Prof. Dr. Şenan Ece Schmidt

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Personal Information:
Date of Birth: 27th March 1975
Sex: Female
Republic of Turkey Citizen, Married

Research Interests:
High throughput, low latency, scalable hardware accelerators for data processing and computer networks
Resource allocation for computer systems and cloud data centers
Real-time embedded network design: Worst-case analysis, scheduling and resource allocation

Education Background:
2004: Ph.D. in Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, USA.
Thesis Title: "Scheduling and Switching Architecture for Virtual Synchronous Frame (VSF)".
Advisor: Prof. Dr. Hyong Kim
2001: M.Sc. in Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, USA.
Advisor: Prof. Dr. Hyong Kim
Thesis Title: "A Novel Scalable Packet Switch Architecture with Quality of Service Support".
1997: M.Sc. in Electrical and Electronics Engineering, Middle East Technical University.

Work Experience:
2017 - : Professor, Middle East Technical University, Department of Electrical and Electronics Engineering.
2011 - 2017: Associate Professor, Middle East Technical University, Department of Electrical and Electronics Engineering.
2008 - 2011: Assistant Professor, Middle East Technical University, Department of Electrical and Electronics Engineering.
2004 - 2008: Instructor, Middle East Technical University, Department of Electrical and Electronics Engineering.
1997 - 2004: Research Assistant, Middle East Technical University, Department of Electrical and Electronics Engineering. On scholarship leave: 1998-2004

Publications:

International Journal:

1. Z. Ayhan Kılınç, E. G. Schmidt and K. W. Schmidt, "Computation of tight bounds for the worst-case end-to-end delay on Avionics Full-Duplex Switched Ethernet," *Journal of Systems Architecture*, 156 (2024): 103278., doi: 10.1016/j.sysarc.2024.103278.(2024).

2. M. Akpınar, E. G. Schmidt and K. W. Schmidt, "Weak TDMA for the Deterministic Medium Access on the Controller Area Network," *IEEE Transactions on Intelligent Transportation Systems,* Volume: 25, Issue: 8, August 2024., doi: 10.1109/TITS.2024.3400853.(2024).

3. F. Koltuk and E. Güran Schmidt "Uniformity and Independence of H3 Hash Functions for Bloom Filters," *IEEE Transactions on Computers*, vol.73, no. 8, pp. 1913 - 1923, Aug. 2024.

4. İ. Peşkircioğlu Gökçe, M. Üçüncü, and E. Güran Schmidt "OMNeT++ Simulation Framework for Avionics Full-Duplex Switched Ethernet." *Journal of Aerospace Information Systems*, vol. 21, No. 5 (2024), pp. 443-454.

5. Atagoziev, Maksat, Ece Güran Schmidt, and Klaus Werner Schmidt. "Lane change scheduling for connected and autonomous vehicles." *Transportation Research Part C: Emerging Technologies* 147 (2023): 103985.

6. Akpinar, Murat, Ece Guran Schmidt, and Klaus Werner Schmidt. "Highly Accurate Clock Synchronization with Drift Correction for the Controller Area Network." *IEEE Transactions on Parallel and Distributed Systems* (2022).

7. S. Zengin and E. G. Schmidt, "A Fast and Accurate Hardware String Matching Module with Bloom Filters," *IEEE Transactions on Parallel and Distributed Systems*, vol. 28, no. 2, pp. 305-317, Feb. 1 2017.

8. Y. B. Kartal, E. G. Schmidt, and Klaus Werner Schmidt "Modeling Distributed Real-time Systems in TIOA and UPPAAL", vol 16, no. 1 *ACM Transactions on Embedded Computing Systems*, 2016.

9. Klaus Werner Schmidt, Burak Alkan, Ece Guran Schmidt, Duygu Culum Karani, Utku Karakaya, "Controller Area Network (CAN) With Priority Queues and FIFO Queues: Improved Schedulability Analysis and Message Set Extension, "*International Journal of Vehicle Design*, 2016 (In Press).

10. N. Ayyildiz, E. G. Schmidt and H. C. Guran, " S-DIRECT : Scalable and Dynamically Reconfigurable TCAM Architecture for High-speed IP Lookup," *The Computer Journal*, vol. 58, no.6, pp. 1443-1455, 2015.

