DENIZ GULAL

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Education

Koc University   **Sep. 2020 – June 2025**
Bachelor of Science in Computer Engineering (Double Major in Mathematics)   *Istanbul, Turkey*
GPA: 3.60

Vrije Universitiet Amsterdam   **Feb. 2023 – Jun. 2023**
Exchange Program   *Amsterdam, Netherlands*
GPA: 3.85

Professional Experience

Patent Examiner   **Sep 2025 – Present**
European Patent Office   *Rijswijk, Netherlands*

* ∗ Patent Granting Process in AI and Advanced Computing

AI and Automation Engineer   **June 2024 – Oct 2024**
Nokia Corporation   *Istanbul, Turkey*

* ∗ Designed and deployed LLaMA-based LLMs within network testing pipelines to automate complex workflows such as fault detection, incident classification, and sentiment analysis on logs and support tickets.
* ∗ Engineered low-latency RAG systems integrating LLaMA models with custom vector databases to enable real-time retrieval and generation of domain-specific knowledge. Fine-tuned LLaMA variants on internal datasets to ensure accurate, context-sensitive output in dynamic testing environments.
* ∗ IP routing protocols, Layer 2/3 network architecture, and scalable network design.
* ∗ Applied state-of-the-art NLP techniques to process high-volume unstructured data sources, extracting actionable insights and supporting automated decision-making in network validation and quality assurance workflows.

Software Developer Intern   **Aug 2022 – Sep 2022**
Softtech Inc.   *Istanbul, Turkey*

* Developed a responsive and visually optimized front-end, ensuring cross-browser compatibility and modern web standards.
* Used semantic HTML5 for content structure, enhancing accessibility and SEO.
* Applied CSS3 (Flexbox, Grid) for responsive design, improving user experience.

Technical Skills

Languages: Python, Java, C, MATLAB
Technologies/Frameworks: SQL, PostgreSQL, MySQL, Python, Tableau, PyTorch, Tensorflow, OpenCV, Sci-kit, NLTK, spaCy, Langchain,MongoDB
Professional Skills: Data Analysis, Data Visualization, Time Series Analysis, Supervised Learning, Image Processing, Image Classification, Object Detection, Image Segmentation

Projects

Sentiment-Analysis-Using-SVM
NERC with SVM, VADER, Naive Bayes, LDA, Regression, Scikit-learn, Gensim, TF-IDF
Alchemist Game
Java, Unit Testing, Integration Testing, Visual Studio Debugger, Git, Agile(Unified Processes), Networking, TCP/UDP

Research Experience

Undergraduate Researcher **Dec 2022 – Feb 2023**

Koc University *Istanbul, Turkey*

- Conducted research on self-supervised representation learning, focusing on graph-based methods and mutual information maximization (InfoMax) frameworks.
- Investigated the role of linear algebraic techniques (matrix factorization, eigendecomposition, spectral analysis) in addressing data sparsity and stability issues in self-supervised objectives.
- Connections between probabilistic modeling, advanced optimization, and linear operators in the design of self-supervised graph representation learning algorithms.
- Supervised by Prof. Alper Erdogan.

Summer Researcher **June 2022 – Sep 2022**

Koc University *Istanbul, Turkey*

- Computational Methods for Ophthalmology and Pathology.
- Advanced image processing techniques (e.g., morphological filtering, feature extraction, normalization pipelines) to enhance diagnostic interpretability.
- Deep learning architectures (e.g., U-Net variants, custom CNNs) in PyTorch and MATLAB for segmentation of whole-slide histopathological and retinal images.
- Image processing techniques to enhance the interpretation of complex medical images, aiding in diagnosis and research.

Teaching

Undergraduate Teaching Assistant | *Koc University* **Spring 2022/2024**

- MATH 208 (Advanced Calculus)
- MATH 107 (Introduction to Linear Algebra)

Section Leader | *Koc University* **Spring 2022**

- COMP 132 (Advanced Programming)

Tutor | *Koc University Office of Learning and Teaching (KOLT)* **Oct 2021 – Jan 2024**

- MATH 107 (Introduction to Linear Algebra) Fall 2021
- COMP 132 (Advanced Programming) Spring 2022
- MATH 204 (Differential Equations) Fall 2022
- STEM Boost Camp Calculus Instructor (Spring 2022 – Fall 2022)
- UNIV 199 (Introduction to Python Programming) Fall 2024

Leadership / Voluteering

KuScience **June 2022 – June 2023**

Vice–President *Koc University*

- Leading four sub-commitee and over thirty board members.

Toplum Gonulluleri Vakfi **July 2021 – Aug 2021**

Math Teacher *Remote*

- Weekly math tutoring for 8th grade students for their high school entrance examination.

Istanbul Gonulluleri **July 2021 – Sep 2021**

English Tutor *Remote*

- Weekly English speaking tutoring for university students.