Christos Theodoropoulos

Doctoral Researcher at LIIR, KU Leuven
Brussels, Belgium, 1000

WWW: https://christos42.github.io/
christos.theodoropoulos@kuleuven.be

Professional and Research Experience

Doctoral Researcher Sep. 2020 – Present
LIIR, KU Leuven *Leuven, Belgium*

- Conduct research in the relation extraction field applied to biomedical and news text with a focus on continual learning.
- Implement a framework using the contrastive learning paradigm, incorporating knowledge graphs and unstructured text.
- Fulfill teaching assistant duties for the "Information Retrieval and Search Engines" course, like preparing and presenting exercise sessions and project assignments.

Research Scientist Intern Jul. 2022 – Nov. 2022
IBM Research *Dublin, Ireland*

- Conducted research on Person-Centric Knowledge Graph Extraction from Electronic Health Records (EHR) using HSPO ontology.
- Applied Graph Neural Network (GNN) training for solving Intensive Care Unit (ICU) readmission prediction.
- Experimented with embedding learning for heterogeneous graphs.
- Abstractly developed the framework to be applicable to other downstream predictive tasks (e.g. mortality prediction).
- Heavily contributed to IBM's open-source project (HSPO ontology).
- Submitted a patent as the primary inventor.

Machine - Deep Learning Engineer, Researcher Mar. 2019 – Sep. 2019
I-SENSE Group, ICCS, NTUA *Athens, Greece*

- Worked on an internal project related to eye-tracking and object detection systems.
- Developed advanced Deep Learning architectures for gaze localization.
- Implemented process for GAN quality evaluation using pre-trained Deep Learning models and Random Forest classifier.
- Performed data pre-processing and manipulation for the unification of images datasets related to driving conditions.

Data Scientist Mar. 2018 – Jul. 2018
Sentio Solutions Inc. *Athens, Greece*

- Developed proprietary algorithms for signal processing of HRV, related to signal reconstruction and quality estimation.
- Created procedure for data retrieval from cloud storage space.

Education

KU Leuven Sept. 2020 – Present
Doctor of Philosophy - PhD, Computer Science *Leuven, Belgium*

- Research Areas: Natural Language Processing, Information Extraction, Continual Learning, Deep Learning
- Advisor: Prof. Marie-Francine Moens

KU Leuven Sept. 2019 – Aug. 2020
Advanced M.Sc., Artificial Intelligence *Leuven, Belgium*

- Grade: 81.17%, Magna Cum Laude - Great Distinction

National and Technical University of Athens Oct. 2012 – Oct. 2018
Integrated B.Sc. & M.Sc., Electrical & Computer Engineering *Athens, Greece*

- Grade: 81.8%, Great Distinction
- Concentration: Computer Science
- Advisor: Andreas-Georgios Stafylopatis
- Dissertation: "Deep Learning Techniques for Emotion Recognition through Facial Expressions."

Publications

Christos Theodoropoulos, James Henderson, Andrei C. Coman, Marie-Francine Moens. **Imposing Relation Structure in Language-Model Embeddings Using Contrastive Learning.** In Proceedings of the 25th Conference on Computational Natural Language Learning. 2021. (oral)

Christos Theodoropoulos, Christos Chatzichristos, and Sabine Van Huffel. **Automatic artifact removal of resting-state fMRI with Deep Neural Networks.** In 29th European Signal Processing Conference (EUSIPCO). IEEE, 2021.

Selected Projects

Person-Centric Knowledge Graph Extraction

- Developed a data pre-processing and analysis pipeline to extract Person-Centric Knowledge Graphs in RDF format using HSPO ontology schema and MIMIC-III dataset.
- Implemented a downstream task-agnostic transformation process to create different graph versions, experiment with the level of heterogeneity, and extract Knowledge Graphs in a GNN-friendly format.
- Trained Graph Convolution/Attention Networks to solve the ICU readmission prediction task using an insufficiently large dataset (appr. 2.5K training records).

Automatic Denoising of Resting-State fMRI

- Designed and developed a Deep Learning framework using 3D CNN and LSTM layers for artifact removal of resting-state fMRI.
- Handled spatial and temporal information by implementing a weighted voting schema.
- Achieved comparable to state-of-the-art performance.

Emotion Recognition

- Manipulated video data annotated with emotion markers using Deep Learning and Transfer Learning techniques for emotion recognition through facial expressions.
- Approached the problem as classification and regression based on the emotional space (valence-arousal).

Churn Prediction

- Implemented a Machine Learning framework for churn prediction, working with official masked customer data, given by an established Greek telecommunication company.
- Experimented with different classifiers and achieved over 88% accuracy by segmenting the customers into different risk groups.

Honors and Awards

Scholarship for Ph.D. studies, FWO fellowship
KU Leuven *Sep. 2020*

Scholarship for M.Sc. studies
Bodossaki Foundation *Sep. 2019*

Scholarship for M.Sc. studies
Eugenides Foundation *Sep. 2019*

Scholarship for B.Sc. and M.Sc. studies
Bakopouleio Foundation *Sep. 2012/2013/2014/2015/2016*

Technical Skills and Talks

Programming: Python (PyTorch, PyTorch-Geometric, Scikit-learn, Huggingface, Spacy, Numpy), Matlab, C
Agile Development and Project Management: Git, JIRA, Scrum
Conference/Other Talks Show and Tell - IBM Research '22, CoNLL '21
Languages: English (fluent), Greek (native)