Renato Mancuso │ CV

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Affiliations

Associate Professor **Boston, MA, USA**
Boston University *May 2024 - present*
Department: Computer Science
Role: Director of the BU Cyber-Physical Systems Lab

Assistant Professor **Boston, MA, USA**
Boston University *Sept. 2017 - May 2024*
Department: Computer Science
Role: Director of the BU Cyber-Physical Systems Lab

Affiliated Faculty **Boston, MA, USA**
Boston University *Feb. 2021 - Present*
Department: Electrical and Computer Engineering

Education

Ph.D. in Computer Science **Urbana, IL, USA**
University of Illinois at Urbana-Champaign *2012 - May 2017*
Dissertation title: "Next-generation Safety-critical Systems on Multi-Core COTS Platforms"
Thesis advisor: Professor Marco Caccamo

M.Sc. in Computer Engineering **Rome, Italy**
University of Rome Tor Vergata, Magna cum laude *2009 - Feb. 2012*
Thesis title: "Avoiding Memory Access Conflicts in Hard Real-time Multi-core Systems"
Advisor: Professor Marco Cesati

B.Sc. in Computer Engineering **Rome, Italy**
University of Rome Tor Vergata, Magna cum laude *2006 - Nov. 2009*
Thesis title: "CoreBoot: the Open-source BIOS and Bootloader"
Advisor: Professor Daniel P. Bovet

Research Interests

Investigating, implementing and testing **hardware-, hypervisor-, and OS-level** techniques to restore strong confidence in the predictable, robust, and secure operation of high-performance **safety-critical cyber-physical systems (CPS)**, with special focus on hybrid CPU+FPGA platforms and profile-driven resource management with practical applications in automotive, avionics and unmanned aerial vehicles.

Research Positions

○ **Graduate Research Assistant** — **Urbana, IL, USA**
Department of Computer Science, UIUC — *2012 - 2014*
Supported by: Rockwell Collins Inc. and NSF
- Evaluation of real-time predictability and performance degradation due to inter-core performance interference on shared memory hierarchy
- Design and feasibility study of techniques to mitigate performance interference in shared CPU caches
- OS-level implementation of proof-of-concept support for real-time oriented shared cache management

○ **Graduate Research Assistant** — **Urbana, IL, USA**
Department of Computer Science, UIUC — *2014 - 2015*
Supported by: Rockwell Collins Inc. and NSF
In collaboration with: Department of Aerospace Engineering, UIUC
- Study of techniques to reduce performance interference due to DRAM bank sharing
- OS-level implementation of proof-of-concept support for real-time oriented DRAM bank management
- Integration of hardware resource management techniques for overall evaluation and theoretical scheduling
- Design of OS-level techniques for power adaptive CPU+GPU UAVs.
- Construction of a UAV testbed for live evaluation

○ **Graduate Research Assistant** — **Urbana, IL, USA**
Department of Computer Science, UIUC — *2015 - 2017*
Supported by: Hitachi America Ltd. and NSF
- Predictability evaluation of new-generation multi-core automotive platforms for ASIL-D certification
- Re-design of OS-level resource management and scheduling to exploit heterogeneous memory layout
- Design of OS-level predictable strategies to recover from detectable memory errors
- Proof-of-concept implementation extending an existing AUTOSAR-compliant OS

Research Grants — Total: USD 3,018,113

○ **Grant: NSF Division of Computing and Communication Foundations (CCF)**
National Science Foundation — *July 2024*
Project: "SHF: Medium: Effortless Data Locality Through Near-memory On-the-fly Data Transformation"
Funding: USD 727,999
Role: PI
Award Nr.: SHF-2403012
Start-End: Aug 1, 2024—July 31, 2028

○ **Grant: Red Hat Collaboratory Research Incubation Award Program**
Red Hat — *Jan. 2024*
Project: "Minimal Mobile Systems via Cloud-based Adaptive Task Processing"
Funding: USD 97,484
Role: Co-PI
PI: Prof. Eshed Ohn-Bar
Start-End: Jan. 1, 2024—Jan. 1, 2025

○ **Grant: Technologies for Next-Gen Integrated Automotive Platforms**
Bosch GmbH — *Dec. 2023*
Project: "Compartmentalization of Safety-Critical Subsystems in Heterogeneous Platforms"
Funding: USD 60,000
Role: PI
Start-End: Jan. 15, 2024—Jan. 15, 2025

○ **Grant: NSF Division Of Computer and Network Systems (CNS)**
National Science Foundation — *Mar. 2023*

Project: "CAREER: Timeliness as a Controllable Dimension via Knowledge-driven System Management"
Funding: USD 603,489
Role: PI
Award Nr.: CSR-2238476
Start-End: May 1, 2023—April 30, 2028

○ **Grant: Red Hat Collaboratory Research Incubation Award Program**
Red Hat *Jan. 2023*
Project: "Toward on-the-Fly Reorganization of High-Order Data Objects"
Funding: USD 149,610
Role: PI
Co-PIs: Prof. Manos Athanassoulis
Start-End: Jan. 1, 2023—Jan. 1, 2024

○ **Grant: Red Hat Collaboratory Research Incubation Award Program**
Red Hat *Jan. 2023*
Project: "Relational Memory Controller"
Funding: USD 149,999
Role: Co-PI
Co-PIs: Prof. Manos Athanassoulis
Start-End: Jan. 1, 2023—Jan. 1, 2024

○ **Grant: Red Hat Collaboratory Research Incubation Award Program**
Red Hat *Jan. 2023*
Project: "Minimal Mobile Systems via Cloud-Based Adaptive Task Processing"
Funding: USD 75,000
Role: Co-PI
Co-PIs: Prof. Eshed Ohn-Bar
Start-End: Jan. 1, 2023—Jan. 1, 2024

○ **Grant: Technologies for Next-Gen Integrated Automotive Platforms**
Bosch GmbH *Dec. 2022*
Project: "Profile-driven System Management in Real-Time Cloud Backend Systems"
Funding: USD 60,000
Role: PI
Start-End: Jan. 15, 2023—Jan. 15, 2024

○ **Grant: Red Hat Collaboratory Research Incubation Award Program**
Red Hat *Jan. 2022*
Project: "Near-Data Data Transformation"
Funding: USD 150,000
Role: Co-PI
Co-PIs: Prof. Manos Athanassoulis
Start-End: Jan. 1, 2022—Jan. 1, 2023

○ **Grant: Technologies for Next-Gen Integrated Automotive Platforms**
Bosch GmbH *Dec. 2021*
Project: "From Partitioning to Profiling-aided Shared Resource Management"
Funding: USD 80,000
Role: PI
Start-End: Feb. 10, 2022—Feb. 10, 2023

○ **Grant: Cisco Research**
Cisco Systems, Inc. *Sept. 2021*
Project: "Near-Data Data Transformation for Edge Computing"
Funding: USD 50,000
Role: Co-PI
Start-End: Sept. 1, 2021—Aug. 31, 2022

Grant: NSF Division of Computing and Communication Foundations (CCF)
National Science Foundation *Dec. 2020*

Project: "Beyond Accelerators - Using FPGAs to Achieve Fine-grained Control of Data-flows in Embedded SoCs"
Funding: USD 500,000
Role: PI
Award Nr.: SHF-2008799
Start-End: July 15, 2020—June 30, 2023

Grant: Technologies for Next-Gen Integrated Automotive Platforms
Bosch GmbH *Dec. 2020*

Project: "From Partitioning to Profiling-aided Shared Resource Management"
Funding: USD 80,000
Role: PI
Start-End: Feb. 10, 2021—Feb. 10, 2022

Grant: Collaboratory Support for Grad Student Research
Red Hat *Dec. 2020*

Project: "Programmable Logic In-the-Middle: the Case for Relational Memory"
Funding: USD 136,000
Role: PI
Co-PIs: Prof. Manos Athanassoulis
Start-End: Feb. 1, 2021—Feb. 1, 2022

Grant: Technologies for Next-Gen Integrated Automotive Platforms
Bosch GmbH *Dec. 2019*

Project: "Towards A Unified Virtualized Shared Resource Management Infrastructure"
Funding: USD 80,000
Role: PI
Start-End: Feb. 10, 2020—Feb. 10, 2021

Grant: Hariri Institute Research Incubation Award
Boston University *Feb. 2019*

Project: "Data Driven, Inexpensive and Reusable Sensors for Water Contamination Detection"
Funding: USD 18,532
Role: PI
Co-PIs: Prof. Xi Lin

Honors, Awards, and Patents

Early Career Researcher Award
ACM SIGBED *May 2024*

The community-wide award recognizes one junior researcher per year for their oustanding contribution in the area of embedded, real-time, and cyber-physical systems.

Best Demonstration Award
International Conference on Very Large Data Bases (VLDB) *Sept. 2023*

Best Presentation Award
Euromicro Conference on Real-Time Systems (ECRTS) *July 2023*

Outstanding Paper Award
Euromicro Conference on Real-Time Systems (ECRTS) *July 2023*

Outstanding Paper Award
Euromicro Conference on Real-Time Systems (ECRTS) *July 2023*

○ **(Nomination) Supervisor of the Year Award**
Boston University *Apr. 2023*
Nominated by 5 Ph.D. students for the award. The award recognizes supervisors who have distinguished themselves as a role model, leader, and mentor and have made an impact on their student employees.

○ **Gerald & Deanne Gitner Family Award for Innovation in Teaching with Technology**
Boston University *Mar. 2023*
The award recognizes the faculty member or team that best exemplifies innovation in teaching through the use, development, or adaptation of technology within or outside Boston University.

○ **Faculty Early Career Development (CAREER) Award**
National Science Foundation (NSF) *Mar. 2023*

○ **Best Reviewer Award**
IEEE Real-Time Systems Symposium (RTSS) *Dec. 2022*

○ **Elevated to IEEE Senior Member**
IEEE Membership *Nov. 2022*

○ **Best Student Paper Award**
IEEE Real-Time Systems Symposium (RTSS) *Dec. 2020*

○ **Best Paper Award**
IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS) *Apr. 2020*

○ **Outstanding Paper Award**
Euromicro Conference on Real-Time Systems (ECRTS) *July 2019*

○ **Best Presentation Award**
IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS) *Apr. 2016*

○ **Best Student Paper Award**
IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS) *Apr. 2013*

○ **(Finalist) Qualcomm Innovation Fellowship**
Qualcomm Inc. *Spring 2016*
The QInF program is focused on recognizing, rewarding, and mentoring innovative PhD students across a broad range of technical research areas, based on Qualcomm's core values of innovation, execution and teamwork.