11. M. Sanli, E. G. Schmidt and H. C. Guran, " Hardware Design and Implementation of Packet Fair Queuing Algorithms for the Quality of Service Support in the High-speed Internet," *Elsevier Computer Networks*, in the Special Issue on "Challenges in High-Performance Switching and Routing in the Future Internet", vol. 56, no.13, pp. 3065-3075, 2012.

12. K. W. Schmidt and E. G. Schmidt, "Distributed Real-time Protocols for Industrial Control Systems: Framework and Examples," *IEEE Transactions on Parallel and Distributed Systems*, vol. 23, no.10, pp. 1856-1866, 2012.

13. M. Sanli, E. G. Schmidt and H. C. Guran, " FPGEN: A Fast, Scalable and Programmable Traffic Generator for the Performance Evaluation of High-speed Computer Networks," *Elsevier Performance Evaluation*, vol. 68, no.12, pp. 1276-1290, 2011.

14. S. Senol, K. Leblebicioglu and E. G. Schmidt, " INtERCEDE: An Algorithmic Approach to Networked Control System Design," *Elsevier Journal of Network and Computer Applications,* vol. 34, no.4, pp. 1326-1341, 2011.

15. M. Soysal and E. G. Schmidt, "Machine Learning Algorithms for Accurate Flow-based Network Traffic Classification: Evaluation and Comparison," *Elsevier Performance Evaluation*, vol. 67, no.6, pp. 451-467, 2010.

16. K. Schmidt and E. G. Schmidt, "Message Scheduling for the FlexRay Protocol: The Static Segment, "*IEEE Transactions on Vehicular Technology*, vol. 58, no.5, pp. 2170-2179, 2009.
17. E. G. Schmidt and K. Schmidt, "Message Scheduling for the FlexRay Protocol: The Dynamic Segment, "*IEEE Transactions on Vehicular Technology*, vol. 58, no.5, pp. 2160-2169, 2009. (
18. K. Schmidt and E. G. Schmidt, "Systematic Message Schedule Construction for Time-Triggered CAN, "*IEEE Transactions on Vehicular Technology*, vol.56, no.6, pp.3431-3441, 2007.
19. S. Ece (Guran) Schmidt and Hyong S. Kim, "A new scalable service discipline for real-time traffic: The framed-deadline scheduler," *Elsevier Computer Communications*, vol. 30, no.6, pp. 1258-1277, 2007.
20. S. Ece (Guran) Schmidt and Hyong S. Kim, "Frame-counter scheduler: A novel QoS scheduler for real-time traffic," *Elsevier Computer Communications*, vol. 29, no.12, pp. 2181-2200, 2006.

