

# ERDEM ÜNAL

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## OBJECTIVE

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With over two years of experience as a Machine Learning Engineer specializing in deep learning, I have undertaken a diverse range of responsibilities encompassing Cloud Architecture, Data Engineering, DevOps, and Software Development. These responsibilities have entailed tasks such as Cloud Migration, Business Data Analytics, Scheduled Batch Jobs, as well as Automated Rollback and Deployment Management. Consequently, I am actively seeking a full-time, preferably long-term role as a Solution Engineer or Data Architect, where I can pursue my passion for demanding Data Pipelining and Backend Engineering challenges.

## SKILLS

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<b>Programming and Tools</b>	Python, SQL, dbt, git, Bash, Terraform, Docker, Visual Studio Code
<b>Google Cloud Components</b>	Artifact Registry, Bigquery, Looker, Cloud Build, Cloud Function, Cloud Run, Cloud SQL, Compute Engine, Kubernetes Engine
<b>AWS Components</b>	S3, Lambda, Simple Notification Service (SNS), Key Management Service (KMS), Sagemaker, Fargate, Elastic Container Registry (ECR), EC2, Redshift, Cloudwatch, Cloud Formation
<b>Data Storage &amp; Processing</b>	Apache Spark, Dataproc, Apache Airflow, Google Workflows, ETL-ELT Pipelining, CI/CD, Cloud Scheduler, Data Ingestion and Warehousing, PostgreSQL, Redis
<b>Deep Learning</b>	RNNs, CNNs, Generative Networks (GANs, VAEs, Flows), Autoregressive Models, Fairness, Pattern Recognition, Unsupervised Outlier Detection Google Vertex AI, AWS Sagemaker, PyTorch, Tensorflow

## EXPERIENCE

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**Senior Manager - Data Engineer** Hybrid, November 2023 - Ongoing  
[BMG - The New Music Company](#) *Berlin, Germany*

- Copyright, AV Registration systems, Automating Operations, API Integrations
- Data Warehouse Management, BigQuery, dbt, jinja, Python, SQL
- Developing Data pipelines for Revenue Assurance Team, Supplychain
- Vertex AI Notebook Admin, VM Instance Management, DevOps, IAM Permissions

**Machine Learning Engineer** Remote, May 2023 - Oct 2023  
[EOS Technology Solutions GmbH](#) *Hamburg, Germany*

- Deploying end-to-end Train-Predict ML Pipelines, setting up Sagemaker models using AWS CDK
- Creating 'How-To-Start at EOS' and 'how-to-mlops' tutorials that teach VS Code, git, SQL, Python, AWS and cdk.
- Establish and enforce data governance policies, including data access controls and data retention policies, to ensure data security and compliance within SageMaker, Redshift, and S3.
- Monitor resource utilization and optimize costs by implementing cost-saving measures such as Amazon S3 data lifecycle policies and resizing Amazon Redshift clusters based on workload requirements.

**Data Engineer** Hybrid, Apr 2022 - April 2023  
[BMG - The New Music Company](#) *Berlin, Germany*

- ELT connection from SAP BW to BigQuery, BigQuery to Looker integration, LookML development
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- ML-Ops lifecycle, end-to-end workflow, fully containerized application running on multitenancy Kubernetes cluster. Tools used: uvicorn, nginx, Redis, ArgoCD
- Deep Learning Research in Music Similarity, Tagging and Information Retrieval tasks targeting BMG Music Catalogue
- CI-CD pipeline using Bitbucket, Cloud Build, JIRA, Confluence
- Automated cloud operations (resource management, IAM permissions) using Terraform and GCP
- Participating in Data Engineering Weekly Meetings by reading and sharing experiences

### Data Analyst

May 2021 - January 2022

[Anvajo GmbH](#)

*Dresden, Germany*

- Conducted research in unsupervised anomaly detection methods for microscopic imaging ([Master's Thesis](#))
- Pre-processing of microscopic data for ML pipeline, CI-CD workflow, computationally efficient CNNs, variational and autoregressive generative models
- Robust detection of image samples and distributions using statistical and ML-based detectors
- Optimized inference time and cost of pretrained ML model on NVIDIA Jetson Nano
- [References available upon request \(Dr. Thomas Neumann\)](#)

### Research Assistant

May 2021 - Apr 2022

[DiscoRet](#)

*Dresden, Germany*

- Participated in research studies and published "[Enhancing Fairness of Visual Attribute Predictors](#)" in ACCV Conference.
- Research topics: Fairness, Robust Generative Models (VAEs, GANs, INNs), Latent Space manipulation, Hyperparameter optimization, Neural Architecture Search, AutoML
- [References available upon request \(Nishant Kumar\) \(Dmitrij Schlesinger\)](#)

### Python Programmer

Dec 2019 - May 2020

[Helmholtz-Zentrum Dresden-Rossendorf](#)

*Dresden, Germany*

- [Designed a UNIX command line tool that queries popular AI hubs for pre-trained weights of a given architecture](#)
- [References available upon request \(Dr. rer. nat. Peter Steinbach\)](#)

### C++ Programmer

Dec 2019 - May 2020

[TU Dresden CGV](#)