○ **Computer Science Excellence Fellowship**
College of Engineering, University of Illinois *Fall 2015, Spring 2016*
The Computer Science Excellence Fellowship is funded thanks to the Graduate College's Block Grant Program, which provides funds to help departments recruit and retain outstanding graduate students.

○ **Patent, Issued** **Urbana, IL, USA**
University of Illinois at Urbana-Champaign *August 2016*
Title: "Real-Time Scratchpad-Centric Operating System for Multi-Core Embedded System"
Issued on: May 12, 2020
US Patent Nr.: 10649914

○ **Recognized on List of Teachers Ranked Excellent**
College of Engineering, University of Illinois *Fall 2013*

○ **Homo Sapiens Sapiens Scholarship**
INPS Italy *Spring 2014*
Government-issued scholarship to support high-degree education in promising young researchers.

○ **Patent, Main Inventor** **Rome, Italy**
CFI Progetti LLC. *May 2014*

Title: "Providing Interactive Pharmaceutical Services through Internet"
Submitted/accepted: June 2011 / May 2014
Patent Nr.: RM2011A000297

○ **Merit Scholarship**
Accenture, PLC   *Spring 2010*

○ **High Honor Award and Scholarship**   **Rome, Italy**
University of Rome Tor Vergata   *2009, 2010, 2011, 2012*

○ **Full Merit Scholarship**   **Rome, Italy**
Excellence University College "Lamaro-Pozzani"   *2006-2011*
Awarded by the Italian Federation "Cavalieri del Lavoro" on a merit-only basis, through a competitive selection procedure involving students from all over Italy. The scholarship was renewed every year, having reached fixed targets, such as: passing all the scheduled university exams with an average grade of at least 27/30, succeeding in the English, Economics and Law internal courses and actively attending all the College activities, meetings and lectures.

Peer Reviewed Journal, Conference, and Workshop Papers

Journal Articles

[1] D. Hoornaert, G. Ghaemi, A. Bastoni, **R. Mancuso**, M. Caccamo, G. Corradi, "MCTI: Mixed-Criticality Task-based Isolation", Real-Time Systems, Springer, June 2024.

[2] A. Zuepke, A. Bastoni, W. Chen, M. Caccamo, **R. Mancuso**, "MemPol: Polling-Based Microsecond-Scale Per-Core Memory Bandwidth Regulation", in Real-Time Systems, Springer, May 2024.

[3] T.I. Papon, J.H. Mun, K. Karatsenidis, S. Roozkhosh, D. Hoornaert, A. Sanaullah, U. Drepper, **R. Mancuso**, M. Athanassoulis, "Effortless Locality on Data Systems using Relational Fabric", in IEEE Transactions on Knowledge and Data Engineering, April 2024.

[4] R. Tabish, R. Pellizzoni, **R. Mancuso**, G. Gracioli, R. Mirosanlou, M. Caccamo, "X-Stream: Accelerating Streaming Segments on Modern MPSoCs", Journal of Systems Architecture, Volume 138, 2023, 102857, ISSN 1383-7621, March 2023.

[5] G. Gracioli, R. Tabish, **R. Mancuso**, R. Mirosanlou, R. Pellizzoni, M. Caccamo, "Lazy Load Scheduling for Mixed-Criticality Applications in Heterogeneous MPSoCs", ACM Trans. Embed. Comput. Syst. 22, 3, Article 59, May 2023.

[6] P. Sohal, R. Tabish, U. Drepper, **R. Mancuso**, "Profile-driven Memory Bandwidth Management for Accelerators and CPUs in QoS-enabled Platforms", in Real-Time Systems, Springer, April 2022.

[7] D. Tarapore, S. Roozkhosh, S. Brzozowski, **R. Mancuso**, "Observing the Invisible: Live Cache Inspection for High-Performance Embedded Systems", in IEEE Transactions on Computers (IEEE TC), Volume 71(03), Pages: 559-572, March 2022.

[8] R. Tabish and J.Y. Wen and R. Pellizzoni and **R. Mancuso** and H. Yun and M. Caccamo and L. R. Sha, "An analyzable inter-core communication framework for high-performance multicore embedded systems", in Journal of Systems Architecture, Volume 118, 2021, Pages 102178, ISSN 1383-7621, Jun. 2021.

[9] S. Mysore, B. Mabsout, K. Saenko, **R. Mancuso**, "How to Train your Quadrotor: A Framework for Consistently Smooth and Responsive Flight Control via Reinforcement Learning", in ACM Transactions on Cyber-Physical Systems, 2021.

[10] R. Tabish, **R. Mancuso**, S. Wasly, R. Pellizzoni, M. Caccamo, "A Real-Time Scratchpad-centric OS with Predictable Communication for Multi-core Embedded Systems", in Real-Time Systems, Springer, 55, 850–888, May 2019.

[11] W. Koch, **R. Mancuso**, R. West and A. Bestavros, "Reinforcement Learning for UAV Attitude Control", In ACM Transactions on Cyber-Physical Systems (TCPS), Vol. 3, Issue 2, Art. 22, February 2019.

[12] H. Wang, Y. Gao, S. Hu, S. Wang, **R. Mancuso**, M. Kim, P. Wu, L. Su, L. Sha, T. Abdelzaher, "On Exploiting Structured Human Interactions to Enhance Sensing Accuracy in Cyber-physical Systems", ACM Transactions on Cyber-Physical Systems, vol. 1 no. 3, p. 1-19, July 2017.

[13] L. Sha, M. Caccamo, **R. Mancuso**, J. E. Kim, M. K. Yoon, R. Pellizzoni, H. Yun, R. B. Kegley, D. R. Perlman, G. Arundale, R. Bradford, "Real-Time Computing on Multicore Processors", IEEE Computer, vol.

49 no. 9, p. 69-77, September 2016.

[14] A. Melani, **R. Mancuso**, D. Cullina, M. Caccamo, L. Thiele, "Optimizing Resource Speed for Two-Stage Real-Time Tasks", in Real-Time Systems, Springer, 53, 82–120, September 2016.

[15] G. Gracioli, A. Alhammad, **R. Mancuso**, A. A. Frohlich, R. Pellizzoni, "A Survey on Cache Management Mechanisms for Predictable Real-Time Embedded Systems", ACM Computing Survey, September 2015.

International Conference & Workshop Papers

[1] I. Izhbirdeev, D. Hoornaert, W. Chen, A. Zuepke, Y. Hammad, M. Caccamo and **R. Mancuso**, "Coherence-Aided Memory Bandwidth Regulation", in Proceedings of the 45th IEEE Real-Time Systems Symposium (RTSS 2024), December 2024, York, UK.

[2] K. Sengupta, Z. Shangguan, S. Bharadwaj, S.Arora, E. Ohn-Bar, **R. Mancuso**, "Unified Local-Cloud Decision-Making via Residual Reinforcement Learning", in Proceedings of 18th European Conference on Computer Vision (ECCV 2024), September 2024, Milan, Italy.

[3] D. Ottaviano, F. Ciraolo, **R. Mancuso**, M. Cinque, "The Omnivisor: A real-time static partitioning hypervisor extension for heterogeneous core virtualization over MPSoCs", in Proceedings of the 36th Euromicro Conference on Real-Time Systems (ECRTS 2024), July 2024, Lille, France.

[4] D. Oliveira, W. Chen, S. Pinto, **R. Mancuso**, "Shared Resource Contention in Low-end MCUs: A Reality Check and the Quest for Timeliness", in Proceedings of the 36th Euromicro Conference on Real-Time Systems (ECRTS 2024), July 2024, Lille, France.

[5] J. H. Mun, K. Karatsenidis, T. I. Papon, S. Roozkhosh, D. Hoornaert, A. Sanaullah, U. Drepper, **R. Mancuso**, M. Athanassoulis, "On-the-fly Data Transformation in Action", In Proceedings of the VLDB Endowment, Volume 16, Issue 12, 2023, Vancouver, Canada, **(Best Demonstration Award)**.

[6] W. Chen, I. Izhbirdeev, D. Hoornaert, S. Roozkhosh, P. Carpanedo, S. Sharma, **R. Mancuso**, "Low-overhead Online Assessment of Timely Progress as a System Commodity", in Proceedings of the 35th Euromicro Conference on Real-Time Systems (ECRTS 2023), July 2023, Vienna, Austria. **(Outstanding Paper Award, Best Presentation Award)**

[7] A. Saeed, D. Hoornaert, D. Dasari, D. Ziegenbein, D. Mueller-Gritschneder, U. Schlichtmann, A. Gerstlauer, **R. Mancuso**, "Memory Latency Distribution-Driven Regulation for Temporal Isolation in MPSoCs", in Proceedings of the 35th Euromicro Conference on Real-Time Systems (ECRTS 2023), July 2023, Vienna, Austria. **(Outstanding Paper Award)**

[8] A. Raza, T. Unger, M. Boyd, E.B. Munson, P. Sohal, U. Drepper, R. Jones, D. Bristot de Oliveira, L. Woodman, **R. Mancuso**, J. Appavoo, O. Krieger, "Unikernel Linux (UKL)", in Proceedings of EuroSys 2023, May 2023, Rome, Italy.

[9] **R. Mancuso**, S. Roozkhosh, D. Hoornaert, J.H. Mun, T.I. Papon, M. Athanassoulis, "Software-Shaped Platforms", in Proceedings of the 2nd Real-time and Intelligent Edge Computing Workshop (RAGE 2023), May 2023, San Antonio, TX, USA.

