

MERT SIDE
<https://www.linkedin.com/in/mert-side/> | <https://mertsideside.com>
EDUCATION

Ph.D., Computer Science , Texas Tech University, Lubbock, TX	09/2019 – 08/2025 (expected)
- Interests: <u>computer architecture</u>, <u>cybersecurity</u>, and <u>high-performance computing</u>. - GPA: 3.95 out of 4. - Advised by <u>Dr. Yong Chen</u>.	
B.E., Computer Engineering , Istanbul Okan University, Istanbul, Turkey	09/2014 – 06/2018
- Ranked 1st in the College of Engineering. Ranked 2nd in the University. - GPA: 3.87 out of 4. - Under Full Scholarship.	
B.E., Industrial Engineering , Istanbul Okan University, Istanbul, Turkey	09/2015 – 06/2019
- GPA: 3.61 out of 4. - Double Major Program. Study Abroad (Erasmus+): University of Minho, Guimarães, Portugal	
	09/2016 – 01/2017

TECHNICAL SKILLS

- Programming Languages:** C, C++, C#, Python, Assembly, Java, Swift, Shell Scripting, SQL, JSON, HTML5, CSS3, JavaScript.
- Parallel & GPU Computing:** CUDA, PTX, MPI, OpenSHMEM, ROCm, Pthreads.
- Frameworks & Tools:** TensorFlow, Keras, Scikit-Learn, NumPy, Pandas, Git, Singularity.
- Other:** Linux, UNIX, QEMU, KiCad, AutoCAD, MATLAB, Weka, Simio, Visio.

EXPERIENCE

Research Assistant , Computer Science, Texas Tech University, Lubbock, TX	
<u>Secure High-Performance Computing Architectures Project:</u>	08/2022 – Present
- Adapting a parallel programming runtime to experimental OS and architectures. - Architecting an address extension technique for secure distributed memory architectures, enhancing memory protection capabilities. - Collaborating in the design of a global address space extension on RISC-V and ARM architectures to enable memory protections on scalable computing centers.	
<u>Energy-Efficient GPU Computing Project:</u>	
- Optimized GPU performance and energy efficiency in HPC systems using DVFS, achieving up to 30% energy savings with minimal (<5%) performance loss. - Implemented analytical and deep learning-based models, integrating workload-specific energy-performance trade-offs for real-world HPC and ML workloads. - Demonstrated model portability across NVIDIA (A100, V100, P100) and AMD (MI100, MI210) GPUs using CUDA, DCGM, ROCm, Python, and DNNs.	
<u>Side-Channels and Covert-Channels on GPUs Cybersecurity Project:</u>	01/2021 – 08/2021
- Developed a cross-VM covert channel that functioned on virtualized GPUs, leading to the discovery of a website fingerprinting vulnerability using CUDA. - Mitigated this side-channel vulnerability on GPUs for hardware security.	
Teaching Assistant , Computer Science, Texas Tech University, Lubbock, TX	09/2021 – 07/2022
- ENGR1330 – Computational Thinking with Data Science [Python] - CS1412 – Programming Principles II [C] - CS2413 – Data Structures [C++]	
	09/2019 – 12/2020

- Student Assistant for International Office**, Okan University, Istanbul, Turkey 01/2019 – 06/2019
- Supported the *Erasmus Program* by promoting exchange opportunities.
 - Facilitated data entry and processing to assist the exchange program.
- Industrial Engineering Internship**, ENTES Electronics, Istanbul, Turkey 08/2017 – 09/2017
- Analyzed the manufacturing workstations in terms of product flow and workplace ergonomics.
 - Proposed optimizations to their manufacturing line.
- Computer Science Engineering Internship**, Texas Tech University, Lubbock, TX 06/2017 – 07/2017
- Participated in the Research Experience for Undergraduates (REU) program.
 - Conducted research on malware signatures of Android applications.
- Computer Engineering Internship**, AIR Telecommunication Solutions, Istanbul, Turkey 08/2016 – 09/2016
- Learned the basics of the telecommunication industry.
 - Collaborated on developing a web interface for their products.

PUBLICATIONS

Peer-reviewed Publications:

- M. Side**, F. Yao, and Z. Zhang, “LockedDown: Exploiting Contention on Host-GPU PCIe Bus for Fun and Profit,” *2022 IEEE 7th European Symposium on Security and Privacy (EuroS&P)*, Genoa, Italy, 2022, pp. 270-285, doi: 10.1109/EuroSP53844.2022.00025.
- G. Ali, S. Bhalachandra, N. J. Wright, **M. Side**, and Y. Chen, “Optimal GPU Frequency Selection using Multi-Objective Approaches for HPC Systems,” *2022 IEEE High Performance Extreme Computing Conference (HPEC)*, Waltham, MA, USA, 2022, pp. 1-7, doi: 10.1109/HPEC55821.2022.9926317.
- M. Side**, B. Williams, J. Leidel, J. Woodruff, S. W. Moore, and Y. Chen, “Towards xBGAS on CHERI: Supporting a Secure Global Memory,” *2023 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, St. Petersburg, FL, USA, 2023, pp. 578-581, doi: 10.1109/IPDPSW59300.2023.00100.
- G. Ali, **M. Side**, S. Bhalachandra, N. J. Wright, and Y. Chen, “Performance-Aware Energy-Efficient GPU Frequency Selection using DNN-based Models,” *2023 ACM 52nd International Conference on Parallel Processing (ICPP)*, New York, NY, USA, 2023, pp. 433–442, doi: 10.1145/3605573.3605600
- G. Ali, **M. Side**, S. Bhalachandra, N. J. Wright, and Y. Chen, “An automated and portable method for selecting an optimal GPU frequency,” *2023 Elsevier Journal of Future Generation Computer Systems (FGCS)*, vol. 149, pp. 71–88, 2023, doi: 10.1016/j.future.2023.07.011.
- G. Ali, **M. Side**, S. Bhalachandra, T. Dang, A. Sill, and Y. Chen, “Understanding the Efficacy of Power Profiles: A Case Study of AMD Instinct MI100 GPU,” *2024 IEEE High Performance Extreme Computing Conference (HPEC)*. [ACCEPTED]

