# Dimitrios Pantelaios

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## EDUCATION

**National Technical University of Athens(NTUA), Athens, Greece** *2018-2023*
*BSc & MSc* in Electrical and Computer Engineering (5-year joint degree; 300 ECTS)

- Grade: **9.42/10 "Distinction" (top 2% of my graduating class of 300 students)**
- Concentration: Computer Science
- Relevant Coursework: Pattern Recognition (9/10), Neural Networks and Intelligent Systems (10/10), Artificial Intelligence (9/10), Biomedical Signal Analysis and Processing (10/10)
- **Thesis: "Medical Image Classification using Hybrid CNN-ViT models"**
  *Supervisor:* Stefanos Kollias

**Nationwide University Entrance Examination** *2018*
Score: **18,944/20,000 (top 1% Nationwide)**

## RESEARCH EXPERIENCE

**Undergraduate Research Assistant** *10/2022 - Present*
Artificial Intelligence and Learning Systems Lab, NTUA, Greece
Medical Image Classification using Hybrid CNN-ViT models (diploma thesis)

- Investigated a diverse range of **hybrid CNN-ViT** models in order to enhance the performance and capabilities of the image classification task.
- Applied these carefully selected models on the **COVID-QU-Ex** dataset, a valuable benchmark for evaluating image classification performance in medical imaging and **COVID-19 detection**.
- Compared CNN-ViTs' and simple ViTs' performances when **finetuned** and when trained **from scratch**. In both cases hybrid models achieved better results in terms of accuracy (best model **96.94%**), training time and computational costs.
- Demonstrated enhanced COVID-19 detection capabilities, yielding robust and reliable results.
- Experiments were performed in the **Google Colab** environment and **Pytorch** framework was used for implementation.

## PUBLICATIONS

**Dimitrios Pantelaios**, Paraskevi-Antonia Theofilou, Paraskevi Tzouveli, Stefanos Kollias. "HYBRID CNN-VIT MODELS FOR MEDICAL IMAGE CLASSIFICATION". (In submission).

## PROJECTS

**IoT Live Streaming (Analysis and Design of Information Systems)** *2023*

- Generated and transmitted real-time virtual sensor data using **Python** and **Apache Kafka**.
- Implemented efficient data processing, storage in timeseries database, and live dashboard visualization using **Kafka Streams, InfluxDB, Grafana**, and **Docker**.

**Unity Health Control Applications (M-health and E-health Technologies)** *2022*

- Created a breath control application for panic attack management and a focus application to deal with anxiety disorder.

**Energy Live Moninoring (Software-as-a-Service Technologies)** *2022*

- Designed a web app-service, which allows users to monitor the prices of electricity in Europe through their browser.
- **NodeJS, ExpressJS, Docker** and **Apache Kafka** were used for implementation.

**IOT project at Microprocessors Laboratory** *2021*

- Collected data through thermal and moisture sensors, processed them through intermediate nodes and controlled the watering pots in areas that the conditions were appropriate.
- Simulated all nodes by an **AVR** microcontroller and achieved robust communication through **ESPs**.

**Tolls interoperability (Software Engineering)** *2021*

- Designed a toll payment system regardless of toll station and provider.
- **Python Flask** framework and **JavaScript** were used for implementation.

## AWARDS

**Christos Papakyriakopoulos 2018-2019** award for achieving the highest average degree in mathematics courses during the first year of my undergraduate studies.
**Nikolaos Kritikos 2018-2019** award for attaining the top average grade in first-year mathematics courses.
**Athens North District Soccer Cup 2018** Winner Award.

## SEMINARS

**NTUAI 2022-2023 Seminar**, a two-semester training at NTUA encompassing theoretical and practical aspects of Artificial Intelligence.
**Microsoft Azure AI Fundamentals 2023 Seminar**, a training emphasizing Machine Learning and AI concepts, with a focus on practical applications in the Microsoft Azure environment.

## TEST SCORES

**GRE General test** Quantitative Reasoning: 167/170, Verbal Reasoning: 154/170
**TOEFL iBT test** Score: 102/120

## PROGRAMMING LANGUAGES & TOOLS

· Pytorch, Python, Javascript, HTML, CSS, C, C++, Java, SQL, Node.js, Python Flask, MATLAB, VHDL, HLS, ARM assembly, x86 assembly, Prolog
· Docker, Apache Kafka, Kafka Streams, InfluxDB, Grafana, Xilinx Vivado, Atmel AVR, Linux

## LANGUAGES

English (fluent), German (basic), Greek (native)