehri (passed readiness exam), Victor Morales, Fatima Shibli, Andrew Fausak, Andy Fausak, Robert Smith (6 students)
- **MS students:** Danielle Hess (thesis)
- **PhD student(s) I graduated:** Fawaz Alruwaili, Burak Tufekci
- **MS student(s) I graduated with thesis:** James Durflinger, Andrew Fausak, Andy Fausak

#### **Graduated Supervised Students**

- PhD: Burak Tufekci, University of North Texas, 2021 – 2025
- MSc: James Durflinger, "*Autonomic Cybersecurity Management*," University of North Texas, 2021 – Present

#### **Committee Member for**

- PhD: Deyuan Qu, supervisor: Prof. Qing Yan, University of North Texas
- PhD: Syed Badruddoja, supervisor: Prof. Ram Dantu, University of North Texas
- PhD: Fernando Mosquera Ferrandiz, supervisor: Prof. Krishna Kavi, University of North Texas
- PhD: Abiola Salau, supervisor: Prof. Ram Dantu, University of North Texas
- PhD: Kritagya Upadhyay, supervisor: Prof. Ram Dantu, University of North Texas
- PhD: Md Mosharaf Hossain, supervisor: Prof. Mark Albert, University of North Texas
- PhD: Alakananda Mitra, supervisor: Prof. Saraju Mohanty, University of North Texas

#### **Previously Co-Supervised Students:**

- PhD: Sicong Shao, "*Understanding Cyber Attackers and Attacks via Social Media Analysis*," University of Arizona, 2016 – Present
- PhD: Likai Yao, "*Autonomic Workflow for Weather Research and Forecast Workflows*," University of Arizona, 2015 – Present
- PhD: Zhiwen Pan, "*A Context Aware Anomaly Behavior Analysis Methodology for Building Automation Systems*," University of Arizona, 2015 – 2017
- PhD: Jesus Pacheco, "*An Anomaly Behavior Analysis Methodology for the Internet of Things: Design, Analysis, and Evaluation*," University of Arizona, 2014 – 2017
- MSc: Birkan Kolcu, "*Seniors' Virtual Assistant via Artificial Emotional Intelligence*," University of Arizona, 2018 – Present

- MSc: Firas AlMoualem, “SDR - Based Resilient Wireless Communications,” University of Arizona, 2015 – 2017
- MSc: Shuqing Gu, “An Autonomic Workflow Performance Manager for Weather Forecast and Research Modeling Workflows,” University of Arizona, 2015 – 2017
- MSc: Bilal Al Baalbaki, “Anomaly Behavior Analysis System for ZigBee in Smart Buildings,” University of Arizona, 2013 – 2015
- BSc: Birkan Kolcu, “LIDAR Security and Resiliency for Smart Cars,” Ozyegin University, 2017 – 2018

## AWARDS

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- *2024 Siemens Tech Sustainability through Cybersecurity Challenge*: A global competition and our team was awarded as the winning team for sustainability through cybersecurity. We gave an online talk for their headquarter and it has been publicly broadcasted. URL: <https://engineering.unt.edu/news/phd-candidates-and-faculty-selected-winning-team-2024-siemens-tech-sustainability-through.html>  
– *Our group was also gifted with an OT environment that consists of PLCs, power supplies, network components, etc. worth of \$7,500+.*
- Burak Tufekci (my PhD student) “*The spirit of innovation*” - March, 2023: My PhD student obtained the third place in the competition.
- *Best poster award* in CAC 2014 – F. Fargo, C. Tunc, Y. Al-Nashif, A. Akoglu, and S. Hariri, “*Autonomic Management of Cloud Resources and Services Framework*,” IEEE International Conference on Cloud and Autonomic Computing (CAC 2014), London, UK., Sep. 2014
- *Graduate Research Assistantship* in the Department of Electrical and Computer Engineering of the University of Arizona (Fall 2011 – Fall 2014)
- *Graduate Research/Teaching Assistantship* in the Department of Electrical and Computer Engineering at Northeastern University (Fall 2008 – Spring 2010)
- *Outstanding paper award* (F. Ugurdag, O. Keskin, C. Tunc, F. Temizkan, G. Fici, and S. Dedeoglu, “*RoCoCo: Row and Column Compression for High-Performance Multiplication on FPGAs*,” East-West Design & Test Symposium, Sevastopol, Ukraine, Sep. 2011)

## MEMBERSHIP

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- IEEE Member (2006 – Present)
- Turkish Student Association at the University of Arizona (Academic Advisor, Spring 2017 – Fall 2018)
- Turkish Student Association at the University of Arizona (President, Spring 2012 – Fall 2014)
- IEEE Student Branch at Bahcesehir University (President, Fall 2007 – Spring 2008)
- IEEE Student Branch at Bahcesehir University (Member, Fall 2006 – Fall 2007)

## REFERENCES

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- Prof. Salim Hariri, The University of Arizona, Tucson, Arizona hariri@email.arizona.edu
  - Prof. Ali Akoglu, The University of Arizona, Tucson, Arizona akoglu@email.arizona.edu
  - Prof. H.J. Siegel, Colorado State University, Fort Collins, Colorado hj@colostate.edu
  - Prof. Hamamache Kheddouci, Lyon 1 University, Lyon, France hamamache.kheddouci@univ-lyon1.fr
  - Prof. Youssif Al-Nashif, Florida Polytechnic University, Lakeland, Florida yalnashif@floridapoly.edu
- More references are available upon request.*