# EMRE ATEŞ

Boston, MA

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## EDUCATION

**Boston University** 2015 - Summer 2020 (Expected)
*PhD in Computer Engineering (Advisor: Prof. Ayşe K. Coşkun)* *GPA: 3.93*

- **Thesis title:** Towards automated analytics on large-scale computing systems
- **Coursework:** Data Structures and Algorithms, Computer Architecture, Data Mining, Operating Systems, Cybersecurity, Computer Systems, Digital Design, Embedded Systems

**Middle East Technical University (METU), Turkey** 2010 - 2015
*BSc in Electrical and Electronics Engineering, Minor in History of Philosophy* *GPA: 3.23, top 10%*

## TECHNICAL STRENGTHS

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|---|---|
| **Languages** | *(proficient:)* C, C++, Python, Rust, Bash, *(familiar:)* SQL, R, Java, Perl |
| **Software & Tools** | git, gdb, OpenStack, scikit-learn, Vowpal Wabbit, Autotools, TensorFlow |

## EXPERIENCE

**Boston University, PeacLab**, *Research Assistant* Fall 2015 – present

- Designed software frameworks for improving supercomputers and cloud computing systems using data-intensive methods and machine learning. Selected projects:
- **HPC Performance Analytics:**
  - Developed an HPC performance interference generation suite in **C**,
  - Built a supervised learning framework in **Python** using **MongoDB, scikit-learn, TensorFlow** that collects numeric time series data from supercomputers, and detects performance anomalies, running applications, or cryptocurrency mining.
- **Distributed Tracing on the Cloud:**
  - Extended existing distributed tracing for **OpenStack** using **Python, Redis**,
  - Built a graph processing pipeline in **Rust** to explore instrumentation options in response to ongoing performance problems.

**Google, NYC**, *Software Engineering Internship* Spring 2019

- As part of the Google Wide Profiling team:
  - Implemented multiple heuristics in **C++** within the memory allocator, TCMalloc.
  - Implemented collection of metrics from TCMalloc users using **C++, Go**.
  - Built a simulator pipeline using **SQL, C++, Flume** to compare various heuristics.

**Lawrence Livermore National Laboratory**, *Research Internship* Summer 2017

- Ran comprehensive benchmarks in supercomputers on the effects of power/network on performance using **Bash, Python**.

**Sandia National Laboratories**, *Research Internship* Summer 2016

- Studied network contention on application performance for HPC systems using **MPI**.

## PUBLICATIONS

**E. Ates**, L. Sturmann, M. Toslali, O. Krieger, R. Megginson, A.K. Coskun, R.R. Sambasivan, "An automated, cross-layer instrumentation framework for diagnosing performance problems in distributed applications," in *Symposium on Cloud Computing* (SoCC), Santa Cruz, 2019.

**E. Ates**, Y. Zhang, B. Aksar, J. Brandt, V.J. Leung, M. Egele, A.K. Coskun, "HPAS: An HPC Performance Anomaly Suite for Reproducing Performance Variations," in *Intl. Conf. on Parallel Processing* (ICPP), Kyoto, 2019.

O. Tuncer, **E. Ates**, Y. Zhang, A. Turk, J. Brandt, V.J. Leung, M. Egele, A.K. Coskun, "Online Diagnosis of Performance Variation in HPC Systems Using Machine Learning," in *IEEE Trans. on Parallel and Distributed Systems*, vol. 30, no. 4, pp. 883-896, 2019.

Q. Xiong, **E. Ates**, M.C. Herbordt, A.K. Coskun, "Tangram: Colocating HPC Applications with Oversubscription," in *IEEE High Performance Extreme Computing Conf.*, Boston, 2018.

**E. Ates**, O. Tuncer, A. Turk, J. Brandt, V.J. Leung, M. Egele, A.K. Coskun, "Taxonomist: Application Detection through Rich Monitoring Data," in *European Conf. on Parallel and Distributed Systems* (Euro-Par), Torino, 2018.

T. Patki, **E. Ates**, A.K. Coskun, J.J. Thiagarajan, "Understanding Simultaneous Impact of Network QoS and Power on HPC Application Performance," in *Computational Reproducibility at Exascale* (CRE), Dallas, 2018.

O. Tuncer, **E. Ates**, Y. Zhang, A. Turk, J. Brandt, V.J. Leung, M. Egele, A.K. Coskun, "Diagnosing Performance Variations in HPC Applications using Machine Learning," in *Intl. Supercomputing Conf.* (ISC-HPC), Frankfurt, 2017.

## OTHER

**Awards and Fellowships:**

· Best Artifact Award at EuroPar'18,
· Gauss Center for Supercomputing Award at ISC-HPC'17,
· A. Richard Newton Young Fellowship at DAC'16,
· Distinguished ECE Fellowship from Boston University,
· Analog Electronics Laboratory Best Project Award at METU.

**Teaching:**

· **Head Teaching Assistant** for Applied Algorithms and Data Structures at Boston University (Spring 2016, Fall 2016). Held weekly discussion sessions, graded exams/assignments, coordinated the graders.
· **Instructor** for BU Summer Challenge (2018). Taught introductory electrical engineering to high school students.

**Open Source Projects:**

· `https://github.com/peaclab/hpas`,
· `https://doi.org/10.6084/m9.figshare.6384248`,
· `https://github.com/uuid-rs/uuid-gdb`

**Student Volunteer:** At SC'17 and SoCC'19.

**Pianist** (2010 - 2015) and **musical director** (2012 - 2013) of METU Musical Society
Led a team of 12 instrumentalists, and trained 14 actors to stage multiple Broadway musicals in METU, collaborating with professionals from all branches of show business, and a technical crew of 30