[10] D. Oliveira, W. Chen, S. Pinto, **R. Mancuso**, "Investigating and Mitigating Contention on Low-End Multi-Core Microcontrollers", in Proceedings of the 2nd Real-time and Intelligent Edge Computing Workshop (RAGE 2023), May 2023, San Antonio, TX, USA.

[11] A. Zuepke, A. Bastoni, W. Chen, M. Caccamo, **R. Mancuso**, "MemPol: Policing Core Memory Bandwidth from Outside of the Cores", in Proceedings of the 29th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2023), May 2023, San Antonio, Texas, USA.

[12] O. Dantsker, M. Caccamo, **R. Mancuso**, "Expanded Flight & Ground Testing Data Set for an Unmanned Aircraft: Great Planes Avistar Elite," in Proceedings of the AIAA SciTech 2023 Forum, January 2023, National Harbor, MD, USA.

[13] T.I. Papon, J. H. Mun, S. Roozkhosh, D. Hoornaert, A. Sanaullah, U. Drepper, **R. Mancuso**, M. Athanassoulis, "Relational Fabric: Transparent Data Transformation", in Proceedings of the IEEE International Conference on Data Engineering (ICDE 2023), April 2023, Anaheim, California, USA.

[14] S. Roozkhosh, D. Hoornaert, J. H. Mun, P. Tarikul, U. Drepper, **R. Mancuso**, M. Athanassoulis, "Relational Memory: Native In-Memory Accesses on Rows and Columns", in Proceedings of the 26th International Conference on Extending Database Technology (EDBT 2023), March 2023, Ioannina, Greece.

[15] S. Roozkhosh, D. Hoornaert, **R. Mancuso**, "CAESAR: Coherence-Aided Elective and Seamless Alternative Routing via on-chip FPGA", in Proceedings of the 43rd IEEE Real-Time Systems Symposium (RTSS

2022), December 2022, Houston, TX, USA.

[16] M. Nicolella, D. Hoornaert, S. Roozkhosh, A. Bastoni, **R. Mancuso**, "Know your Enemy: Benchmarking and Experimenting with Insight as a Goal", WiP Session @ 43rd IEEE Real-Time Systems Symposium (RTSS@Work 2022), December 2022, Houston, TX, USA.

[17] S. Roozkhosh, D. Hoornaert, **R. Mancuso**, M. Athanassoulis, "Hardware Data Re-organization Engine for Real-Time Systems", WiP Session @ 43rd IEEE Real-Time Systems Symposium (RTSS@Work 2022), December 2022, Houston, TX, USA.

[18] D. Hoornaert, G. Ghaemi, A. Bastoni, **R. Mancuso**, M. Caccamo, G. Corradi, "On the Interplay of Computation and Memory Regulation in Multicore Real-Time Systems", in Proceedings of the 16th Operating Systems Platforms for Embedded Real-Time applications Workshop (OSPERT 2022), July 2022, Modena, Italy.

[19] M. Nicolella, S. Roozkhosh, D. Hoornaert, A. Bastoni, **R. Mancuso**, "RT-Bench: an Extensible Benchmark Framework for the Analysis and Management of Real-Time Applications", in Proceedings of the 30th International Conference on Real-Time Networks and Systems (RTNS 2022), June 2022, Paris, France.

[20] P. Sohal, M. Bechtel, **R. Mancuso**, H. Yun, O. Krieger, "A Closer Look at Intel Resource Director Technology (RDT)", in Proceedings of the 30th International Conference on Real-Time Networks and Systems (RTNS 2022), June 2022, Paris, France.

[21] O. Dantsker, **R. Mancuso**, "Propulsion System Instrumentation Development and Integration on Small-and Medium-Sized Electric Unmanned Aircraft", In Proceedings of the AIAA Scitech 2022 Forum, Jan. 2022, San Diego, CA, USA.

[22] G. Schwäricke, R. Tabish, R. Pellizzoni, **R. Mancuso**, A. Bastoni, A. Züpke, M. Caccamo, "A Real-Time virtio-based Framework for Predictable Inter-VM Communication", in Proceedings of the 42nd IEEE Real-Time Systems Symposium (RTSS 2021), Dec. 2021.

[23] S. Mysore, B. Mabsout, **R. Mancuso**, K. Saenko, "Honey, I Shrunk The Actor: A Case Study on Preserving Performance with Smaller Actors in Actor-Critic RL", in Proceedings of the IEEE Conference on Games (CoG), Copenhagen, Denmark, Aug. 2021.

[24] G. Ghaemi, D. Tarapore, **R. Mancuso**, "Governing with Insights: Towards Profile-driven Cache Management of Black-Box Applications", in Proceedings of the 33rd Euromicro Conference on Real-Time Systems (ECRTS 2021), Online, July 2021.

[25] D. Hoornaert, S. Roozkhosh, **R. Mancuso**, "A Memory Scheduling Infrastructure for Multi-core Systems with Re-programmable Logic", in Proceedings of the 33rd Euromicro Conference on Real-Time Systems (ECRTS 2021), Online, July 2021.

[26] D. Hoornaert, S. Roozkhosh, **R. Mancuso**, M. Caccamo, "Identifying Unexpected Inter-core Interference Induced by Shared Cache", in Proceedings of the Work-in-Progress at IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), Online, May 2021.

[27] S. Mysore, B. Mabsout, **R. Mancuso**, K. Saenko, "Regularizing Action Policies for Smooth Controlwith Reinforcement Learning", in Proceedings of the IEEE International Confernece on Robotics and Automation (ICRA 2021), Xi'an, China, May 2021.

[28] P. Sohal, R. Tabish, U. Drepper, **R. Mancuso**, "E-WarP: a System-wide Framework for Memory Bandwidth Profiling and Management", in Proceedings of the 41st IEEE Real-Time Systems Symposium (RTSS 2020), Houston, TX, USA, Dec. 2020. **(Best Student Paper Award)**

[29] R. Tabish, J.Y. Wen, R. Pellizzoni, **R. Mancuso**, H. Yun, M. Caccamo and L. Sha, "SCE-Comm: A Real-Time Inter-Core Communication Framework for Strictly Partitioned Multi-core Processors", In Proceedings of the 9th Mediterranean Conference on Embedded Computing (MECO 2020), Budva, Montenegro, June 2020.

[30] A. Bansal and J. Singh and Y. Hao and J.Y. Wen and **R. Mancuso** and M. Caccamo, "Reconciling Predictability and Coherent Caching", In Proceedings of the 9th Mediterranean Conference on Embedded Computing (MECO 2020), Budva, Montenegro, June 2020.

[31] S. Roozkhosh, **R. Mancuso**, "The Potential of Programmable Logic in the Middle: Cache Bleaching", In Proceedings of the IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), April 2020, Sydney, Australia. **(Best Paper Award)**

[32] O. Dantsker, M. Theile, M. Caccamo, S. Yu, M. Vahora, **R. Mancuso**, "Continued Development and Flight

Testing of a Long-Endurance Solar-Powered Unmanned Aircraft: UIUC-TUM Solar Flyer", In Proceedings of the AIAA Scitech 2020 Forum, Jan. 2020, Orlando, FL, USA.

[33] O. Dantsker, M. Caccamo, M. Vahora, **R. Mancuso**, "Flight & Ground Testing Data Set for an Unmanned Aircraft: Great Planes Avistar Elite", In Proceedings of the AIAA Scitech 2020 Forum, Jan. 2020, Orlando, FL, USA.

[34] G. Gracioli, R. Tabish, **R. Mancuso**, R. Mirosanlou, R. Pellizzoni, M. Caccamo, "Designing Mixed Criticality Applications on Modern Heterogeneous MPSoC Platforms", Proceedings of the 31st Euromicro Conference on Real-Time Systems (ECRTS), July 2019, Stuttgart, Germany. **(Outstanding Paper Award)**

[35] **R. Mancuso**, H. Yun and I. Puaut, "Impact of DM-LRU on WCET: a Static Analysis Approach", Proceedings of the 31st Euromicro Conference on Real-Time Systems (ECRTS), July 2019, Stuttgart, Germany.

[36] J. Ponniah, O. Dantsker, **R. Mancuso**, "Design of Multi-Agent UAV Simulator to Support the Development of the MARSNet Communication Protocol", Proceedings of the AIAA Aviation 2019 Forum, Dallas, TX, USA, June 2019.

[37] A. Raza, P. Sohal, J. Cadden, J. Appavoo, U. Drepper, R. Jones, O. Krieger, **R. Mancuso**, L. Woodman, "Unikernels: The Next Stage of Linux's Dominance", Proceedings of the 17th Workshop on Hot Topics in Operating Systems (HotOS 2019), Bertinoro, Italy.

[38] O. Dantsker, **R. Mancuso**, "Flight Testing Data Set for Subscale GA Aircraft: 26%-scale Cub Crafters CC11-100 Sport Cub S2", Proceedings of the AIAA Scitech 2019 Forum, San Diego, CA, USA, Jan. 2019.

[39] O. Dantsker, **R. Mancuso**, "Flight Data Acquisition Platform Development, Integration, and Operation on Small-to Medium-Sized Unmanned Aircraft", Proceedings of the AIAA Scitech 2019 Forum, San Diego, CA, USA, Jan. 2019.

[40] T. Kloda, M. Solieri, **R. Mancuso**, N. Capodieci, P. Valente, M. Bertogna, "Deterministic Memory Hierarchy and Virtualization for Modern Multi-Core Embedded Systems", In Proceedings of the IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), April 2019, Montreal, Canada.

[41] A. Agrawal, **R. Mancuso**, R. Pellizzoni, G. Fohler, "Analysis of Dynamic Memory Bandwidth Regulation in Multi-core Real-Time Systems", In Proceedings of the 39th IEEE Real-Time Systems Symposium (RTSS), December 2018, Nashville TN, USA.

[42] **R. Mancuso**, S. Chaki, "Verification of OS-level Cache Management", In Proceedings of Operating Systems Platforms for Embedded Real-Time applications (OSPERT), May 2018.

[43] A. Bansal, R. Tabish, G. Gracioli, **R. Mancuso**, R. Pellizzoni and M. Caccamo, "Evaluating Memory Subsystem of Configurable Heterogeneous MPSoC", In Proceedings of Operating Systems Platforms for Embedded Real-Time applications (OSPERT), May 2018.

