

# Alain Patrick Ndigande

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## Education

- Özyeğin Üniversitesi, Masters In Computer Science** 2022 – present  
Istanbul, Türkiye  
focusing on Artificial Intelligence, Deep Learning, Computer Vision, Autonomous Driving and Big Data. **GPA:4.0/4.0**
- Kocaeli Üniversitesi, B.S. Computer Engineering** 2017 – 2021  
Kocaeli, Türkiye  
Bachelor's degree in computer engineering. **GPA:3.12/4.0**
- Kocaeli Üniversitesi Sürekli Eğitim Araştırma ve Uygulama Merkezi (KOUSEM),** 2016 – 2017  
Kocaeli, Türkiye  
*Turkish language preparatory*  
Turkish language preparatory program.

## Professional Experience

- Graduate Research and Teaching Assistant, Özyeğin University** 09/2022 – present  
Istanbul, Türkiye  
- Held the teaching assistant position for over four semesters for four classes: Introduction to Programming, Introduction to deep learning, Computer Vision, and Distributed Systems and Cloud Computing.  
- Research assistantship for over four semesters  
- Schedule and maintain regular office hours to meet with students.  
- Preparing assignment answer sheets.  
- Evaluate and grade examinations, assignments, or papers and record grades.  
- Exams Proctoring and required grade-related paperwork.
- Researcher, Scientific and Technological Research Council of Türkiye (TÜBİTAK)** 11/2022 – 06/2023  
Istanbul, Türkiye  
- Modeled UAV-taken visible and infrared pairs image registration using CNNs.  
- Overseeing models implementation, training and evaluation process and necessary data tools.  
- The method resulted in reduced registration error (ACE, SSIM, MI) and was published in TGRS.  
- tools (Python, Tensorflow, Pandas, Sckit-Learn, OpenCV, Slurm, Shell, Jupyter Notebooks).
- Java Spring Bootcamp, Patika.dev** 06/2022 – 08/2022  
Istanbul, Türkiye  
- Java Spring Boot, covering modern practices such as microservices, clean code, unit testing, Apache Kafka, JWT, and Hibernate.  
- Implemented NTier application with SpringBoot, MongoDB, Docker.
- Software Engineer Intern, Kocaeli Üniversitesi** 06/2021 – 07/2021  
Kocaeli, Türkiye  
- Power consumption-based Side-Channel Analysis using FFN, CNN with ASCAD Dataset.  
- Analysis of different DL methods to attack AES-128 and AES-256 encryption keys on ATMEGA.  
- CNN-based implementations improved attack efficiency.

## Publications

- Analysis and Comparison of Dockerized and Standalone Apache Spark Configurations for Efficient Distributed Data Processing** 17/10/2024  
A. P. Ndigande, Ismail Ari, and Sedat Özer. *in 2024 Innovations In Intelligent Systems and Applications Conference (ASYU)*, Ankara, Türkiye, 2024, pp. 1-5, doi: 10.1109/ASYU62119.2024.10757047
- VisirNet** 02/2024  
Özer, Sedat, and Alain P. Ndigande. "VisIRNet: Deep Image Alignment for UAV-Taken Visible and Infrared Image Pairs." *IEEE Transactions on Geoscience and Remote Sensing* 62 (2024): 1-11.

**Using different loss functions with YOLACT++ for real-time instance segmentation.** [↗](#) 07/2023

Koles, S., Karakas, S., Ndigande, A. P., & Ozer, S. (2023, July). In 2023 46th International Conference on Telecommunications and Signal Processing (TSP) (pp. 264-267). IEEE.

**CoSDa** [↗](#) 10/2021

Yılmaz, Gökçe, Recep Tektaş, Mevlüde Sila Kazan, Alain Patrick Ndigande, and Meltem Kurt Pehlivanoğlu. "A Novel Coronavirus Speech Dataset: CoSDa." In 2021 Innovations in Intelligent Systems and Applications Conference (ASYU), pp. 1-4. IEEE, 2021.

## Projects

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### Dockerized Apache Spark Performance Analysis.

- Performance analysis of Apache Spark under different configurations on simulated local cluster.
- Tools (Python, Shell, Docker, Jupyter Notebook, PySpark, Vagrant)

### Vision Datasets Statistics [↗](#)

- Comparative analysis of common computer vision datasets for; object detection, segmentation, video instance segmentation and multiple object tracking
- Implemented data loaders and converters for datasets crucial for model training. Python, PyTorch, Shell, OpenCV.

### Machine learning in Finance [↗](#)

- Outlier detection in financial data using isolation forest and other machine learning methods.
- comparative study of portfolio optimization techniques, and autoregressive models (ARIMA, SARIMA).
- Stock price predictions with CNN, LSTM and transformer-based architectures. Python

## Skills

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**Programming Languages** — Python, Java, C++, Javascript.

**Machine Learning** — PyTorch, Tensorflow, Keras, Scikit-Learn, Numpy, Pandas, Seaborn, Hugging Face, Generative AI, Diffusion Models, LLMs, OpenAI, Jupyter Notebook, Slurm, Seaborn, Amazon SageMaker.

**Databases and Analysis** — MySQL, MongoDB, PostgreSQL, RDS, Firebase, Data Visualization (Power Bi), Python, SQL, CSV, Apache Spark, Hadoop, JSON.

**DevOps** — Docker, Kubernetes, Github Actions, Jenkins, Amazon Web Services (AWS), Ansible, Terraform, Python, Shell Scripting, Linux, Git, SonarQube, Nexus

**Cloud Solutions** — Google Cloud, Amazon Web Services; EC2, Security groups, EBS, EFS, IAM, S3, VPC, subnets, Internet gateway, Load Balancers (ALB, NLB), Auto scaling, ECR, EKS, SNS, Route53, golden AMIs, CloudFront, CloudWatch, RDS, Elastic Beanstalk

**Tools** — Git, Azure, Google Cloud, Postman, Rest API, SpringBoot, React, JWT, JUnit, Bash Scripting, Slack.

## Languages

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**English** — Fluent | **Turkish** — C1 certificate | **French** — Intermediate | **Kinyarwanda** — Native

## Awards

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**Graduate Research Fellowship, Özyeğin University** 06/2023

Awarded to successful students with active research and whose goal is to become researchers or university professors.

**Graduated with Honors, Kocaeli Üniversitesi** 11/2021

Graduated with honors, recognized for outstanding academic performance, and received a certificate of achievement.

**Türkiye Scholarships Receiver, Türkiye Bursları (tbbs)** 08/2016

Awarded a prestigious scholarship for academic excellence for studies in Turkey.