Georgios Moschovis

PhD Candidate Student & Archimedes Unit Scholar, Athena Research Centre
Dpt. of Informatics - Athens University of Economics & Business, GR-112 57 Athens, Greece
T: +30 6948 81 84 66 | E: geomos@aueb.gr | website: www.linkedin.com/in/geomos

Education

Feb 23 – current **PhD Natural Language Processing**
Athens University of Economics & Business, Department of Informatics

Aug 20 – Dec 22 **MSc Machine Learning**
KTH Royal Institute of Technology, School of Electrical Engineering and Computer Science
GPA: **9.17/10**

Oct 15 – Sep 19 **BSc (Hons) Informatics**
Athens University of Economics & Business, Department of Informatics
GPA: **9.07/10** - **2nd** highest grade in the class of 2019 and in the top **1.3%** of all Department graduates within 2015-2019

Sep 12 – Jun 15 **National High School Certificate** (Apolytirion of Lyceum)
Second State School of Aghia Paraskevi
Overall grade: **19.1/20**

Experience

Feb 23 – current **Research Engineer,** Natural Language Processing Group
Information Processing Laboratory, Athens University of Economics & Business
Troias 2, 11362 Athens, Greece (Room 301)

- **Project:** Participation in AUEB's Natural Language Processing Group as part of my PhD.

Jun 22 – Dec 22 **Machine Learning Engineer,** NLP Summer Internship
Organization Division, Process Automation and Improvement, Alpha Bank
Sofokleous11, 10559 Athens, Greece (Room K108) Project Presentation

- **Project:** Research of Natural Language Processing architectures for information extraction, optical character Recognition and text generation towards automation of the legalization process based on documents from the General Industrial Registry.

Feb 22 – Dec 22 **Graduate Research Assistant,** *Neural Dynamics Lab* Group
Science for Life Laboratory (SciLife Lab), KTH Royal Institute of Technology
Lindstedtsvägen 5, 11428 Stockholm, Sweden (Room 4449) Project Description

- **Project:** Exploration of medical images captioning with deep networks, using novel approaches used in Deep Learning, to investigate whether and to what extent the automatic generation of a diagnostic text from a set of medical images is possible and how much interpretation of medical images by a Deep Neural Network (DNN) can assist doctors and radiologists produce better quality diagnoses but also at an increased throughput. My plan includes using ImageCLEF medical 2022 data and known biomedical Datasets that are publicly available, such as the IU X-RAY.
- The aforementioned goals have been endeavoured to achieve using a deep model that utilizes Bidirectional and Auto-Regressive Transformers as a parametric memory, combined with a dense retrieval component as a non-parametric memory, inspired by its application in Retrieval-Augmented Generation. Furthermore, we have also attempted to use a summarization architecture based on Transformers, Pegasus, which resulted in better model performance.

Jun 19 – Jul 20 **Research Assistant,** Information Retrieval & Management Research Group
Information Processing Laboratory, Athens University of Economics & Business
Troias 2, 11362 Athens, Greece (Room 301) Project Description

- **Project:** Application of machine learning techniques, such as phrase extraction algorithms, late fusion based on phrases, pre-trained embeddings on Common Crawl and word-embeddings calculated using Facebook's fastText skipgram in Information Retrieval.
- As part of my role, I was experimenting with Information Retrieval based on phrases, extracted using Microsoft Text Analytics API for key phrases extraction and the Cordis.eu Collection (including 18316 documents) of the EU funded research projects, implementing the evaluation algorithms based on both word-embeddings, either pre-trained or trained from scratch in the collection.
- We have achieved significant increase of the Mean Average Precision in the retrieval evaluation when using phrases and we were investigating whether Machine Learning algorithms can improve performance of traditional retrieval techniques, such as BM25 function, when querying a text collection by Document. In this context, we have made several observations on precision.