International Conference:
1. H. Sağırkaya, E. G. Schmidt, "An Approach for Defining and Predicting Faults in Mil STD 1553 Bus in an Avionics Architecture," 2023 IEEE/AIAA 42nd Digital Avionics Systems Conference (DASC2023), Barcelona, Spain, 2023.
2. F. Yazıcı, A. S. Yıldız, A. Yazar, E. G. Schmidt, "A Novel Scalable On-chip Switch Architecture with Quality of Service Support for Hardware Accelerated Cloud Data Centers," IEEE International Conference on Cloud Networking, 2020.
3. C. Canpolat and E. G. Schmidt, "Dynamic User Count Aware Resource Allocation for Network Slicing in Virtualized Radio Access Networks," 2020 25th IEEE Symposium on Computers and Communications (ISCC) , Rennes, France, 2020.
4. F. Koltuk and E. G. Schmidt, "A Novel Method for the Synthetic Generation of Non-I.I.D Workloads for Cloud Data Centers," 2020 25th IEEE Symposium on Computers and Communications (ISCC) , Rennes, France, 2020.
5. M. Akpınar,E. G. Schmidt and K.W. Schmidt, "Drift Correction for the Software-based Clock Synchronization on Controller Area Network," 2020 25th IEEE Symposium on Computers and Communications (ISCC) , Rennes, France, 2020.
6. M. Ç. Güldiken,E. G. Schmidt and K.W. Schmidt, "Telegram Scheduling for the Multifunction Vehicle Bus (MVB): Algorithms and Evaluation," 2020 25th IEEE
7. N. U. Ekici, K. W. Schmidt, A. Yazar and E. G. Schmidt, "Resource Allocation for Minimized Power Consumption in Hardware Accelerated Clouds," 2019 28th International Conference on Computer Communication and Networks (ICCCN), Valencia, Spain, 2019.
8. A. Erol, A. Yazar and E. G. Schmidt, "OpenStack Generalization for Hardware Accelerated Clouds," 2019 28th International Conference on Computer Communication and Networks (ICCCN), Valencia, Spain, 2019.
9. M. Akpinar, K. W. Schmidt and E. G. Schmidt, "Improved Clock Synchronization Algorithms for the Controller Area Network (CAN)," 2019 28th International Conference on Computer Communication and Networks (ICCCN), Valencia, Spain, 2019.
10. A. Batur, E.G. Schmidt, K.W. Schmidt, "Offset Computation of Response Time Distributions for Messages on the Controller Area Network," IEEE Symposium on Industrial Embedded Systems, SIES2018.
11. M. E. Afşin, K.W. Schmidt, E.G. Schmidt, "C3: Configurable CAN FD Controller: Architecture, Design and Hardware Implementation," IEEE Symposium on Industrial Embedded Systems, SIES2017.

12. A. Batur, E.G. Schmidt, K.W. Schmidt, "Offset Assignment on Controller Area Network: Improved Algorithms and Computational Evaluation," IEEE Symposium on Industrial Embedded Systems, SIES2017.

13. Maksat Atagoziyev, Klaus W. Schmidt, Ece G. Schmidt, " Lane Change Scheduling for Autonomous Vehicles," IFAC Symposium on Control in Transportation Systems, 2016.

14. M. Sanli, A. Pehlivanli, and E. G. Schmidt, "Window Based Fair Aggregator for the Scalable Support of QoS Guarantees in the Backbone: An Experimental Performance Study," *IEEE ICNC 2016*.

15. M. Sanli, E. G. Schmidt and H. C. Guran, "A Flow Aggregation Method for the Scalable and Efficient Quality of Service Support in Next Generation Networks, "*IEEE GLOBECOM 2013*.

16. M. Ozkardes and E. G. Schmidt, "CALMTV: A Cluster Based Application Layer Multicast Architecture for IPTV," *IEEE GLOBECOM 2013*.

17. K. Schmidt and E. G. Schmidt, "A Shortest-Path Problem for Evaluating the Worst Case Packet Delay of Switched Ethernet," *IEEE Symposium on Industrial Embedded Systems*, SIES2010.

18. E. G. Schmidt, M. Alkan, K. Schmidt, E. Yuruklu, and U. Karakaya, "Performance Evaluation of FlexRay/CAN Networks Interconnected by a Gateway," *IEEE Symposium on Industrial Embedded Systems*, SIES2010.

19. E. G. Schmidt and K. Schmidt, "Schedulability Analysis and Message Schedule Computation for the Dynamic Segment of FlexRay," *IEEE VTC Fall 2010*.

20. K. Schmidt and E. G. Schmidt, "Optimal Message Scheduling for the Static Segment of FlexRay," *IEEE VTC Fall 2010*.

21. K. Schmidt, E. G. Schmidt, A. Demirci, E. Yuruklu , and U. Karakaya, "An Experimental Study of the FlexRay Dynamic Segment," *IFAC Symposium Advances in Automotive Control, IFAC AAC2010*.

22. K. Schmidt and E. G. Schmidt, "Communication of Distributed Discrete-Event Supervisors on a Switched Network," 9th International Workshop on Discrete Event Systems, *WODES08*.

23. K. Schmidt, E. G. Schmidt and J. Zaddach, "Safe operation of distributed discrete-event controllers: A networked implementation with real-time guarantees," *IFAC 2008*.

24. K. Schmidt and E. G. Schmidt "Echtzeitimplementierung verteilter ereignisdiskreter Steuerungen mittels Kommunikationsnetzwerken, " *Entwurf Komplexer Automatisierungssysteme, EKA 2008*.