*Dresden, Germany*

- [Applied ray tracing algorithms to further improve a Virtual Reality project using OpenGL and C++](#)
- [References available upon request \(Prof. Dr. Stefan Gumhold\)](#)

### Intern

June 2018 - Sep 2018

[Fraunhofer IIS/EAS](#)

*Dresden, Germany*

- Analysis of FinFET layouts and its implications to analog design

### Intern

June 2017 - Aug 2017

[Saurer Schlafhorst](#)

*Übach-Palenberg, Germany*

- Involved in project groups related to hardware designs of new products, software solutions and repair shops

## EDUCATION

### Master of Science: Visual Computing

2019-2021

Department of Computer Science - Dresden University of Technology - Dresden, Germany

CGPA: 2.1 – GUT (German Grade)

**Thesis:** [Out-of-distribution Detection for Microscopic Imaging](#)

**Publication:** [Enhancing Fairness of Visual Attribute Predictors](#)

**Topics:** Deep Learning, Computer Vision, Computer Graphics, High Performance Computing, Data Visualization

## Bachelor of Science: Electrical and Electronics Engineering

2015 - 2019

Department of Engineering - Bilkent University - Ankara, Turkey

**CGPA:** 3.19 - Honor Student (American Grade)

**Final Project:** LocInCampus - 2D outdoor localization system independent of GPS functioning in Bilkent University Campus borders

**Topics:** Telecommunications, Computational Neuroscience, Digital Signal Processing, Statistical Learning and Data Analytics, Reinforcement Learning, Computer Networks, Embedded Systems

- Bilkent IEEE Student Branch Active Member (2014-2016)

- Algorithms & Programming Course (JAVA) Grader and Tutor (2015-2017)

## High School Degree

2010 - 2014

Bornova Anatolian High School - Izmir, Turkey

**CGPA:** 85.7/100

## PUBLICATIONS

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### [Enhancing Fairness of Visual Attribute Predictors](#)

**Authors:** Tobias Hänel, Nishant Kumar, Dmitrij Schlesinger, Mengze Li, Erdem Ünal, Abouzar Eslami, Stefan Gumhold

**Publication date:** 2022

**Conference:** Proceedings of the Asian Conference on Computer Vision

**Pages:** 1211-1227

## PROJECTS ([GITHUB](#))

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### [Out-of-distribution Detection for Microscopic Imaging \(2021\)](#) Master's degree final project – Thesis

Analysis and design of SOTA anomaly detection approaches suitable for microscopic data while fulfilling the requirements of the hardware. Multiple unsupervised CNN-based classifiers and deep generative models are evaluated in terms of accuracy and efficiency.

**Techs:** Python, TensorFlow, Keras, PyTorch

[Real-Time Video Segmentation \(2021\)](#) [Segmentation models trained on water images](#) and then further transformed into CoreML environment and realtime mobile compatible water segmentation app is developed.

**Techs:** Python, PyTorch, Kaggle, ONNX, CoreML, Swift, Metal

[ImageCluster \(2021\)](#) Image clustering algorithm based on MPEG-7 Color Layout Descriptor using Java.

[VR-Mesh View \(2020\)](#) A Virtual Reality environment where you can load meshes and play with them.

**Techs:** C++, OpenGL, Steam VR, Visual Studio

**DeepDoom (2018)** A self defender algorithm for the popular gaming franchise Doom by using the essentials of reinforcement learning and Q-learning.

**Techs:** Python, Java, PyTorch, Kaggle, NetBeans

**New York Times 5x5 Mini Crossword Puzzle Solver (2018)** Machine learning project that solves the daily posted mini crossword puzzle at New York Times website based on the given clue

**Techs:** Java, JavaScript, HTTP5, Selenium, Eclipse, Sublime Text

**Magnetic Levitation Circuit (2017)** The circuit, built by using photo detectors and IR LED, suspends objects a set distance below an electromagnet

**Audio Toolbox (2016)** Atmel 8051 microcontroller based design that filters the given audio signal by using the principles of FIR filters

**Space Shooter Game (2016)** VHDL based shooting game using Basys3 FPGA board and VGA monitor.

**Techs:** VHDL, XILINX ISE Design Suite

**Bilgiman Project (2016)** Design of the backend database and website of [Bilgiman Co. Ltd](#)

*Techs:* C++, PHP, MySQL, HTML5, JavaScript, QT Creator, Sublime Text

**BilShare (2015)** Mobile based Android e-commerce application that lets students of Bilkent University sell, buy or borrow their goods and products

*Techs:* Java, Android, MySQL, HTML5, JavaScript, PHP, Android Studio

## LANGUAGES

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- English: *Fluent*
- German: *Intermediate*
- Turkish: *Native*

## CERTIFICATES

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- Received Merit Scholarship from Bilkent University (2016-2017)
- TOEFL IBT: 90/120 (2018)
- Awarded Fit (Sports) Challenge 1st Place (2018-2019)
- Bilkent Under Water Community 1\* Scuba Diver (2016-2017)

## INTERESTS AND HOBBIES

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- Escaping European winter by working remote on the Southern Hemisphere
- Bodybuilding, calisthenics and swimming
- Development of webcrawlers, bot accounts and media content capturers
- Traditional quantitative investing and AI approach to investing