Skills

Languages
Greek: Native
English: Fluent - IELTS Academic. October 2019. Score: 8.5
Cambridge English Language Proficiency Certificate. December 2015
French: Intermediate- DELF Niveau (B2). Institut Français d'Athénes. October 2013

Software
Machine Learning toolkits: PyTorch, Tensorflow 2, Numerical Python (numpy)

Projects

Publications and reproducibility assignments

- P. Kaliosis, G. Moschovis, F. Charalampakos, J. Pavlopoulos, I. Androutsopoulos, *AUEB NLP Group in ImageCLEF medical 2023*, Lab Working Notes of the 14th International Conference of the CLEF Association (CLEF 2023), Springer Lecture Notes in Computer Science LNCS, Thessaloniki, Greece, September 18-21, 2023. Code online (available on GitHub).
- G. Moschovis, E. Fransén, *NeuralDynamicsLab in ImageCLEF medical 2022*, Lab Working Notes of the 13th International Conference of the CLEF Association (CLEF 2022), Springer Lecture Notes in Computer Science LNCS, Bologna, Italy, September 5-8, 2022.
- I. Athanasiadis, G. Moschovis, A. Tuoma, *Weakly-Supervised Semantic Segmentation via Transformer Explainability*, ReScience Journal Volume 8. Project Report and code online (available on GitHub). Project for "DD2412 Deep Learning Advanced Course". March 2022.
- G. Moschovis, *A study in Biomedical Machine Learning* (Diagnostic captioning). Project Report and tentamen (exam) slides. Project survey for "DD2402 Advanced Individual Course in Computational Biology". Academic supervisor: Erik Fransén. June 2021.
- A. Tuoma, G. Moschovis, B. Lovely, E. Stratigi, *Semi-supervised training of a deep neural network for phoneme recognition*, Project Report and code online (available on GitHub). Project for "DT2119 Speech and Speaker recognition, June 2021.
- E. Stratigi, G. Moschovis, I. Athanasiadis, *Large Variational Autoencoders project* (replication of J. Tomcjak et al., *VAE with a VampPrior*, *AISTATS* 2018). Project Report and code online (available on GitHub). Project for "DD2434 Machine Learning Advanced", January 2021.

Smaller scale lab assignments

- G. Moschovis, *Recurrent Neural Networks*, Assignment for "DD2424 Deep Learning in Data Science", Code and report online (upon prior request). June 2021.
- G. Moschovis, *Training Multi-layer Perceptrons for image classification*, Assignment series for "DD2424 Deep Learning in Data Science" including bonus parts. Code, reports, bonus reports for Part 1, Part 2, Part 3 (upon prior request). May 2021.

Bachelor degree assignments

- G. Moschovis, *Investigating voting policies in terms of truthfulness.* June 2019.
- G. Moschovis, *Elastic Search Client using Java High Level Rest API in Cordis.eu Collection*. April 2019.
- G. Moschovis, *Spam detection mechanism: Naïve Bayes & Enron-Spam dataset.* February 2019.
- G. Moschovis, K. Kyriazis, V. Mossalos, M. Lygeros *Recommendation System Android implementation based on Collaborative Filtering for Implicit Feedback Datasets.* June 2018.
- G. Moschovis, S. Markopoulos, *Android Management System for Escape Room Reservations.* June 2018.
- G. Moschovis, *Programming in Logic: forward chaining and resolution algorithms*, February 2018.
- G. Moschovis, *Automated schedule generator using A-Star exploration algorithm*. November 2017.

Trainings & Competitions

Mar 19 – Jun 20 **Pantú** Android App **|** *Envolve 2019 Entrepreneurship Contest* Project Presentation

- Worked in the development of Pantú, a travel services application, which aims at improving the trip experience by connecting group members and making real time recommendations. Contributed by designing a distributed Recommendation System, based on Collaborative Filtering.

Nov 18 – Dec 18 **Huawei Seeds for the Future**
Huawei Technologies, Beijing and Shenzhen, People's Republic of China

- Achieved score of 88.0% on ICT assessments | Received training in Deep Learning for telecommunications
- Completed a report on Suggestions on improving Huawei's ICT interventions in Greece

Distinctions & Scholarships

Jun 21 **Karl Engvers' Scholarship 2020-2021**

- Received for my excellent performance in Deep Learning in Data Science, Advanced Course in Computational Biology, Speech & Speaker Recognition.

Nov 17 **Ioannis Kavouras Prize 2016-2017**

- Received for my excellent performance in Operating Systems and Computer Systems Organisation.

Dec 16 **Maria Dimopoulou Prize 2015-2016**

- Received for my excellent performance in the modules Linear Algebra, Calculus and Discrete Mathematics.

Interests & Activities

Travel Photography Keen on exploring other cultures and experimenting with photography techniques for depicting landscapes and cultural – historical themes (travelled in over 10 destinations including China, Sweden, Spain, Portugal, Switzerland, Belgium, Netherlands etc.)