[44] F. Farshchi, P. K. Valsan, **R. Mancuso**, H. Yun, "Deterministic Memory Abstraction and Supporting Multicore System Architecture", Proceedings of the 30th Euromicro Conference on Real-Time Systems (ECRTS), July 2018, Barcelona, Spain.

[45] O. Dantsker, M. Theile, M. Caccamo, **R. Mancuso**, "Design, Development, and Initial Testing of a Computationally-Intensive, Long-Endurance Solar-Powered Unmanned Aircraft", Proceedings of the 36th Applied Aerodynamics Conference, Atlanta, GA, USA, June 2018.

[46] A. Melani, **R. Mancuso**, M. Caccamo, G. Buttazzo, J. Freitag, S. Uhrig, "A Scheduling Framework for Handling Integrated Modular Avionic Systems on Multicore Platforms", In Proceedings of the 23rd IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA), August 2017, Hsinchu, Taiwan.

[47] F. Abdi, **R. Mancuso**, R. Tabish, M. Caccamo, "Restart-Based Fault-Tolerance: System Design and Schedulability Analysis", In Proceedings of the 23rd IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA), August 2017, Hsinchu, Taiwan.

[48] **R. Mancuso**, R. Pellizzoni, N. Tokcan, M. Caccamo, "WCET Derivation under Single Core Equivalence with Explicit Memory Budget Assignment", Proceedings of the 29th Euromicro Conference on Real-Time Systems (ECRTS), June 2017, Dubrovnik, Croatia.

[49] O. Dantsker, M. Selig, **R. Mancuso**, "A Rolling Rig for Propeller Performance Testing", Proceedings of the 35th AIAA Applied Aerodynamics Conference, Denver, CO, USA, June 2017.

[50] R. Tabish, **R. Mancuso**, S. Wasly, S. S. Phatak, R. Pellizzoni, M. Caccamo, "A Reliable and Predictable

OS for Real-Time Embedded Systems", Proceedings of the IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), Pittsburgh, USA, 2017.

[51] F. Abdi, **R. Mancuso**, S. Bak, O. Dantsker, M. Caccamo, "Reset-Based Recovery for Real-Time Cyber-Physical Systems with Temporal Safety Constraints", Proceedings of the 21st IEEE International Conference on Emerging Technologies Factory Automation and Applications Symposium (ETFA), Berlin, Germany, September 2016.

[52] R. Tabish, **R. Mancuso**, S. Wasly, A. Alhammad, S. S. Phatak, R. Pellizzoni, M. Caccamo, "A Real-Time Scratchpad-centric OS for Multi-core Embedded Systems", Proceedings of the IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), April 2016, Vienna, Austria. **(Best Presentation Award)**

[53] A. Melani, **R. Mancuso**, D. Cullina, M. Caccamo, L. Thiele, "Speed Optimization for Tasks with Two Resources", Proceedings of the International Conference on Design, Automation, and Test in Europe (DATE). Dresden, Germany, March 2016.

[54] **R. Mancuso**, R. Pellizzoni, M. Caccamo, L. Sha, H. Yun, "WCET(m) Estimation in Multi-Core Systems using Single Core Equivalence", Proceedings of the 27th Euromicro Conference on Real-Time Systems (ECRTS), July 2015, Lund, Sweden.

[55] **R. Mancuso**, A. V. Louis, M. Caccamo, "Using Traffic Phase Shifting to Improve AFDX Link Utilization", Proceedings of the 15th ACM International Conference on Embedded and Software (EMSOFT). Amsterdam, The Netherlands, October 2015.

[56] O. Dantsker, A.V. Louis, R. Mancuso, M. Caccamo, M. Selig, "SDAC-UAS: A Sensor Data Acquisition Unmanned Aerial System for Flight State Monitoring and Aerodynamic Data Collection", Proceedings of the 10th AIAA Infotech @ Aerospace, Kissimmee, FL, USA, Jan. 2015.

[57] M. Cesati, **R. Mancuso**, E. Betti, M. Caccamo, "A Memory Access Detection Methodology for Accurate Workload Characterization", Proceedings of the IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA). Hong Kong, China, August 2015.

[58] Y. Gao, S. Hu, **R. Mancuso**, M. Kim, P. L. Wu, L. Su, L. Sha, T. Abdelzaher, "Exploiting Structured Human Interactions to Enhance Estimation Accuracy in Cyber-physical Systems", Proceedings of the IEEE International Conference on Cyber-Physical Systems (ICCPS 2015), Seattle, WA, USA, April 2015.

[59] **R. Mancuso**, Or D. Dantsker, M. Caccamo, M. S. Selig, "A Low-Power Architecture for High Frequency Sensor Acquisition in Many-DOF UAVs", Proceedings of the 5th Intl. Conference on Cyber-Physical Systems (ICCPS), April 2014, Berlin, Germany.

[60] H. Yun, **R. Mancuso**, Z. Wu, R. Pellizzoni, "PALLOC: DRAM Bank-Aware Memory Allocator for Performance Isolation on Multicore Platforms", Proceedings of the IEEE Intl. Real-Time and Embedded Technology and Applications Symposium (RTAS), April 2014, Berlin, Germany.

[61] **R. Mancuso**, P. Srivastava, D. Cheng, M. Caccamo, "A Hardware Architecture to Deploy Complex Multiprocessor Scheduling Algorithms", Proceedings of the IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA). Chongqing, China, August 2014.

[62] **R. Mancuso**, R. Dudko, M. Caccamo, "Light-PREM: Automated Software Refactoring for Predictable Execution on COTS Embedded Systems", Proceedings of the IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA). Chongqing, China, August 2014.

[63] Or D. Dantsker, **R. Mancuso**, M. S. Selig, M. Caccamo, "High-Frequency Sensor Data Acquisition System (SDAC) for Flight Control And Aerodynamic Data Collection Research on Small to Mid-Sized UAVs", Proceedings of the AIAA Aviation and Aeronautics Forum and Exposition, Applied Aerodynamic Conference, (APA'14). Atlanta, Georgia, June 2014.

[64] F. Abdi , J. V. D. Woude, Y. Lu, S. Bak, M. Caccamo, L. Sha, **R. Mancuso**, S. Mohan, "On-Chip Control Flow Integrity Check for Real Time Embedded Systems", Proceedings of the 1st IEEE Intl. Conference on Cyber-Physical Systems, Networks and Applications (CPSNA), August 2013, Taipei, Taiwan.

[65] **R. Mancuso**, R. Dudko, E. Betti, M. Cesati, M. Caccamo, R. Pellizzoni, "Real-Time Cache Management Framework for Multi-core Architectures", Proceedings of the IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), April 2013, Philadelphia, USA. **(Best Student Paper Award)**

Technical Reports

[1] A. Raza, T. Unger, M. Boyd, E. Munson, P. Sohal, U. Drepper, R. Jones, D. Bristot de Oliveira, L. Woodman, **R. Mancuso**, J. Appavoo, O. Krieger, "Integrating Unikernel Optimizations in a General Purpose OS", Technical Report at BU, Available at: `https://arxiv.org/abs/2206.00789`.

[2] E. Asyabi, A. Bestavros, **R. Mancuso**, R. West, E. Sharafzadeh, "Akita: A CPU scheduler for virtualized Clouds", Technical Report at BU, Available at: `https://arxiv.org/pdf/2009.09104.pdf`.

[3] W. Koch, **R. Mancuso**, and A. Bestavros, "Neuroflight: Next Generation Flight Control Firmware", Technical Report at BU, Available at: `https://arxiv.org/pdf/1901.06553.pdf`.

[4] A. Melani, **R. Mancuso**, D. Cullina, M. Caccamo, L. Thiele, "Resource Speed Optimization for Two-Stage Flow-Shop Scheduling", Technical Report at UIUC, Available at: `http://hdl.handle.net/2142/88404`

[5] **R. Mancuso**, R. Pellizzoni, M. Caccamo, L. Sha, H. Yun, "Response-Time Analysis for Single Core Equivalence Framework", Technical Report at UIUC, Available at: `http://hdl.handle.net/2142/55570`

[6] L. Sha, M. Caccamo, **R. Mancuso**, J.E. Kim, M.K. Yoon, R. Pellizzoni, H. Yun, R. Kegley, D. Perlman, G. Arundale, R. Bradford, "Single Core Equivalent Virtual Machines for Hard Real-Time Computing on Multicore Processors", Technical Report at UIUC, Available at: `http://hdl.handle.net/2142/55672`

[7] M. Cesati, **R. Mancuso**, E. Betti, M. Caccamo, "MadT: A Memory Access Detection Tool for Symbolic Memory Profiling", Techinical Report at UIUC, Available at: `http://hdl.handle.net/2142/78093`

[8] **R. Mancuso**, A. V. Louis, M. Caccamo, "Improving Bandwidth Utilization With Deterministic Delivery Guarantees in AFDX through Traffic Phase-Shifting", Techinical Report at UIUC, Available at: `http://hdl.handle.net/2142/78193`

Press Releases and Other Articles

Faster, Safer, Smarter: Computer scientist Renato Mancuso [...]   **ARTS × Sciences Magazine**
Online Article (Mara Sassoon)   *Dec. 2023*
URL: https://www.bu.edu/hic/2023/06/25/three-hariri-institute-faculty-affiliates-receive-nsf-career-awards/

Three Hariri Institute Faculty Affiliates Receive NSF CAREER Awards   **Hariri Faculty News**
Online Article (Maureen Stanton)   *Jun. 2023*
URL: https://www.bu.edu/hic/2023/06/25/three-hariri-institute-faculty-affiliates-receive-nsf-career-awards/

BU's 5 NSF Grant Winners Are Changing Conversations in Robotics, Computing, [...] The Brink
Online Article (Jessica Colarossi)   *Jun. 2023*
URL: https://www.bu.edu/articles/2023/5-nsf-grant-winners-are-changing-conversations-in-engineering-computer-science-sociology/

