Berk Çakar

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EDUCATION

Purdue University 08/2024 – 05/2028
Ph.D., Electrical and Computer Engineering *West Lafayette, IN, USA*
Advised by Prof. James C. Davis

Bilkent University 09/2020 – 06/2024
B.S., Computer Engineering *Ankara, Turkey*
Advised by Prof. Eray Tüzün

Malatya Fen Lisesi 09/2016 – 06/2020
High School Diploma, Mathematics and Science *Malatya, Turkey*

RESEARCH INTERESTS

- Empirical Software Engineering
- Software Analytics
- AI/ML for Software Engineering
- Software Engineering for AI/ML
- Software Maintenance and Evolution
- Software Engineering Best Practices
- Software Testing
- DevOps

RELEVANT COURSEWORK

- Data Structures & Algorithms
- Digital Design
- Computer Architecture
- Operating Systems
- Object-Oriented Softw. Eng.
- Database Systems
- Programming Languages
- Signals & Systems
- Application Lifecycle Mgmt.
- Machine Learning
- Artificial Intelligence
- Cloud Computing

SKILLS

- Software Development
- Embedded Systems
- System Administration
- DevOps Practices
- Network Programming
- Data Science
- Web & Mobile Development

EXPERIENCE

Purdue Duality Lab ↗ 08/2024 – **Present**
Graduate Research Assistant *West Lafayette, IN, USA*

- Engaging in advanced research on domain-specific languages and software engineering for AI/ML, guided by Prof. James C. Davis.

BU Software Engineering and Data Analytics Research Group (BILSEN) ↗ 01/2023 – **Present**
Researcher *Ankara, Turkey*

- Conducting software engineering-related research under the supervision of Prof. Eray Tüzün at Bilkent University.

ASELSAN A.Ş. ↗ 08/2023 – 09/2023
Electronic Warfare Systems Engineering Intern *Ankara, Turkey*

- Developed a Windows Forms application using .NET Framework that listens to the structured communication between multiple military domain-specific hardware over TCP/IP, then visualizes and logs the data transmitted between them.

Arçelik Global ↗ 07/2023 – 08/2023
R&D Engineering Intern *Istanbul, Turkey*

- Enhanced the company's data acquisition system which gathers data such as temperature, fan level, and power consumption from the household appliances by fixing several bugs in the embedded software running on microcontroller units.

- Built a mobile application called UDAQ-M to enable real-time data monitoring of household appliances so that R&D engineers can observe the behavior of the appliances during the testing phase, benefiting the previously mentioned data acquisition system.
- Conducted an in-house training session on documenting embedded software using Doxygen, providing engineers with essential insights and practical knowledge on software documentation processes.

TÜRASAŞ ⬈ 08/2022 – 09/2022
Computer Engineering Intern *Ankara, Turkey*
- Implemented a Privileged Access Management (PAM) System for the company's internal use by combining several open-source solutions. The IT department there currently uses the system.

Jotform Inc. ⬈ 06/2022 – 08/2022
DevOps Engineering Intern *Ankara, Turkey*
- Delivered two projects, named Api-Doc and Uptime Dashboard, which aimed to improve the company's DevOps and software development practices.
- Participated in many in-house training sessions on software development processes.

PROJECTS

2048 AI ⬈ | Python, PyTorch, Pygame 10/2023 – 12/2023
- Re-implemented three different AI algorithms, namely Minimax with Alpha-Beta Pruning, Monte Carlo Tree Search, and Double Deep Q-Learning, to play the 2048 game.
- This project was recognized as the best term project in the CS461 - Artificial Intelligence course at Bilkent University for the 2023-2024 Fall Semester, standing out from 11 other projects.

UDAQ-M | Kotlin, Android, UART, Bluetooth 07/2023 – 08/2023
- Engineered an Android application that allows R&D engineers to wirelessly log and monitor the data collected from the household appliances in real-time via Bluetooth using company's data acquisition system, which implements the UART protocol underneath.
- The application has visualization capabilities for the data collected using tables and charts.