Google Scholar: <https://scholar.google.com/citations?user=Oli7kPQAAAAJ&hl=en>

COLLOQUIA, CONFERENCE, AND WORKSHOP PRESENTATIONS

Paper Presentations:

- M. Side**, F. Yao, and Z. Zhang, “LockedDown: Exploiting Contention on Host-GPU PCIe Bus for Fun and Profit,” *2022 IEEE 7th European Symposium on Security and Privacy (EuroS&P)*, Genoa, Italy, 2022, pp. 270-285, doi: 10.1109/EuroSP53844.2022.00025.
- M. Side**, B. Williams, J. Leidel, J. Woodruff, S. W. Moore, and Y. Chen, “Towards xBGAS on CHERI: Supporting a Secure Global Memory,” *2023 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, St. Petersburg, FL, USA, 2023, pp. 578-581, doi: 10.1109/IPDPSW59300.2023.00100.

- G. Ali, **M. Side**, S. Bhalachandra, T. Dang, A. Sill, and Y. Chen, “Understanding the Efficacy of Power Profiles: A Case Study of AMD Instinct MI100 GPU,” *2024 IEEE High Performance Extreme Computing Conference (HPEC)*.

Poster Presentations:

- **M. Side**, X. Wang, Y. Chen, “Bringing Secure Enclaves to xBGAS,” *NSF CAC Semiannual IAB Meeting*, November 11th-12th, 2021. Tucson, AZ, USA.
- **M. Side**, B. Williams, Y. Chen, “Porting xBGAS to Arm Morello,” *NSF CAC Semiannual IAB Meeting*, April 21st, 2022. Lubbock, TX, USA.
- **M. Side**, B. Williams, J. Leidel, Y. Chen, “xBGAS on CHERI: Porting xBGAS Runtime,” *NSF CAC Semiannual IAB Meeting*, November 11th, 2022. Denton, TX
- **M. Side**, B. Williams, J. Leidel, J. Woodruff, S. W. Moore, Y. Chen, “Towards xBGAS on CHERI: A Simplified xbrtime for Morello,” *NSF CAC Semiannual IAB Meeting*, May 25th, 2023. Lubbock, TX, USA.
- **M. Side**, B. Williams, J. Leidel, Y. Chen, “Towards xBGAS on CHERI: Simulating a Secure and Architecture-Independent Runtime for xBGAS,” *NSF CAC Semiannual IAB Meeting*, November 20th, 2023. Lubbock, TX, USA. (**Best Poster Award**)
- **M. Side**, Y. Chen, “Towards xBGAS on CHERI: Examining the Benefits of a Secure Distributed Architecture,” *Latch-Up 2024*, April 19th, 2024. Cambridge, MA, USA.
- **M. Side**, B. Williams, J. Leidel, Y. Chen, “Examining the Benefits of a Secure Distributed Architecture,” *NSF CAC Semiannual IAB Meeting*, May 9th, 2024. Lubbock, TX, USA. (**Best Poster Award**)
- **M. Side**, B. Williams, J. Leidel, Y. Chen, “A Secure Global Address Space Extension for HPC,” *NSF CAC Semiannual IAB Meeting*, December 16th, 2024. Lubbock, TX, USA.

INVOLVEMENT AND PROFESSIONAL MEMBERSHIPS

Served as Paper Reviewer:

- IEEE Transactions on Computers 2020 – TOC'20.
- 36th ACM/SIGAPP Symposium on Applied Computing 2021 – SAC'21.
- Journal of Parallel and Distributed Computing 2021 – JPDC'21.
- 7th IEEE European Symposium on Security and Privacy – EuroS&P'22.
- International Parallel and Distributed Processing Symposium 2024 – IPDPS'24

Served as Poster Reviewer:

- The International Conference for High Performance Computing 2022 – SC'22.
- The International Conference for High Performance Computing 2024 – SC'24.

Volunteer Service:

- **Student Volunteer**, SC'24, Atlanta, GA 11/2024
- **Student Volunteer**, SC'23, Denver, CO 11/2023
- **Member of Erasmus Student Network**, Okan University, Istanbul Turkey 06/2017 – 06/2019

Professional Memberships:

- ACM Member (active since 2021)
- IEEE Member (active since 2022)

OTHER SKILLS

Languages:

- **Native:** Turkish
- **Fluent:** English
- **Basic:** Portuguese (CEFR: A2)

Licenses & Certifications:

- Google Cybersecurity Certificate on Coursera earned in November 2023.
- Certified in providing first aid (EFR+CPR).
- Licensed PADI Rescue Scuba Diver since July 2015.