BU Teaching Awards Honor Two Outstanding Educators   **BU Today**
Online Article   *Apr. 2023*
URL: https://www.bu.edu/articles/2023/bu-teaching-awards-honor-two-outstanding-educators/

Renato Mancuso Awarded NSF CAREER Grant   **BU Arts & Sciences**
Online Article (Lucy Gilbert)   *Apr. 2023*
URL: https://www.bu.edu/cas/renato-mancuso-awarded-nsf-career-grant/

Knowledge is Power. The Case for Profile-driven Resource Management   **ACM SIGBED Blog**
Online Article (Renato Mancuso, Dakshina Dasari, Arne Hamann)   *Nov. 2021*
URL: https://sigbed.org/2021/11/08/knowledge-is-power/

Simplifying machine learning for drone flight control   **Hariri Institute News**
Online Article (Gina Mantica)   *March 2021*
URL: https://www.bu.edu/hic/2021/03/17/simplifying-machine-learning-for-drone-flight-control/

Cyber-Physical Systems: the battle of Self- and Context-Awareness   **ACM SIGBED Blog**
Online Article (Renato Mancuso)   *Jan. 2021*
URL: https://sigbed.org/2021/01/20/cyber-physical-systems-embody-the-battle/

○ **We Have Emphasized Learning and Compassion** **ACM News**
Online Article (Gregory Goth) *Sept. 2020*
URL: `https://cacm.acm.org/news/247463-we-have-emphasized-learning-and-compassion/fulltext`

○ **How AI can enhance drone flight** **TechTalks**
Online Article (Ben Dickson) *June 2019*
URL: `https://bdtechtalks.com/2019/06/17/neuroflight-neural-networks-drone-controller/`

Teaching and Mentoring

○ **Main Instructor, Embedded Systems Development (CS-454/654)** **Boston, MA**
Computer Science, Boston University *Spring 2019, 2020, 2022–2024*
– Lab-based hands-on course touching on aspects of embedded and cyber-physical systems development.
– Official page at: `https://cs-people.bu.edu/rmancuso/courses/cs454_654-sp24/`

○ **Main Instructor, Challenges in Cyber-Physical Systems (CS-591 M1)** **Boston, MA**
Computer Science, Boston University *Spring 2018*
– Developed syllabus and reading list of research papers in CPS
– Assigned presentations and projects to a class of 30 students
– Organized peer-reviewed student presentations on research paper
– Formed student teams for custom class projects (6 projects total)
– Official page at: `http://cs-people.bu.edu/rmancuso/courses/cs591-sp18/index.php`

○ **Main Instructor, Fundamentals of Computing Systems (CS-350)** **Boston, MA**
Computer Science, Boston University *Fall 2017—2024*
– Prepared syllabus, lectures notes, and slides for a class of ≈130 students
– Held office hours and coordinated discussion sections (2-3 TA's)
– Prepared weekly assigments and exams: 2 midterms and 1 final
– Developed interactive code evaluation system (CodeBuddy)
– Coordinated grading of assignments and exams
– Organized end-of-semester online programming challenge
– Official page at: `http://cs-people.bu.edu/rmancuso/courses/cs350-fa24`

○ **Co-Instructor, Fundamentals of Computing Systems (CS-350)** **Boston, MA**
Computer Science, Boston University *Spring 2018, 2019, 2020, 2022*
– Delivered 1/3 of the frontal lectures
– Held office hours and coordinated discussion sections (2 TA's)
– Support in preparing weekly assigments and exams: 2 midterms and 1 final

○ **Teaching Assistant, System Programming (CS-241)** **Urbana, IL**
College of Engineering, University of Illinois *Spring 2013*
– Prepared discussion sections with presentations and interactive programming sessions with 60 students
– Held office hours with live debugging of student code and clarification of class material
– Prepared machine problems, instructions for assignments and grading strategies
– Implemented, maintained and executed auto-graders
– Graded assignments (with auto-graders), midterms and finals
– Coordinated with other TAs and faculty for the direction of the course

○ **Undergraduate Mentor**
Department of Computer Science, University of Illinois *2013 - 2017*
– Evaluated student fit to research projects based on CV evaluation and interviews
– Assigned students to ongoing research projects based on their inclinations
– Drafted project statement to be used as written agreement for independent study projects (CS-397)
– Prepared embedded platforms, source trees, development environments and repositories for students
– Evaluated/interviewed 11 students; mentored 5 students

○ **Graduate Mentor**
Department of Computer Science, University of Illinois 2014 - 2017
- Coordinated with faculty over student selection for Ph.D. program or short-term visiting
- Assessed student fit to research group based on CV and research interests
- Suggested short-term and long-term research path
- Guided new students to understand the exact scope of project, write formal reports and prepare presentations for conferences and industry partners
- Prepared literature review list for incoming students and introduced basic background concepts
- Mentored 3 students

○ **Invited Lecturer, Cyber-Physical Systems** **Munich, Germany**
Dept. of Electrical and Computer Engineering, Technical University of Munich *Jan. 2015*
- Prepared and lectured 4 graduate-level classes on Network Calculus and Real-Time Calculus
- Integrated lectures with rest of course material
- Prepared questions about presented material for practice exam and final exam

○ **Invited Lecturer, System Programming (CS-241)** **Urbana, IL**
College of Engineering, University of Illinois *Feb. 2014*
- Prepared tool to demonstrate virtual memory mapping and manipulate memory of running processes
- Lectured about theory on memory mapping
- Performed live demonstration of attacks on memory of running processes

Student Advising

Current Ph.D. Advisees

1. **Ivan Izhbirdeev** **Spring 2023—Present**
   Role: Ph.D. Advisor *Ph.D. Expected 2028/2029*
   ○ Webpage: `http://cpslab.bu.edu/ivan/`

2. **Francesco Ciraolo** **Fall 2022—Present**
   Role: Ph.D. Advisor *Ph.D. Expected 2028/2029*
   ○ Webpage: `http://cpslab.bu.edu/team/fciraolo`

3. **Mattia Nicolella** **Fall 2021—Present**
   Role: Ph.D. Advisor *Ph.D. Expected 2026/2027*
   ○ Webpage: `http://cpslab.bu.edu/mattia`

4. **Weifan Chen** **Fall 2021—Present**
   Role: Ph.D. Advisor *Ph.D. Expected 2026/2027*
   ○ Webpage: `https://weifan-chen-bu.netlify.app/`

5. **Shahin Roozkhosh** **Fall 2018—Present**
   Role: Ph.D. Advisor *Ph.D. Expected 2023/2024*
   ○ Remarks: Prospectus cleared in Spring 2024.
   ○ Webpage: `http://cs-people.bu.edu/shahin/`

6. **Denis Hoornaert** **Spring 2018—Present**
   Role: Ph.D. Co-advisor; Advisor: Prof. Caccamo (TUM) *Ph.D. Expected 2023/2024*
   ○ Webpage: `https://www.mec.ed.tum.de/en/cps/people/msc-denis-hoornaert/`

7. **Bassel El Mabsout** **Fall 2019—Present**
   Role: Ph.D. Advisor *Ph.D. Expected 2024/2025*
   ○ Remarks: Depth exam cleared in Fall 2022.
   ○ Webpage: `https://bmabsout.com/`

8. **Golsana Ghaemi**   **Fall 2019—Present**
   Role: Ph.D. Advisor   *Ph.D. Expected 2023/2024*
   - Remarks: Prospectus cleared in Spring 2022.
   - Webpage: `http://cpslab.bu.edu/golsana/`

9. **Parul Sohal**   **Fall 2018—Present**
   Role: Ph.D. Co-Advisor; Advisor: Prof. Krieger   *Ph.D. Expected 2023/2024*
   - Webpage: `http://cpslab.bu.edu/team/parulsohal/`

Former Ph.D. Advisees

1. **Ali Raza**   **Fall 2018—Spring 2023**
   Role: Ph.D. Co-Advisor; Advisor: Prof. Krieger   *Ph.D. Spring 2023*
   - Thesis: "Specializing a General-Purpose Operating System"
   - Current position: Samsung, HPC division
   - Webpage: `https://razaaliraza.github.io/`

2. **William Frederick Koch III**   **Fall 2017—Fall 2019**
   Role: Ph.D. Co-Advisor; Advisor: Prof. Bestavros   *Ph.D. Fall 2019*
   - Thesis: "Flight Controller Synthesis via Deep Reinforcement Learning"
   - Current position: Merlin Labs
   - Webpage: `https://wfk.io/`

Hosted Visiting Scholars

1. **Cristiano Rodrigues**   **Aug. 2023—Feb. 2024**
   Role: Visiting Scholar Advisor   *Ph.D. Student at University of Minho, Portugal*
   - Webpage: `https://algoritmi.uminho.pt/user/cristiano-antonio-azevedo-rodrigues/`

2. **Daniele Ottaviano**   **July 2023—Feb. 2024**
   Role: Visiting Scholar Advisor   *Ph.D. Student at University of Naples "Federico II", Italy*
   - Webpage: `http://wpage.unina.it/daniele.ottaviano/`

3. **Daniel Oliveira**   **Oct. 2022—Jan. 2023**
   Role: Visiting Scholar Advisor   *Ph.D. Student at University of Minho, Portugal*
   - Webpage: `https://www.linkedin.com/in/danieljcoliv/`

Current M.S. Advisees

1. **Patrick Carpanedo**   **Fall 2023—Present**
   Role: Ph.D. Advisor   *M.S. Expected Fall 2024*
   - Webpage: `https://cs-people.bu.edu/pfcarp21/`

2. **Hyunjin Jung**   **Fall 2024—Present**
   Role: Ph.D. Advisor   *M.S. Expected Fall 2025*
   - Webpage: `https://cs-people.bu.edu/hyunjin/`

Former M.S. Advisees

1. **Bassel El Mabsout**   **Spring 2023**
   Role: M.S. Advisor   *Non-terminal M.S.*
   - Webpage: `https://bmabsout.com/`
   - Thesis Title: *PULER*

Students Advised in Directed Study Courses

- **Yann Arif, Koneshka Bandyopadhyay, Truc Duong, Shahnawaz Fakir, Jiawei Sun**   **Spring 2024**
  Undergraduate Students   *CS492*

