BARAN KAYNAK
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EXPERIENCE

2023 – Present **Postdoc Researcher**   **University of Iowa**
University of Iowa Hydroinformatics Lab
Link: https://hydroinformatics.uiowa.edu
Reference: Ibrahim Demir, Associate Professor (ibrahim-demir@uiowa.edu)

2022 – Present **Faculty Member, Ph.D.**   **Sakarya University**
Department of Information Systems Engineering
Faculty of Computer and Information Sciences
Courses:
System Administration / Web Programming / Web Technologies / Information Systems Infrastructure and Technologies / Operating Systems / Cloud Computing / Blockchain Technologies and Applications

2012 – 2022 **System Administrator**   **Sakarya University**
Development of University Information Systems – `C#` / `dotnet core`
Server Infrastructure Management - Around 100 servers – `Virtualization` / `VMWare` / `Proxmox`
Installation and administration of Kubernetes clusters – `Kubernetes` / `Rancher`
Administration of linux and windows servers
Development of Linux-based IoT devices – `Embedded Systems` / `IoT`
Development of RFID access systems – `RFID` / `Payment`
Google Mail Integration and Administration – `Email` / `Google Cloud`
Cloud-based, distance education system design, development and management – UZEP Project
`Kubernetes` / `Linux Administration` / `Web Development`
Reference: Ahmet Ozmen, Professor (ozmen@sakarya.edu.tr)

2013 – 2022 **Lecturer**   **Sakarya University**
Department of Information Systems Engineering
Faculty of Computer and Information Sciences
Courses:
System Administration / Web Programming / Web Technologies / Operating Systems

2011/07 – 2011/09 **Summer Trainee**   **Hyundai Glovis Turkey**
part time
Industrial Engineering Training
`Manufacturing`

2008 – 2011 **System Administrator**   **Sakarya University**
part time
Learning Management System
`System Administrator` / `Web Developer`

2005 – 2010 **IT Responsible**   **Barış Görsel Tanıtım Ltd.**
part time
Photography company
`System Administrator` / `VOIP` / `Developer`

SOFTWARE PROJECTS AND SYSTEM ADMINISTRATION

2018-2022 **On-premise Cloud Environment**   **Kubernetes, Rancher, F5, Cloudian, GlusterFS, Docker**
Prepared on-premise cloud technology infrastructures required within the university. Kubernetes (Rancher), load balancer (F5), object storage (Cloudian), and block storage (GlusterFS) solutions were installed and tested on university servers. I personally managed the administration and maintenance of these systems for an extended period. Collaborated with team members to quickly implement necessary updates for the compatibility of existing applications with these systems.

| 2010-2022 | **University Student Information Automation System (SABIS)** | ASP.NET Core, Docker |

Web-based university student information management system. All student processes are managed through this automation system. The system is designed to be scalable in containers. It can handle high traffic during peak times, such as course registration, serving up to 30,000 concurrent unique students.

| 2011-2022 | **Hierarchical Unit Data Service** | ASP.NET Core, gRPC, Redis |

A service providing hierarchical unit data as a central service to other applications. Performs all hierarchical operations in a distributed manner with high speed and low memory usage through GRPC. Designed to minimize database IO using caching. Additionally, there is a web interface for editing all hierarchical department data. A .NET library has been prepared to use this service in other applications.

| 2011-2022 | **Single Sign On** | ASP.NET Core, Redis, IdentityServer, OAuth |

A single sign-on project using Identity Server, serving authentication to all other applications.

| 2020-2022 | **SABIS Online Examination** | ASP.NET Core, Redis |

A scalable online examination web application. Successfully conducted over 3 million exam sessions. Provides quick and flexible exam preparation for instructors through advanced question preparation screens. Detailed reports can be obtained. Integration is possible with other systems through the provided APIs. Can work with both PostgreSQL and MSSQL databases using Entity Framework. Served over 10 universities in the UZEP project.

| 2011-2022 | **Central Authorization Management System** | ASP.NET Core, Redis |

A web application and library for central authorization management, allowing all web projects to manage authorization processes under a single platform. All role management processes are centrally controlled. It can be integrated with roles in the organization's human resources systems. Roles can be matched with roles in web applications or authorized in projects or multiple projects with custom-defined roles. All these processes can be done through the web application. The library can be quickly added as an authorization middleware to an ASP.NET Core application.