25. Murat Soysal and E. G. Schmidt, " An Accurate Evaluation of Machine Learning Algorithms for Flow-based P2P Traffic Detection," *IEEE ISCIS07*, 2007.

26. Y. B. Kartal and E. G. Schmidt, "An Evaluation of Aspect Oriented Programming for Embedded Real-Time Systems," *IEEE ISCIS07, 2007*.

27. K. Schmidt, E. G. Schmidt and J. Zaddach, "A shared-medium communication architecture for distributed discrete event systems," *Mediterranean Conference on Control and Automation*, 2007.

28. K. Schmidt and E. G. Schmidt, "Modeling and networked implementation of distributed discrete event dynamic controllers," (in Abstract book), *European Conference on Operational Research*, 2007.

29. S. Ece (Guran) Schmidt, Murat Soysal, "An intrusion detection based approach for the scalable detection of P2P traffic in the National Academic Network backbone, "*IEEE ISCN06* pp.128-133, 2006.

Projects:

In Progress:

1. Industrial Project conducted with BullTech and METU TTO: "Risk Management for FPGA-Based High Frequency Trading Users", Principal Investigator, Project end date: December 2026.
2. Industrial Project conducted with OGEMSAN: "FIBER-O is a system for transferring Multimedia (Serial, Camera and Ethernet) to a remote point via fiber cable", Principal Investigator, Project end date: March 2025.

Completed:

3. Industrial Project conducted with ElectraIC: "A Software Tool for the Configuration Analysis of ARINC664 Networks", Principal Investigator, Project end date: August 2022.
4. Industrial Project conducted with ISSD: "Detection Of Anomalies Through The Moving Camera in Open Area Using Computer Vision and Transferring Detection Data to In-Car Built-in Units" , Principal Investigator, Project end date: November 2022.
5. Industrial Project conducted with BullTech and OTEST: "Development of a New FPGA-based UPF Device Architecture for 5G Networks", Principal Investigator, Project end date: April 2024.
6. TUBITAK 1003 -ACCLOUD (ACCELERATED CLOUD): A Novel, FPGA-Accelerated Cloud Architecture -ACCLOUD (ACCELERATED CLOUD): FPGA İle Hızlandırılmış Yeni Bir Bulut Mimarisi, Principal Investigator (2018-2021)
7. Industrial Project conducted with ElectraIC: "Design and Software Modeling of a Fault Tolerant, High-Speed Bus Architecture", Principal Investigator, 2020.
8. Industrial Project conducted with FARBA: "Fonksiyonel Güvenlik Standartlarına Uygun Yazılım Test Sistemi Geliştirimi-Development of a Functional Safety Standards Compliant Software Test Method", researcher, Project end date: October 2019.
9. Independent R-D Project with TAI: "Very Light Aircraft (VLA)", researcher, Project end date: December 2020.
10. Industrial Project conducted with ROKETSAN (SAYP): "MOKA (Model Kullanım Altyapısı)-Model-based Embedded Software Development", researcher, Project end date: 2019.
11. METU Research Project: "METU-STARS: Yüksek Başarımlı Yeni Bir Sistematik Yazılım Tanımlı Ağ (Software Defined Network-SDN) Yönetimi -A Novel and High-performance Systematic Software Defined Network-SDN Management Method", principal investigator, Project end date: May 2019.
12. METU Research Project: "METU-HAS: Yüksek Başarımlı Yeni Bir Sistematik HTTP Adaptive Streaming (HAS) Yöntemi – METU-HAS: A Novel and High-performance Systematic HTTP Adaptive Streaming (HAS) Method", principal investigator, Project end date: December 2017.
13. METU Research Project: "Araç içi Haberleşme için CAN-FD Kontrolcusu (METU-CAN): FPGA Geliştirimi, Gerçekleştirimi ve Testleri – A CAN-FD Controller (METU-CAN) for In-vehicle Communication: FPGA Development, Implementation and Evaluation", principal investigator, Project end date: December 2017.
14. Industrial Project conducted with TURK TRAKTOR: "Connected Tractor": Yeni Nesil Traktörler içinAraç-içi ve Araç-X (V2X) Haberleşme Mimarisi Geliştirilmesi Ar-Ge Projesi-
15. Connected Tractor": Development of in-vehicle and V2X network architecture for next generetaion tractors", principal invesigator, Project end date: June 2017.
16. METU Research Project: "Akıllı Ulaşım Sistemleri (AUS) için gerçek zamanlı bir haberleşme mimarisi – A real time communication architecture for Intelligent

Transportation Systems (ITS)", principal invesigator, Project end date: December 2016. Official completion: February 2017.