- **Yann Arif, Jiayi Shen**   **Fall 2023**
  Undergraduate Students   *CS491*

- **Rithvik Doshi**   **Fall 2023–Spring 2024**
  BA/MS Student   *Kilachand Honors College Keystone Project*

Jordan Espinal, Maxwell Higa *Undergraduate Students*	**Fall 2023** *UR2PhD Program*
Revathi Vipinachandran *Undergraduate Student*	**Summer 2023** *CS491*
Golsana Ghaemi *Ph.D. Student*	**Spring 2023** *EC991*
Parul Sohal, Mattia Nicolella, Weifan Chen *Ph.D. Student*	**Spring 2023** *CS995*
Melody Chan, Xing Zhizhou *MS Students*	**Spring 2023** *CS995*
Dave Godfrey, Devon Lewis, Vineet Raju *Undergraduate Students*	**Spring 2023** *CS492*
Golsana Ghaemi *Ph.D. Student*	**Fall 2022** *EC991*
Parul Sohal *Ph.D. Student*	**Fall 2022** *CS995*
Patrick Carpanedo, Melody Chan, Ivan Izhbirdeev *MS Students*	**Fall 2022** *CS995*
Agboola Kolade Adegbaye, Devon Lewis *Undergraduate Students*	**Fall 2022** *CS491*
Weifan Chen, Bassel El Mabsout *Ph.D. Students*	**Spring 2022** *CS995*
Weifan Chen *MS Student*	**Fall 2020** *CS995*
Andrew James *BA/MS Student*	**Spring 2020** *CS991*
Yifei Feng *Graduate Student*	**Spring 2020** *CS991*
Bassel El Mabsout *Ph.D. Student*	**Fall 2019** *CS995*
Yifei Feng *Graduate Student*	**Fall 2019** *CS995*
Erasmo Tani *Ph.D. Student*	**Spring 2019** *CS995*
Chet Powers, Tuna Sogut, Ivan Izhbirdeev *Undergraduate Students*	**Spring 2019** *CS492*
Steven Brzozowski, Benjamin Sissons *BA/MS Students*	**Spring 2019** *CS911*
Francis Zamora, Tuna Sogut, Sabouri Armin *Undergraduate Students*	**Fall 2018** *CS491*

Students Advised in Independent Projects

- Brandon Chen
- Soon Sung Hong
- Ghazal Randhawa
- Keval Khara
- Chuqiao Liang
- Dharmesh Tarapore
- Yash Jain
- James Kunstle
- Kathryn Quirk
- Max Mesirow

High School Research Interns

o Abhinav Pomalapally (RISE Internship, June 2021–Dec. 2021)

Presentations and Talks

Conference Presentations

1. **"Impact of DM-LRU on WCET: a Static Analysis Approach"**   **Stuttgart, Germany**
   Euromicro Conference on Real-Time Systems (ECRTS)   *July 2019*

2. **"A Scheduling Framework for Handling Integrated Modular Avionic Systems on Multicore"**   **Hsinchu, Taiwan**
   IEEE Int. Conference on Embedded and Real-Time Systems and Applications (RTCSA)   *Aug. 2017*

3. **"Restart-Based Fault-Tolerance: System Design and Schedulability Analysis"**   **Hsinchu, Taiwan**
   IEEE Int. Conference on Embedded and Real-Time Systems and Applications (RTCSA)   *Aug. 2017*

4. **"WCET Derivation under SCE with Explicit Memory Budget Assignment"**   **Dubrovnik, Croatia**
   Euromicro Conference on Real-Time Systems (ECRTS)   *Jun. 2017*

5. **"A Real-Time Scratchpad-centric OS for Multi-core Embedded Systems"**   **Vienna, Austria**
   IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)   *Apr. 2016*

6. **"Real-Time Cache Management Framework for Multi-core Architectures"**   **Philadelphia, PA, USA**
   IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)   *Apr. 2013*

7. **"WCET(m) Estimation in Multi-Core Systems using Single Core Equivalence"**   **Lund, Sweden**
   Euromicro Conference on Real-Time Systems (ECRTS)   *July 2015*

8. **"Using Traffic Phase Shifting to Improve AFDX Link Utilization"**   **Amsterdam, Netherlands**
   ACM International Conference on Embedded and Software (EMSOFT)   *Oct. 2015*

9. **"Reset-Based Recovery for Real-Time Cyber-Physical Systems"**   **Berlin, Germany**
   IEEE Emerging Technologies Factory Automation and Appl. Symposium (ETFA)   *Sept. 2016*

10. **"A Memory Access Detection Methodology for Accurate Workload Characterization"**   **Hong Kong, China**
    IEEE Int. Conference on Embedded and Real-Time Systems and Applications (RTCSA)   *Aug. 2015*

11. **"A Low-Power Architecture for High Frequency Sensor Acquisition in Many-DOF UAVs"**   **Berlin, Germany**
    IEEE Int. Conference on Cyber-Physical Systems (ICCPS)   *Apr. 2014*

12. **"A Hardware Architecture to Deploy Complex Multiprocessor Scheduling Algorithms"**   **Chongqing, China**
    IEEE Int. Conference on Embedded and Real-Time Systems and Applications (RTCSA)   *Aug. 2014*

13. **"Light-PREM: Software Refactoring for Predictable Execution on Embedded Systems"**   **Chongqing, China**
    IEEE Int. Conference on Embedded and Real-Time Systems and Applications (RTCSA)   *Aug. 2014*

14. **"On-Chip Control Flow Integrity Check for Real Time Embedded Systems"**   **Taipei, Taiwan**
    IEEE Intl. Conference on Cyber-Physical Systems, Networks and Applications (CPSNA)   *Aug. 2013*

Keynotes and Other Talks

1. **"Can We Control Time? Software-Shaped Platforms for Precise Performance Control"**   **St. Louis, MO, USA**
   Washington University in St. Louis (Research Talk)   *Nov. 2023*

2. **"Can We Control Time? Software-Shaped Platforms for Precise Performance Control"**   **Porto, Portugal**
   CISTER (Research Talk)   *Sept. 2023*

3. **"Can We Control Time? Software-Shaped Platforms for Precise Performance Control"**   **Stuttgart, Germany**
   Bosch GmbH Campus (Research Talk)   *July 2023*

4. **"Can We Control Time? Software-Shaped Platforms to Control Timeliness"**   **San Antonio, TX, USA**
   2nd Real-time and Intelligent Edge Computing Workshop (RAGE'23)   *May 2023*

5. **"CAESAR: Coherence-Aided Elective and Seamless Alternative Routing via on-chip FPGA"**   **(Online)**
   Washington University in Saint Louis (Seminar Talk)   *Apr. 2023*

6. **"Can We Control Time? Software-Shaped Platforms to Control Timeliness"** **Cambridge, UK**
ARM Ltd. Headquarters (Workshop Talk) *Mar. 2023*

7. **"Can We Control Time? Toward Knowledge-Driven System Management to Control Timeliness"** **(Online)**
Red Hat Research (Research Days Talk) *Oct. 2022*

8. **"Fine-grained Resource Profiling and Knowledge-driven Allocation"** **Garching, Germany**
Technical University of Munich (Seminar Talk) *June 2022*

9. **"Fine-grained Resource Profiling and Knowledge-driven Allocation"** **Braga, Portugal**
University of Minho (Seminar Talk) *June 2022*

10. **"From Memory Partitioning to Management through Fine-grained Profiling and Control"** **Grenoble, France**
CAPITAL Workshop Keynote *June 2022*

11. **"From Partitioning to Management: Fine-grained Resource Profiling and Knowledge-driven Allocation"** **(Online)**
University of California, Berkeley (DREAMS Seminar Talk) *Mar. 2022*

12. **"Modern Cyber-Physical Systems and the Nightmare of Temporal Interference"** **Boston, MA, USA**
Boston University (Upsilon Pi Epsilon Student Chapter) *Mar. 2022*

13. **"Tackling Memory Contention with Fine-grained Profiling and Control"** **Boston, MA, USA**
Boston University (Systems Seminar) *Mar. 2022*

14. **"From Partitioning to Management: Tackling Memory Contention with Fine-grained Profiling and Control"** **(Online)**
Washington University in St. Louis *Mar. 2021*

15. **"From Partitioning to Management: Tackling Memory Contention with Fine-grained Profiling and Control"** **(Online)**
SBESC'20 Keynote (K3) *Nov. 2020*

16. **"Towards A Unified Virtualized Shared Resource Management Infrastructure"** **Boston, MA, USA**
Boston University *Feb. 2020*

17. **"Shared Resource Management with Programmable Logic in-the-Middle"** **Cambridge, UK**
ARM Ltd. Headquarters *Nov. 2019*

18. **"Safe, Real-Time Software Architectures for Cyber-Physical Systems"** **Worchester, MA, USA**
Worchester Polytechnic Institute (WPI) *Sept. 2019*

19. **"Towards Fine-grained Memory Resource Management in Latest-generation MPSoCs"** **Munich, Germany**
Dept. of Cyber-Physical Systems in Production Engineering *July 2019*

20. **"Challenges and Opportunities in High-Performance Cyber-Physical Systems"** **Manaus, Brazil**
1st Digital Fair of Manaus *Nov. 2018*

21. **"Are You Ready for the 4th Industrial Revolution? Future-proof Cyber-Physical Systems"** **Boston, MA, USA**
BUILD-Lab Technology Transition Workshop *Nov. 2018*

22. **"Restart-Based Fault-Tolerance"** **York, UK**
Workshop on Modelling, Measuring and Managing Uncertainty in CPS *July 2018*

23. **"Verification of OS-level Cache Management"** **Barcelona, Spain**
Operating Systems Platforms for Embedded Real-Time applications (OSPERT) *July 2018*

24. **"Evaluating Memory Subsystem of Configurable Heterogeneous MPSoC"** **Barcelona, Spain**
Operating Systems Platforms for Embedded Real-Time applications (OSPERT) *July 2018*

