EREN YILDIZ, PH.D.

Postdoctoral Researcher

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I am a Postdoctoral Researcher at the **Georgia Institute of Technology**, specializing in **batteryless and energy-harvesting sensor systems**. My research focuses on enabling sustainable, ultra–low-power computing platforms that operate reliably under intermittent power conditions by leveraging ambient energy sources such as RF, solar, and vibration. I have developed novel timekeeping architectures, energy-aware runtime systems, and resilient hardware/software co-designs for the deployment of self-powered IoT devices. With more than 10 peer-reviewed publications, including in top-tier venues such as **OSDI**, **EuroSys**, **SenSys**, and **EWSN**, my work advances energy-efficient sensing technologies for applications in smart infrastructure, healthcare monitoring, and environmental systems.

PERSONAL DETAILS

Nationality: Turkish
Date of Birth: 1989
Languages: Turkish (native), English (Academic Proficiency), Spanish (beginner)

EXPERTISE

Embedded Systems   Operating Systems/Runtimes

Computer Architectures   Low-power Architectures

Energy Harvesting   Intermittent Computing

Tiny Machine Learning

PUBLICATION RECORD

h-index: » 7 (⅁)   i10-index: » 5 (⅁)   Total Citations: » 151 (⅁)

📖 Selected Publications

📕 **EWSN 2025**: *PEARL: Power- and Energy-Aware Multicore Intermittent Computing.* Khakim Akhunov, *Eren Yıldız* et al. The 22nd International Conference on Embedded Wireless Systems and Networks.

📕 **TECS 2025**: *CapDYN: Adaptive Self-Scaling Energy Storage for Powering Batteryless IoT.* Maria Doglioni, *Eren Yildiz* et al. ACM Transactions on Embedded Computing Systems.

📕 **SenSys 2024**: *Fast-Inf: ultra-fast embedded intelligence on the batteryless edge.* Leonardo Lucio Custode, Pietro Farina, *Eren Yildiz* et al. The 22nd ACM Conference on Embedded Networked Sensor Systems.

📕 **EuroSys 2024**: *Adaptable runtime monitoring for intermittent systems.* *Eren Yıldız* et al. Th 19th European Conference on Computer Systems.

📕 **EWSN 2024**: *Memory-efficient energy-adaptive inference of pre-trained models on batteryless embedded systems.* Pietro Farina, Subrata Biswas, *Eren Yıldız* et al. The 21st International Conference on Embedded Wireless Systems and Networks.

📕 **EuroSys 2023**: *Efficient and safe i/o operations for intermittent systems.* *Eren Yıldız* et al. The 18th European Conference on Computer Systems.

📕 **OSDI 2022**: *Immortal threads: Multithreaded event-driven intermittent computing on Ultra-Low-Power microcontrollers.* *Eren Yıldız* et al. In 16th USENIX Symposium on Operating Systems Design and Implementation.

☛ 🗎 Just Submitted

📕 **ASPLOS 2026**: *BIONIC: Power System Architecture for Time-Sensitive Intermittent Computing.* *Eren Yıldız* et al. The ACM International Conference on Architectural Support for Programming Languages and Operating Systems (Under Evaluation).

♟ *Patent*: *A New Power System Architecture for Batteryless Systems.* ***Eren Yıldız*** et al. Italian Patent and Trademark Office (Under Evaluation).

Journal Reviews

- Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies
- IEEE Internet of Things Journal
- Future Generation Computer Systems
- IEEE Transactions on Very Large Scale Integration Systems

ACHIEVEMENTS & AWARDS

2214-A - International Research Fellowship Programme for PhD Students.
The Scientific And Technological Research Council Of Turkey(TUBITAK), 20,000$.

EWSN Rising Star 2025.
I selected as one of the Rising Star in Conference on Embedded Wireless Systems and Networks (EWSN) 2025.

EMPLOYMENT AND APPOINTMENTS

Postdoctoral Researcher   📅 **Feb. 2025 – Ongoing**
Georgia Institute of Technology, College of Computing, School of Interactive Computing, Atlanta, United States

Research Assistant Dr.   📅 **Oct. 2023 – Feb. 2025**
RTEU, Department of Computer Engineering, Rize, Turkiye

Visiting Researcher   📅 **Dec. 2021 – Dec. 2022**
Northwestern University, Computer Science Department, Chicago, United States

Research Assistant   📅 **Oct. 2018 – Oct. 2023**
Ege University, Department of Computer Engineering, Izmir, Turkiye

R&D Engineer   📅 **Sept. 2015 – Feb. 2017**
Emtech Information Technologies, Mersin, Turkiye

Education

Ph.D. in Computer Engineering
Ege University

📅 2018 – 2023

Thesis title: System Support for Efficient Operation of Batteryless Sensor Systems

M.Sc. in Electrical Electronics Engineering
Mersin University

📅 2015 – 2018

Thesis title: Cyberbullying Detection And Classification With Artificial Intelligence Algorithms In Social Network

B.Sc. in Electrical Electronics Engineering
Mersin University

📅 2009 – 2014

TEACHING

Courses at the Department of Computer Engineering, RTEU, Turkiye

CE-202 Signals and Systems
🗓 2024 - Spring Semester

CE-414 Tiny Machine Learning
🗓 2024 - Spring Semester

CEN-109 Fundamental Information Technologies
🗓 2025 - Fall Semester

TEACHING ASSISTANT

Courses at the Department of Computer Engineering, Ege University, Turkiye

Digital Computer Design
2019 - 2023 Spring Semester

Logic Design
🗓 2019 - 2023 Fall Semester

Digital Electronics
🗓 2019 - 2023 Spring Semester

Electrical Circuits
🗓 2019 - 2023 Fall Semester

Microprocessors
2019 - 2023 Fall Semester

Microcontroller-Based System Design-
🗓 2019 - 2023 Spring Semester

PROFESSIONAL MEMBERSHIPS

HiPEAC (High Performance Embedded Architecture and Compilation)
🌐 https://www.hipeac.net

Publications

📄 Journal Articles

- X. Chen, A. Goldner, **E. Yildiz**, *et al.*, "From component to system: Rethinking edge computing design through a carbon-aware lens," ACM SIGENERGY Energy Informatics Review, vol. 5, no. 2, pp. 125–131, 2025.