CareerBridge ⬈ | Python, FastAPI, TypeScript, Angular, MySQL, Docker 02/2023 – 06/2023
- Constructed a LinkedIn-like web application that aims to connect job seekers such as students, graduates, and professionals with opportunities for the CS353 - Database Systems course at Bilkent University.
- Users can create their profiles, upload their resumes, and apply for jobs. Employers can post job listings and view the applications. Also, career experts can post articles in the feed section where users can interact with them via likes and comments.

ERSMS ⬈ | C#, .NET, TypeScript, Angular, PostgreSQL, Docker 09/2022 – 01/2023
- Programmed a web-based registration management system for the Erasmus Exchange Programme upon the need of Bilkent University.
- ERSMS was selected as the best term project of the CS319 - Object-Oriented Software Engineering course at Bilkent University for the 2022-2023 Fall semester, among 25 other projects.

Api-Doc | PHP, Twig, jQuery 07/2022 – 08/2022
- Created a new documentation generator for company's API endpoints, which does not depend on handwritten "doc comments".
- Api-Doc parses the undocumented API endpoints in a project directory and generates HTML-based documentation pages for them.

Uptime Dashboard | Python, Django, Celery, Redis, RabbitMQ, MySQL, Docker 06/2022 – 08/2022
- Developed a web application for Jotform Inc., which allows DevOps engineers to monitor and track the uptime status of remote servers. In case of a server outage, the application sends notifications to the responsible DevOps engineers.

friBot ⬈ | C++, JSON, SQLite 08/2021 – 09/2021
- Designed a *Discord* 🎮 chatbot that can do auto-moderation, perform media uploads to the cloud, and guess the approximate ranking to be obtained in the Turkish University Entrance Exam based on the number of correct and incorrect questions answered.

LabConnect ⬈ | Java, Spring, React, Redis, MongoDB, Docker 02/2021 – 05/2021
- Built a web application that aims to assist CS introductory courses in organization and communication.

- Students who have completed their labs or homework assignments upload their work to the LabConnect system, and LabConnect tests the uploaded code using pre-defined unit tests, which are determined by the teaching assistant or instructor.

<u>**Data Transmission to Terminals on Local Network**</u> | Pascal, TCP/UDP   **12/2016 – 03/2017**
- Researched that fast and secure data transmission can be made to a large number of computers using UDP or TCP protocols. Achieved a speed increase up to hundreds of times more than the Unicast transmission with this project.
- Entitled to participate in the TÜBİTAK Regional Competition in 2017 with this project.
- Project report (*in Turkish*) ⤤

TECHNICAL SKILLS

Languages: C, C++, C#, Python, Java, Swift, JavaScript, PHP, Pascal, SystemVerilog, Bash, SQL
Developer Tools: VS Code, Visual Studio, XCode, GNU Emacs, DBeaver, IntelliJ IDEA, Figma
Technologies/Frameworks: GNU/Linux, macOS, Git, .NET, Spring, jQuery, React, Angular, Vue.js, Docker, Ansible, Jenkins, ELK Stack, Sentry, Azure, AWS

EXTRACURRICULAR

Pisi GNU/Linux   **04/2021 – Present**
Development Volunteer
- Actively contributed to the development of *Pisi GNU/Linux*, a Linux-based operating system designed as the modern successor to *Pardus 2011*.
- Carried out various responsibilities, including integrating new desktop environments to the OS, improving OS initialization and authentication systems, detecting bugs in the parts of the OS inherited from *Pardus 2011* and modernizing them if necessary, and more.

Microsoft Learn   **07/2021 – 06/2024**
Student Ambassador
- Attended various workshops and training events on *Microsoft* products and related technologies.

PROFESSIONAL MEMBERSHIPS

Member, Institute of Electrical and Electronics Engineers (IEEE)

Member, Association for Computing Machinery (ACM)

HONORS & AWARDS

Merit Scholarship, Awarded by Bilkent University for outstanding academic performance.   **2022 – 2024**

High Honor Student, Named as a high honor student by Bilkent University.   **2021 – 2024**

National Academic Excellence, Ranked among the top 0.4% in Turkish University Entrance Exam.   **2020**