25. **"Hypervisor-level System Protection with SafeVisor"** **San Diego, CA, USA**
Qualcomm Inc. - Qualcomm Innovation Fellowship *May 2016*

26. **"Toward certifiable avionics platforms: Single Core Equivalent (SCE) - Part 1"** **Seattle, WA, USA**
First TCRTS Workshop on Certifiable Multicore Avionics Systems (CMAS) *Apr. 2015*

27. **"Scratchpad-centric Resource Management"** **Farmington Hills, MI, USA**
Hitachi Automotive Ltd. - Technology Transition Workshop *May 2015*

28. **"Single-Core Equivalence (SCE) Tutorial"** **Berlin, Germany**
Cyber-Physical Systems Week (CPSWeek) *Apr. 2014*

29.	**"Workshop on Multi-Core Performance Isolation using Freescale P4080"** *Lockheed Martin - Technology Transition Workshop*	**Denver, CO, USA** *Jan. 2013*
30.	**"A Hands-on Tutorial on Performance Isolation Techniques"** *Lockheed Martin - Technology Transition Workshop*	**Urbana, IL, USA** *Apr. 2013*
31.	**"Automatic Predictability-Oriented Refactoring of Application Code"** *WIP – IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)*	**Philadelphia, PA, USA** *Apr. 2013*

Services to the Community

Executive Committees
○ *ACM SIGBED Communication Director* ····· *Aug. 2019 – Aug. 2022*

Editorial Boards
○ *Leibniz Transactions on Embedded Systems (LITES)* ····· *July 2023 – Present*
○ *Journal of Systems Research (JSys), Real-time and Cyber-physical Systems Area* ····· *Jan. 2021 – Present*

Co-organizer

○	**Local Organizer** *46th IEEE Real-Time Systems Symposium (RTSS)*	**Boston, USA** *2025*
○	**Artifact Evaluation Chair** *55th IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*	**Naples, Italy** *2025*
○	**Program Chair** *37th Euromicro Conference on Real-Time Systems (ECRTS)*	**Brussel, Belgium** *2025*
○	**Program Chair** *32nd ACM International Conference on Real-Time Networks and Systems (RTNS)*	**Porto, Portugal** *2024*
○	**Track 1 Deputy Chair** *44th IEEE Real-Time Systems Symposium (RTSS)*	**Hong Kong** *2023*
○	**Program Chair** *17th Workshop on Operating Systems Platforms for Embedded Real-Time Applications (OSPERT)*	**Vienna, Austria** *2023*
○	**Track 1 Deputy Chair** *29th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)*	**San Antonio, TX, USA** *2023*
○	**Publicity Chair** *25th IEEE International Symposium On Real-Time Distributed Computing (ISORC)*	**Vasteras, Sweden, USA** *2022*
○	**Artifact Evaluation Chair** *28th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)*	**Milan, Italy** *2022*
○	**Chair** *16th Workshop on Operating Systems Platforms for Embedded Real-Time Applications (OSPERT)*	**Modena, Italy** *2022*
○	**Publicity Chair** *41st IEEE Real-Time Systems Symposium (RTSS)*	**Houston, TX, USA** *2021*
○	**Co-organizer** *2nd ACM/SIGBED Student Research Competition (SRC) at CPS-IoT Week*	**Nashville, TN, USA** *2021*
○	**Publicity Chair** *27th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)*	**Nashville, TN, USA** *2021*
○	**Web Chair** *11th ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS)*	**Nashville, TN, USA** *2021*
○	**Co-chair** *16th annual workshop on Operating Systems Platforms for Embedded Real-Time (OSPERT)*	**Modena, Italy** *2020*
○	**Co-organizer** *1st ACM Student Scholars Program at CPS-IoT Week*	**Sydney, Australia** *2020*

Web Chair   **Sydney, Australia**
10th ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS)   *2020*

Co-organizer   **New York, NY, USA**
1st ACM/SIGBED Student Research Competition (SRC) at Embedded Systems Week (ESWEEK)   *2019*

Web Chair   **Montreal, QC, Canada**
25th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)   *2019*

Co-organizer for Conference   **Boston, MA, USA**
4th New England Networking and Systems Day (NENS)   *2017*

Co-organizer for TCRTS CPSWeek Tutorial   **Pittsburgh, PA, USA**
2nd TCRTS Workshop on Certifiable Multicore Avionics and Automotive Systems (CMAAS)   *2017*

Co-organizer for ACM/IEEE CPSWeek Tutorial   **Berlin, Germany**
Single Core Equivalent (SCE) Architecture Framework for Safety-critical Multi-core Systems   *2014*

Program Committee Member

- *45th IEEE Real-Time Systems Symposium (RTSS'24)*   *Dec. 2024*
- *23rd ACM International Conference on Embedded and Software (EMSOFT'24)*   *Oct. 2024*
- *36th Euromicro Conference on Real-Time Systems (ECRTS'24)*   *July 2024*
- *3rd International Workshop on Real-time and Intelligent Edge Computing (RAGE'24)*   *May 2024*
- *30th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS'24)*   *May 2024*
- *LB+WiP Track, 22nd ACM International Conference on Embedded and Software (EMSOFT'23)*   *Oct. 2023*
- *2nd International Workshop on Real-time and Intelligent Edge Computing (RAGE'23)*   *May 2023*
- *35th Euromicro Conference on Real-Time Systems (ECRTS'23)*   *July 2023*
- *31st International Conference on Real-Time Networks and Systems (RTNS'23)*   *June 2023*
- *Design, Automation and Test in Europe Conference (DATE'23)*   *Mar. 2023*
- *9th International workshop on Mixed Criticality Systems (WMC'22)*   *Dec. 2022*
- *43rd IEEE Real-Time Systems Symposium (RTSS'22)*   *Dec. 2022*
- *34th Euromicro Conference on Real-Time Systems (ECRTS'22)*   *July 2022*
- *20th International workshop on Worst-Case Execution Time Analysis (WCET'22)*   *July 2022*
- *Design Automation Conference (DAC'22)*   *July 2022*
- *13th ACM International Conference on Cyber-Physical Systems (ICCPS'22)*   *Apr. 2022*
- *Design, Automation and Test in Europe Conference (DATE'22)*   *Mar. 2022*
- *20th ACM International Conference on Embedded and Software (EMSOFT'21)*   *Oct. 2021*
- *IEEE Conference on Games (CoG'21)*   *Aug. 2021*
- *33rd Euromicro Conference on Real-Time Systems (ECRTS'21)*   *July 2021*
- *Design Automation Conference (DAC'21)*   *July 2021*
- *ACM Student Research Competition (SRC) Grand Finals 2021*   *May 2021*
- *Design, Automation and Test in Europe Conference (DATE'21)*   *Mar. 2021*
- *41th IEEE Real-Time Systems Symposium (RTSS'20)*   *Dec. 2020*
- *19th ACM International Conference on Embedded and Software (EMSOFT'20)*   *Oct 2020*
- *Design Automation Conference (DAC'20)*   *July 2020*
- *ACM Student Research Competition (SRC) Grand Finals 2020*   *May 2020*
- *Design, Automation and Test in Europe Conference (DATE'20)*   *Mar 2020*
- *26th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS'20)*   *Apr. 2020*
- *7th International workshop on Mixed Criticality Systems (WMC'19)*   *Dec. 2019*
- *40th IEEE Real-Time Systems Symposium (RTSS'19)*   *Dec. 2019*
- *18th ACM International Conference on Embedded and Software (EMSOFT'19)*   *Oct 2019*
- *25th IEEE Intl. Conf. on Embedded and Real-Time Computing Systems and Applications (RTCSA'19)*   *Aug. 2019*
- *7th International Conference on Smart Computing & Communications (ICSCC'19)*   *June 2019*
- *5th New England Network and Systems Day (NENS'19)*   *Apr. 2019*

- *25th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS'19)* — Apr. 2019
- *COINS 2019 – Special Session on Critical Systems Design* — May 2019
- *RTSS 2018 – Brief Presentations Session* — Dec. 2018
- *RTSS@Work 2018 – Demo Session* — Dec. 2018
- *6th International workshop on Mixed Criticality Systems (WMC'18)* — Dec. 2018
- *39th IEEE Real-Time Systems Symposium (RTSS'18)* — Dec. 2018
- *24th IEEE Intl. Conf. on Embedded and Real-Time Computing Systems and Applications (RTCSA'18)* — Aug. 2018
- *18th ACM International Conference on Embedded and Software (EMSOFT'18)* — Oct 2018
- *21st Euromicro Conference on Digital System Design (DSD'18)* — Aug. 2018
- *15th IEEE International Conference on Embedded Software Systems (ICESS'18)* — Jun. 2018
- *24th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS'18)* — Dec. 2017
- *14th Workshop on Operating Systems Platforms for Embedded Real-Time Applications (OSPERT'18)* — Apr. 2018
- *WiP Session at CSI Symposium on Real-Time and Embedded Systems and Technologies (RTEST'18)* — Feb. 2018
- *10th Junior Researcher Workshop on Real-Time Computing (JRWRTC)* — Sept. 2016

Session Chair

- **Euromicro Conference on Real-Time Systems (ECRTS)** — **Lille, France**
  Keynote 2 — *2024*
- **Euromicro Conference on Real-Time Systems (ECRTS)** — **Vienna, Austria**
  Session 2 - Architectures and Network — *2023*
- **IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)** — **Online**
  Session 3 - ROS 2 — *2023*
- **IEEE Real-Time Systems Symposium (RTSS)** — **Houston, TX, USA**
  Session 14 - DAG Scheduling — *2022*
- **IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)** — **Online**
  Session 1 - Scheduling for Parallelism — *2020*
- **ACM International Conference on Embedded Software (EMSOFT)** — **New York, USA**
  Session 3C - Timing, Scheduling and Parallel Execution — *2019*
- **IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)** — **Montreal, Canada**
  Session 7 - Scheduling and Synchronization — *2019*
- **ACM International Conference on Embedded Software (EMSOFT)** — **Amsterdam, The Netherlands**
  Session 6 - Energy Efficiency and Security — *2015*