17. Industrial Project conducted with TURK TRAKTOR: "Yeni Nesil Traktörlerde Uygulanabilecek Gövde Kontrol Sistemi Modülü Geliştirilmesi AR-GE Projesi-

18. Development of a Body Control Module that can be implemented for next generation tractors", principal investigator, Project end date: August 2016.

19. Industrial Project conducted with TURKCELL (supported by TUBITAK): "CarCoDe:Araçlar için Akıllı İçerik İletim Platformu-CarCoDePlatform for Smart Car to Car Content Delivery", principal invesigator, Project end date: April 2015. Web Page Project Leaflet

20. Industrial Project conducted with TOFAS and Cankaya University (supported by TUBITAK): "Otomotiv Haberleşme Ağları için Algoritmik Çizelgelendirme Yapabilen Tasarım Yazılımı Geliştirme (AUTONET)-AUTONET: A software design tool for algorithmic scheduling of automotive networks", principal invesigator, Project end date: April 2015.

21. TUBITAK Carrier Award Project: "Ethernet üzerinde dinamik, dağıtılmış ve güvenilir endüstriyel haberleşme protokolları: Genel tasarım işçerçevesi, gerçekleştirim ve deneysel çalışma-Dynamic, distributed and dependable real-time industrial communication protocols over Ethernet: General design framework, implementation and experimental study", principal invesigator, Project end date: March 2013. A video of the experiments can be seen at this link.

22. Industrial Project conducted with TOFAS: "Diagnoser Interface Development for Electric Vehicle", principal invesigator, Project end date: September 2011.

23. METU Research Project: "Endüstriyel ağ uygulamaları için paylaşımlı ortamda haberleşme protokolu geliştirilmesi-Development of a communication protocol in shared medium for industrial networking applications ", principal invesigator, Project end date: May 2010.

24. Industrial Projectconducted with TOFAS: "Otomatik park etme ve drive-by-wire uygulamaları için TOFAŞ araçlarında drive-by-wire haberleşme alt yapısının FlexRay veriyolu üzerinden kurulması-Establishing the drive-by-wire communication infrastructure over FlexRay Bus in TOFAS vehicles for automatic parking and drive-by-wire applications", principal invesigator, Project end date: March 2010. A video of the experiments can be seen at this link.

25. METU Research Project: "FlexRay Araç içi haberleşme sistemleri için yüksek başarimli zaman çizelgeleyicisi tasarımı ve gerçekleştirimi-Design and implementation of high performance schedules for FlexRay in-vehicle communication networks ", principal invesigator, Project end date: December 2008.

26. METU Research Project: "Yüksek hızlı araç içi haberleşme sistemleri için yüksek başarımlı zaman çizelgeleyicisi gerçekleştirimi-Implementation of high-performance schedules for high-speed in-vehicle communication networks", principal invesigator, Project end date: December 2007.

27. METU Research Project: "Bilgisayar ağları üzerinde gerçek zamanlı trafik iletimi için kullanılan zamanlama algoritmaları analizi-Analysis of scheduling algorithms for real-time communication over computer networks", principal invesigator, Project end date: December 2005.

28. Industrial project grant from Pittsburgh Digital Greenhouse: "Network switch on a single chip", researcher, Project end date: 2002.