| 2021-2022 | **Payment Proxy** | ASP.NET Core |

Provides a common payment infrastructure for projects that require payment infrastructure. Users can make their payments from a common address. Projects only need to provide payment amounts and additional information using the functions in the provided client library. The POS agreement information made by the projects with the banks is stored in the database, and payment transactions are carried out according to the payment transactions of the relevant bank. Projects are sufficient to provide payment amounts and additional information using the functions in the client library.

| 2017-2022 | **University Card Automation System** | RFID, Microcontroller, ASP.NET, Dotnet Core, Docker |

A comprehensive system prepared for card automation within the university. Solutions have been developed for cafeteria turnstiles, staff time tracking systems, and access control systems. All systems can be managed centrally through a web interface. Hardware solutions for turnstiles, a client application that can work offline on the client side, and integrations made for staff time tracking are specially prepared solutions. Components working on Linux, Windows, and microcontrollers are available. Solutions that can work in event-based operating systems on both the client and server sides have been designed. Applications on both the client and server sides run in containers.

PUBLICATION

| 2023 | **UZEP: A Cloud-Based Distance Education Platform for Higher Education Institutions Learning** |

Turkish Online Journal of Distance Education
DOI: 10.17718/tojde.1188032
Baran Kaynak – Osman Tuna – Ugur Ozbek – Ali Aksoy – Ahmet Ozmen – Mehmet Baris Horzum – Burak Gol

```
Distance Education  /  Internet Based Online Learning  /  Online Assessment  /
Educational Technology,  /  Covid-19
```

| 2023 | **Open Data and Big Data Applications For Higher Education and Possible Outcomes** | Mugla |

Journal of Science and Technology
DOI: 10.22531/muglajsci.1201726
Sümeyye Kaynak – Baran Kaynak – Ahmet Özmen

```
Open Data  /  Big Data  /  Higher Education
```

2020	**GPU-Based Dynamic Solar Potential Estimation Tool Using 3D Plans**	**IEEE Access**

DOI: 10.1109/ACCESS.2020.2978590
Sümeyye Kaynak – Baran Kaynak – Ahmet Özmen
```
Solar potential analysis  /  GPU  /  3D City Model
```

2019	**Cloud manufacturing architecture based on public blockchain technology**	**IEEE Access**

DOI: 10.1109/ACCESS.2019.2962232
Baran Kaynak – Sümeyye Kaynak – Özer Uygun
```
Blockchain  /  Cloud Manufacturing  /  Decentralized Manufacturing
```

2018	**A software tool development study for solar energy potential analysis**	**Energy and Buildings**

DOI: 10.1016/j.enbuild.2017.12.033
Sümeyye Kaynak – Baran Kaynak – Ahmet Özmen
```
3D City Model  /  Shading Condition  /  Solar Potential Analysis
```

EDUCATION

2013-2021	**PhD**	**Sakarya University**

Industrial Engineering
Thesis: Blockchain based cloud manufacturing model
GPA: 3.83
Graduation Date: 2021/01/15
Diploma Number: 7004/50.73 Supervisor: Özer Uygun - ouygun@sakarya.edu.tr

2011-2013	**Master's Degree**	**Sakarya University**

Industrial Engineering
Thesis: Integrated service-oriented information structure for use of wireless sensor network in manufacturing logistics
GPA: 3.28
Graduation Date: 2013/01/07
Diploma Number: 3192/50.140 Supervisor: Orhan Torkul - torkul@sakarya.edu.tr

2009 – 2010	**Erasmus - Bachelor's Degree**	**Umeå University**

2007 – 2011	**Bachelor's Degree**	**Sakarya University**

Industrial Engineering / Faculty of Engineering
GPA: 3.08
Graduation Date: 2011/09/16
Diploma Number: 11041/01.1644

RESEARCH PROJECTS

2022-2023	**Environmentally Controlled Vertical Farming in Ornamental Plant Production and a Decision Support System Application: The Case of Hybrid African Violet**	**Ministry of Agriculture of Turkey**

News in the press: Plant Journal Link

2020-2021	**Higher Education Distance Education Platform (UZEP)**	**TUBITAK 1001**

Project web page: https://uzep.org
Project no: 120K200

UZEP is a distance education platform developed by Tübitak-1001 project that will be utilized by all higher education institutions across the country. While the hardware infrastructure of the system was provided by ULAKBIM, the software components were developed by Sakarya University. Since the developed system does not require the IT resources of universities, it can be put into service in a very short time for any higher education institution.

News in the press: Webtekno Link

LANGUAGES

Turkish - Native
English - Advanced

AREAS OF INTEREST

Cloud Computing
Blockchain Technologies
IoT
Enterprise Server Systems
Virtualization
Home Automation
Electronics
3D Printing