- M. Doglioni, **E. Yildiz**, M. Nardello, K. Akhunov, K. S. Yildirim, and D. Brunelli, "Capdyn: Adaptive self-scaling energy storage for powering batteryless iot," ACM Transactions on Embedded Computing Systems (TECS), 2024.

- F. Erata, **E. Yildiz**, A. Goknil, *et al.*, "Etap: Energy-aware timing analysis of intermittent programs," ACM Transactions on Embedded Computing Systems (TECS), 2022.

- A. Cigdem, **E. Yildiz**, and E. S. Essiz, "Automatic detection of cyberbullying in formspring. me, myspace and youtube social networks," Turkish Journal of Engineering, vol. 3, no. 4, pp. 168–178, 2019.

👥 Conference Proceedings

- K. Akhunov, **E. Yildiz**, and K. S. Yıldırım, "Pearl: Power- and energy-aware multicore intermittent computing," in Proceedings of the 2025 International Conference on Embedded Wireless Systems and Networks (EWSN'25).

- P. Farina, S. Biswas, **E. Yildiz**, *et al.*, "Memory-efficient energy-adaptive inference of pre-trained models on batteryless embedded systems," in Proceedings of the 2024 International Conference on Embedded Wireless Systems and Networks (EWSN'24).

- S. Ahmed, **E. Yildiz**, S. Holla, *et al.*, "Bootstrapping health wearables powered by intra-body power transfer," in 2024 IEEE 20th International Conference on Body Sensor Networks (BSN), IEEE, 2024, pp. 1–4.

- L. L. Custode, P. Farina, **E. Yildiz**, R. B. Kilic, K. S. Yildirim, and G. Iacca, "Fast-inf: Ultra-fast embedded intelligence on the batteryless edge," in Proceedings of the 22nd ACM Conference on Embedded Networked Sensor Systems (SenSys'24), 2024, pp. 239–252.
- **E. Yildiz**, K. Akhunov, L. A. Riva, A. Goknil, I. Kurtev, and K. S. Yildirim, "Adaptable runtime monitoring for intermittent systems," in Proceedings of the Nineteenth European Conference on Computer Systems (EuroSys'24), 2024, pp. 1175–1191.
- **E. Yildiz**, D. Cavedon, and K. S. Yildirim, "On tracking time with better resolution and range in batteryless systems," in Proceedings of the 12th International Workshop on Energy Harvesting and Energy-Neutral Sensing Systems, 2024, pp. 42–47.
- K. Akhunov, **E. Yildiz**, and K. S. Yildirim, "Enabling efficient intermittent computing on brand new microcontrollers via tracking programmable voltage thresholds," in Proceedings of the 11th International Workshop on Energy Harvesting & Energy-Neutral Sensing Systems (EnsSys'21), 2023, pp. 16–22.
- **E. Yildiz**, S. Ahmed, B. Islam, J. Hester, and K. S. Yıldırım, "Efficient and safe i/o operations for intermittent systems," in Proceedings of the Eighteenth European Conference on Computer Systems (EuroSys 23), 2023.
- **E. Yildiz**, L. Chen, and K. S. Yıldırım, "Immortal threads: Multithreaded event-driven intermittent computing on {ultra-low-power} microcontrollers," in 16th USENIX Symposium on Operating Systems Design and Implementation (OSDI 22), 2022, pp. 339–355.
- **E. Yildiz** and K. S. Yıldırım, "Persistent timekeeping using harvested power measurements," in Proceedings of the 19th ACM Conference on Embedded Networked Sensor Systems(SenSys'21), 2021, pp. 572–574.
- **E. Yildiz** and K. S. Yildirim, "Defragmenting energy storage in batteryless sensing devices," in Proceedings of the 8th International Workshop on Energy Harvesting and Energy-Neutral Sensing Systems(EnsSys'20), 2020, pp. 36–42.
- **E. Yildiz**, K. S. Yıldırım, P. Pawelczak, and J. Hester, "On the accuracy of network synchronization using persistent hourglass clocks," in Proceedings of the 7th International Workshop on Energy Harvesting & Energy-Neutral Sensing Systems(EnsSys'19), 2019, pp. 35–41.
- **E. Yildiz**, C. Aci, and E. S. Essiz, "The effects of attribute selection in artificial neural network based classifiers on cyber-bullying detection," in 2018 3rd International Conference on Computer Science and Engineering (UBMK), IEEE, 2018, pp. 6–11.
- **E. Yildiz**, Ç. Acı, and E. S. Eşsiz, "Performance analysis of artificial neural network based classfiers for cyberbulling detection," in 2018 3rd International Conference on Computer Science and Engineering (UBMK), IEEE, 2018, pp. 1–5.

Referees

Assoc. Prof. Josiah Hester
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