Professional Activities:

1. Executive Board Member of the Faculty of Engineering, Middle East Technical University (2024 December-)

2. Member of Ph.D Qualifier Committee, Electrical and Electronics Engineering Department (2020-)
3. Associate Editor for TURKISH JOURNAL OF ELECTRICAL ENGINEERING & COMPUTER SCIENCES (2017-)
4. TPC member: IEEE ICCS (International Conference on Communication Systems) 2008, 2010, IEEE ISCC (Symposium on Computers and Communications) 2012, 2013, 2019. ICUMT ((International Conference on Ultra Modern Telecommunications)2010, 2011, RNDM (International Workshop on Reliable Networks Design and Modeling), 2009-2019.
5. IEEE ISCIS 2007 Organization Comittee Member, Networks and Systems track chair.
6. Reviewer for IEEE Transactions on Vehicular Technology, IEEE Network, IEEE Transactions on Industrial Informatics, Elsevier Computer Networks, IEEE Journal of Lightwave Technology, Turkish Journal of Electrical Engineering & Computer Sciences
7. **Member of Executive Comittee of IEEE Turkey Chapter, 2008,2009.**

Awards:
1993: 1993 Top 100 in the National University Entrance Exam.
1998: Higher Education Council of Turkey Scholarship (Carnegie Mellon University).
3rd place in Academic Innovative Embedded System Design Category in CPU Turkey with: "Gigaswitch", Mustafa Sanli, Ece Schmidt

Teaching:
EE444 Introduction to Computer Networks
EE445 Computer Architecture I
EE446 Computer Architecture II
EE5410 High-speed and Embedded Computer Networking (New graduate course designed by Ece Schmidt, offered since 2005)
EE542 Computer Networks (Graduate)
EE441 Data Structures
EE348 Introduction to Logic Design

Supervised Ph.D. Theses:
1. A General Framework For The Deterministic Medium Access On The Controller Area Network, Murat Akpınar, Ph.D. Thesis, Defense date: June 2022, Co-advised with Prof. Dr. Klaus Werner Schmidt.
2. Communication and Coordination for Urban Intelligent Transportation: Architecture and Algorithms, Maksat Atagoziyev, Ph.D. Thesis, Defense date: February 2022 Co-advisor, Main advisor: Prof. Dr. Klaus Werner Schmidt.
3. Fast, Efficient and Dynamically Optimized Data and Hardware Architectures for String Matching, Salih Zengin, Ph.D. Thesis, Defense date: September 2014, Co-advised with Prof. Dr. Hasan Guran.
4. Dependability Design for Distributed Real-Time Systems with Broadcast Communication, Yusuf Bora Kartal, Ph.D. Thesis, Defense date: June 2014.
5. QoC and QoS bargaining for message scheduling in networked control systems, Sinan Şenol, Ph.D. Thesis, Defense date: June 2012, Co-advised with Prof. Dr. Kemal Leblebicioğlu.
6. Design and implementation of scheduling and switching architectures for high speed networks, Mustafa Sanlı, Ph.D. Thesis, Defense date: October 2011, Co-advised with Prof. Dr. Hasan Guran.
7. Design and implementation of hardware architectures for high-speed IP address lookup, Nizam Ayyıldız, Ph.D. Thesis, Defense date: August 2013, Co-advised with Prof. Dr. Hasan Guran.

Supervised M.Sc. Theses:

1. An FPGA-Accelerated String-Matching Engine, Süleyman Samet Yalçın, M.Sc. Thesis, Defense date: November 2024.
2. Cycle-Accurate Functional Simulation of RISC-V Processors for Embedded Applications: Timing Model Construction, Validation and Performance Evaluation, Utkucan Doğan, M.Sc. Thesis, Defense date: August 2024.
3. Hardware Accelerators for High Throughput Packet Classification in Computer Networks, Doğu Erkan Arkadaş, M.Sc. Thesis, Defense date: August 2024.
4. Hardware Accelerated Packet Parsers and Deparsers for High-Throughput Flow Classification in Computer Networks: Design, Implementation and Evaluation, Ömer Bayram Demir, M.Sc. Thesis, Defense date: August 2024.
5. High-Throughput Bloom Filter Design: Systematic Parameter Selection and FPGA Implementation, Efe Berkay Yitim, M.Sc. Thesis, Defense date: July 2024.
6. Anomaly Detection of MIL-STD 1553 Traffic: Machine Learning Methods and Realistic Simulation Evaluation, Hüseyin Sağırkaya, M.Sc. Thesis, Defense date: September 2023.
7. A UPF Module for 5G Networks with Quality of Service Support: Software Implementation and Realistic Evaluation, Mustafa Fatih Çemen, M.Sc. Thesis, Defense date: September 2023.
8. Optimal Resource Allocation and Migration Decision for Virtual Machine Requests in Cloud Data Centers, Nazım Kerem Mert, M.Sc. Thesis, Defense date: August 2023, Co-advised with Prof. Dr. Klaus Werner Schmidt.
9. An Analytical Method for the Analysis and Design of AFDX Networks, Zeynep Ayhan, M.Sc. Thesis, Defense date: June 2023, Co-advised with Prof. Dr. Klaus Werner Schmidt.
10. A Novel and Precise False Positive Probability Computation for Bloom Filters Implemented with Universal Hash Functions, Furkan Koltuk, M.Sc. Thesis, Defense date: August 2022.
11. AFDX (Avionics Full-duplex Switched Ethernet) Network Simulation and Performance Analysis, İpek Peşkircioğlu Gökçe, M.Sc. Thesis, Defense date: July 2022,Co-advised with Assoc.Prof. Dr. Murat Üçüncü, Başkent University.Extension of an Open Source Resource Management Tool For Heterogeneous Cloud Data Centers: Implementation And Evaluation, Taha Doğan, M.Sc. Thesis, Defense date: February 2022.
12. A Workflow for Offering Hardware Accelerators as a Cloud Computing Service: Implementation and Evaluation, Anıl Tırlıoğlu, M.Sc. Thesis, Defense date: February 2022.
13. Design, Implementation And Verification Of A High-Speed On-Chip Packet Switch, Ayhan Sefa Yıldız, M.Sc. Thesis, Defense date: February 2022.
14. A Novel Flexible On-chip Switch Architecture for Reconfigurable Hardware Accelerators, Fatih Yazıcı, M.Sc. Thesis, Defense date: August 2021.
15. A New Fault-Tolerant Real-Time Ethernet Protocol: Design and Evaluation, Emre Atik, M.Sc. Thesis, Defense date: January 2021, Co-advised with Prof. Dr. Klaus Werner Schmidt.
16. Dynamic Resource Allocation in Virtualized Networks for Network Slicing, Ceren Canpolat, M.Sc. Thesis, Defense date: February 2020.
17. Clock Synchronization Algorithms on a Software Defined CAN Controller: Implementation and Evaluation Serkan Yalçın, M.Sc. Thesis, Defense date: January 2020, Co-advisor, Main advisor: Prof. Dr. Klaus Werner Schmidt.
18. Train Communication Network, Multifunction Vehicle Bus, Scheduling, Integer Linear Programming, Heuristics, Mustafa Çağlar Güldiken, M.Sc. Thesis, Defense date: January 2020, Co-advisor, Main advisor: Prof. Dr. Klaus Werner Schmidt.