Panelist

- **Topic: Challenges in Explainability of Real-Time Systems** — **Houston, TX, USA**
  1st International Workshop on Explainability of Real-time Systems and their Analysis (ERSA) — *2022*

Journal Reviews

- *Journal on Systems Research (JSYS)* — *2021, 2023*
- *IEEE Robotics and Automation Letters (RA-L/IROS)* — *2021*
- *IEEE Embedded Systems Letters (ESL)* — *2021*
- *IEEE Transactions on Aerospace and Electronic Systems (TAES)* — *2021*
- *Springer Design Automation for Embedded Systems (DAEM)* — *2019, 2020*
- *ACM Transactions on Architecture and Code Optimization (TACO)* — *2020*
- *International Journal of Computers and Applications (IJCA)* — *2020*
- *ACM Computing Surveys (ACM CSUR)* — *2018, 2021*
- *Public Library of Science ONE (PLoS ONE)* — *2018*
- *IEEE Transactions on Computers (TC)* — *2017, 2018, 2019, 2021–2024*
- *Springer Real-Time Systems Journal (RTSJ)* — *2016, 2017, 2018, 2019, 2021–2023*
- *ACM Transactions on Cyber-Physical Systems (TCPS)* — *2016, 2020*

- *ACM Transactions on Embedded Computing Systems (TECS)* 2017, 2018, 2021–2023
- *ACM Transactions on Modeling and Performance Evaluation of Computing Systems (TOMPECS)* 2018

Secondary Reviewer

- *Springer Real-Time Systems Journal (RTSJ)* 2016
- *ACM Transactions on Embedded Computing Systems (TECS)* 2014
- *IEEE Transactions on Industrial Informatics (TII)* 2013, 2017
- *ACM/IEEE Symposium on Embedded Systems For Real-Time Multimedia (ESTIMedia)* 2012, 2013, 2014
- *IEEE International Conference on Cyber-Physical Systems (ICCPS)* 2013, 2015, 2016, 2017
- *ACM Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES)* 2015
- *IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)* 2013, 2014, 2016
- *IEEE Real-Time Systems Symposium (RTSS)* 2014, 2015
- *IEEE Intl. Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA)* 2016, 2017
- *Euromicro Conference on Real-Time Systems (ECRTS)* 2014
- *Design Automation Conference (DAC)* 2017
- *IEEE Emerging Technologies Factory Automation and Applications Symposium (ETFA)* 2017

Internal Services

Committee Member at Boston University

- *Ph.D. Thesis Proposal – Faculty Committee Member* Spring 2024
  Candidate: Shahin Roozkhosh
- *MS Thesis Defense – Faculty Committee Member* Spring 2024
  Candidate: Animikh Aich
- *Computer Science Department Faculty Annual Review (FAR) Committee* Spring 2024
  Committee to evaluate the yearly progress of departmental faculty.
- *BU Teaching Awards Committee* Fall 2023—Spring 2024
  University-level committee to select the winners of three campus-wide teaching awards: (1) the Metcalf Award for Excellence in Teaching, (2) the Provost's Scholar-Teacher of the Year Award, and (3) the Gitner Award for Innovation in Teaching with Technology.
- *Ph.D. Thesis Defense – Faculty Committee Member* Fall 2023
  Candidate: Thomas Unger
- *Ph.D. Thesis Proposal – Faculty Committee Member* Fall 2023
  Candidate: Thomas Unger
- *MS Thesis Defense – Faculty Committee Member* Spring 2023
  Candidate: Bassel El Mabsout
- *STEM Research Committee* Fall 2022—Spring 2023
  College-level committee to improve support for externally-funded STEM research.
- *Ph.D. Thesis Defense – Faculty Committee Member* Spring 2023
  Candidate: Ali Raza
- *Ph.D. Thesis Defense – Faculty Committee Member* Spring 2023
  Candidate: Showan Asyabi
- *Ph.D. Depth Exam – Faculty Committee Member* Fall 2022
  Candidate: Shahin Roozkhosh
- *Ph.D. Depth Exam – Faculty Committee Member* Fall 2022
  Candidate: Parul Sohal
- *Ph.D. Depth Exam – Faculty Committee Member* Fall 2022
  Candidate: Bassel El Mabsout
- *Ph.D. Depth Exam – Faculty Committee Member* Summer 2022
  Candidate: Thomas Unger

- *Ph.D. Thesis Proposal – Faculty Committee Member* — *Summer 2022*
  Candidate: Showan Asyabi
- *Ph.D. Thesis Defense – Faculty Committee Member* — *Summer 2022*
  Candidate: Ahmad (Sasan) Golchin
- *Ph.D. Thesis Defense – Faculty Committee Member* — *Summer 2022*
  Candidate: Soham Sinha
- *Ph.D. Thesis Defense – Faculty Committee Chair* — *Spring 2022*
  Candidate: Siddharth Mysore
- *Ph.D. Thesis Defense – Faculty Committee Member* — *Spring 2022*
  Candidate: Emine Ugur Kaynar
- *Ph.D. Thesis Proposal – Faculty Committee Member* — *Spring 2022*
  Candidate: Golsana Ghaemi
- *Ph.D. Thesis Proposal – Faculty Committee Member* — *Spring 2022*
  Candidate: Siddharth Mysore
- *Ph.D. Depth Exam – Faculty Committee Member* — *Spring 2022*
  Candidate: Yara Awad
- *Faculty Search Committee Member* — *Fall 2021*
- *Ph.D. Depth Exam – Faculty Committee Member* — *Fall 2021*
  Candidate: Showan Asyabi
- *Ph.D. Depth Exam – Faculty Committee Member* — *Fall 2021*
  Candidate: Ali Raza
- *Ph.D. Oral Exam – Faculty Committee Member* — *Fall 2021*
  Candidate: Siddharth Mysore
- *Ph.D. Thesis Proposal – Faculty Committee Member* — *Fall 2021*
  Candidate: Ahmad (Sasan) Golchin
- *Ph.D. Thesis Proposal – Faculty Committee Member* — *Fall 2021*
  Candidate: Soham Sinha
- *Ph.D. Depth Exam – Faculty Committee Member* — *Fall 2019*
  Candidate: Ahmad (Sasan) Golchin
- *Ph.D. Thesis Proposal – Faculty Committee Member* — *Fall 2019*
  Candidate: Emine Ugur Kaynar
- *Ph.D. Thesis Defense – Faculty Committee Member* — *Fall 2019*
  Candidate: Wil Koch
- *Ph.D. Depth Exam – Faculty Committee Member* — *Fall 2018*
  Candidate: Soham Sinha
- *Ph.D. Thesis Proposal – Faculty Committee Member* — *Fall 2018*
  Candidate: Wil Koch
- *Ph.D. Thesis Defense – Faculty Committee Member* — *Fall 2018*
  Candidate: Zhuoqun (Tom) Cheng
- *Faculty Search Committee Member* — *Fall 2018*
- *PhD Admissions Committee Member* — *Fall 2018*
- *PhD Admissions Committee Member* — *Fall 2017*

Other Internal Service

- *Faculty Mentor. Mentee: Deepti Ghadiyaram (BU CS, tenure-track)* — *Spring 2024*
- *PhD Student Search & Filtering Engine* — *Fall 2019*
- *Extension for BU Faculty Link to Assess Course Prerequisite of Students in CS Courses* — *Fall 2019*
- *Graduate Initiation Seminar (co-organizer)* — *Spring 2019*

External Committee Member

- *Ph.D. Thesis Defense – External Faculty Committee Member* — *Summer 2023*
  Candidate: Jatin Arora, Universidade do Porto, Portugal

- *Ph.D. Thesis Review – External Faculty Committee Member* Spring 2023
  Candidate: Filippo Muzzini, Universitá degli Studi di Parma, Italy
- *Ph.D. Thesis Research Plan – External Faculty Committee Member* Fall 2020
  Candidate: Jatin Arora, Universidade do Porto, Portugal

Professional Experience

Co-founder **Boston, MA**
AlterByte, Corp. *2024-Present*
- Innovative startup for the design of a secure-by-design data exchange with the use of cutting-edge partially reprogrammable platforms.

Co-founder, Scientific Advisor **Boston, MA**
Minerva Systems SRL *2021-Present*
- Innovative startup for the design and simplified deployment of predictable AI-enabled, multiple-criticality applications on next-generation embedded systems
- More info available at: `http://minervasys.tech/`

Co-founder **Urbana, IL**
Al Volo LLC. *2016-Present*
- Development of fully integrated data acquisition and sensor fusion system for UAVs
- Performed custom PCB, firmware and OS development
- Developed browser-based configuration interface to simplify in-the-field deployment
- More info available at: `http://www.alvolo.us`

Ph.D. Intern **Pisa, Italy**
Evidence Inc. *June-Aug. 2014*
- Porting of RTOS to new-generation multi-core micro-controller (Freescale MPC5777M)
- Augmented RTOS to support DMA-assisted task loading and scheduling
- Evaluation of achievable performance and timing properties of augmented RTOS

Co-founder and CIO **Rome, Italy**
ShowOn LLC. *2012-2013*
- Ground-up development of a vertical social networking platform with LAMP platform
- System administration, development team recruitment, task assignment and progress assessment
- Data analysis of the highly segmented user base – about 30000 users
- Design of interaction with existing services via APIs to centralize content management

Technical skills

- **Programming/Scripting:** C, C++, ASM (IA32, AMD64, PowerPC, ARM), Java, Bash, Python, Makefile

- **Experienced in Linux Kernel development**, ARM-based and PowerPC-based platforms, Xilinx Zynq-7000 & UltraScale+, Microchip PIC18/32, Freescale MPC56xx and MPC57xx, Arduino, ArduPilot, TI MSP

- **Hardware Debugging:** Lauterbach PowerDebug & PowerTrace, GreenHills SuperTrace Probe, Xilinx Integrated Logic Analyzer

- **Hardware Design:** Verilog, VHDL

- **Web Development:** PHP, SQL, JavaScript, Node.js, Handlebars, AngularJS

Language Skills

Italian: Native speaker
English: Fluent
Turkish: Intermediate

References

References available upon request.