19. Optimal Dynamic Resource Allocation for Heterogenous Cloud Data Centers, Nazım Umut Ekici, M.Sc. Thesis, Defense date: September 2019.
20. Generalized Resource Management for Heterogeneous Cloud Data Centers, Ahmet Erol, M.Sc. Thesis, Defense date: September 2019
21. A Link Delay Computation Method for the Quality of Service Support in Software Defined Networks, Efe Balo, M.Sc. Thesis, Defense date: September 2019, Thesis overview
22. C³: Configurable CAN FD Controller: Design, Implementation and Evaluation
23. Mehmet Ertuğ Afşin, M.Sc. Thesis, Defense date: February 2018, Co-advised with Associate Prof. Dr. Klaus Werner Schmidt.
24. Controller Area Network with Offset Scheduling: Improved Offset Assignment Algorithms And Computation Of Response Time Distributions, Ahmet Batur, M.Sc. Thesis, Defense date: February 2018, Co-advised with Associate Prof. Dr. Klaus Werner Schmidt.
25. An End-To-End Communication Architecture for Intelligent Transportation Systems: Design, Implementation and Latency Analysis, Çağatay Bağcı, M.Sc. Thesis, Defense date: February 2018.
26. Efficient and Fair Adaptive Streaming: Algorithm, Implementation and Evaluation, Ahmet Öge, M.Sc. Thesis, Defense date: June 2017/
27. Efficient algorithms for the frame packing and slot allocation of FlexRay v3.0, Cumhur Çakmak, M.Sc. Thesis, Defense date: February 2017, Co-advised with Associate Prof. Dr. Klaus Werner Schmidt.
28. A Low Latency, High Throughput and Scalable Hardware Architecture for Flow Tables in Software Defined Networks, Göksan Eral, M.Sc. Thesis, Defense date: September
29. TZAR – Time Zone Based Approximation To Ring: An Autonomous Protection Switching Algorithm for Globally Resilient Optical Transport Networks, Fatih Düzgün, M.Sc. Thesis, Defense date: February 2016
30. Message Scheduling For The Static and Dynamic Segment of Flexray: Algorithms and Applications Özgur Kızılay, M.Sc. Thesis, Defense date: December 2015, Co-advised with Associate Prof. Dr. Klaus Werner Schmidt.
31. Dynamic Analysis For Complex Event Processing, Muhammet Oğuz Özcan, M.Sc. Thesis, Defense date: December 2015, Co-advised with Associate Prof. Dr. Ali Doğru.
32. Controller Area Network (CAN) Response Time Analysis and Scheduling For Advanced Topics: Offsets, FIFO Queues and Gateways, Burak Alkan, M.Sc. Thesis, Defense date: February 2015, Co-advised with Associate Prof. Dr. Klaus Werner Schmidt.
33. A Frame Packing Method to Improve the Schedulability on CAN and CAN-FD, Gökhan Urul, M.Sc. Thesis, Defense date: February 2015, Co-advised with Associate Prof. Dr. Klaus Werner Schmidt.
34. RSAR: A Layered Software Architecture for Cyber-physical Systems, Erhan Akagündüz, M.Sc. Thesis, Defense date: February 2015, Co-advised with Associate Prof. Dr. Halit Oğuztüzün.
35. A Generic and Extendable System Architecture for Intelligent Transportation Systems, Kaan Çetinkaya, M.Sc. Thesis, Defense date: January 2015.
36. UNIBUS: A Universal Hardware Architecture For Serial Bus Interfaces With Real-Time Support, Mehdi Duman, M.Sc. Thesis, Defense date: January 2015.
37. Software Implementations of QoS Scheduling Algorithms for High Speed Networks Aydın Pehlivanlı;, M.Sc. Thesis, Defense date: January 2015.
38. Implementation and Performance Analysis Of Switch Fabric Schedulers With a New Accurate Simulator Software, Ahmet Ada, M.Sc. Thesis, Defense date: September 2014.
39. Switch Fabric Schedulers with Intelligent Multi-Class Support: Design, Implementation and Evaluation on FPGA , Murat Akpınar, M.Sc. Thesis, Defense date: September 2014.

40. Diagnosers for discrete event systems: improved realization and examples, Bora Eser Kart, M.Sc. Thesis, Defense date: February 2014, Co-advised with Associate Prof. Dr. Klaus Werner Schmidt.
41. Combined centralized and decentralized fault diagnosis for discrete event systems, Ruhi Karav, M.Sc. Thesis, Defense date: February 2014, Co-advised with Associate Prof. Dr. Klaus Werner Schmidt.
42. An FPGA implementation of two-step trajectory planning for automatic parking Halil Ertuğrul, M.Sc. Thesis, Defense date: September 2013, Co-advised with Associate Prof. Dr. Klaus Werner Schmidt.
43. Simulation-based VoIP performance evaluation under different traffic and codec conditions, Berk Ünlü, M.Sc. Thesis, Defense date: September 2013.
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48. The development and hardware implementation of a dynamically reconfigurable and area optimized Cyclic Redundancy Check architecture, Özcan Yurt, M.Sc. Thesis, Defense date: August 2013.
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61. A new feedback-based contention avoidance algorithm for optical burst switching networks, Hadi Alper Toku, M.Sc. Thesis, Defense date: December 2008.
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