

Giannis Karamanolakis

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Research Interests

Machine learning, Data Mining, Natural Language Processing and Understanding, Deep Learning, Probabilistic Modeling, Active Learning, Weakly Supervised Learning, Machine Learning for Music Applications.

Education

Ph.D. Computer Science, Columbia University, 09/2017 - now.

Current GPA: 4.26/4.00.

Advisors: Prof. Luis Gravano and Prof. Daniel Hsu.

Research Areas: Information Extraction, Natural Language Processing, Deep Learning.

Main projects: Adaptive Information Extraction from Social Media for Actionable Inferences in Public Health (submission to WSDM 2019), Deep Learning for Recommender Systems (publication to DLRS@RecSys 2018).

M.Eng. Electrical and Computer Engineering, National Technical University of Athens, 09/2011 - 07/2017.

Major: Computer Science, GPA: 9.26/10.00 (top 2%).

Advisor: Alexandros Potamianos.

Thesis: "Grounding Word Semantic Representations to Acoustic and Visual Perceptual Modalities".

Nationwide University Entrance Examination score: 19.708 / 20.000 (top 0.1% nationwide), 06/2011.

Professional and Research Experience

Machine Learning Engineer, 04/2016 - 08/2017

Behavioral Signals, Athens, Greece (remote).

Trained statistical models for the recognition of core emotions, moods and behaviors from speech.

Examined how speaker interaction patterns provide information about Key Performance Indicators.

Applied Active Learning and Semi-Supervised Learning algorithms for the extraction of useful information from recorded speech and the corresponding transcriptions.

Research Assistant, 01/2016-06/2017.

Institute for Language & Speech Processing, "Athena" Research & Innovation Center, Athens, Greece.

Supervisors: Alexandros Potamianos, Aggelos Gkiokas, and Vassilis Katsourous

Carried out research under Audio Signal Processing and Multimedia Information Retrieval.

Used Deep Learning for the fusion of multimodal (text, audio, visual) semantic representations.

Participated in "IEEE Signal Processing Cup 2017: Real-Time Beat Tracking" challenge.

Lab & Research Assistant, 11/2015-06/2017

Computer Vision, Speech Communication & Signal Processing Lab, NTUA, Athens, Greece.

Supervisors: Alexandros Potamianos, and Petros Maragos

Developed Audio-Based Distributional Semantic Models (DSMs).

Assisted with the lab sessions of the course “Pattern Recognition with Emphasis on Speech Recognition”.

Research Intern, 11/2015-2/2016

Computational Intelligence Laboratory, National Center of Scientific Research “Demokritos”, Athens, Greece.

Supervisor: Theodoros Giannakopoulos

Carried out research and developed code in the context of “Audio Analysis for Soundscape Event Detection and Quality Estimation using Machine Learning Methods”.

Publications

Giannis Karamanolakis, Daniel Hsu, and Luis Gravano. Submission to WSDM 2019 (long paper - double blind). In summary, we employ Multiple Instance Learning (MIL) in hierarchical deep learning models (CNNs, RNNs) for training sentence-level classifiers using review-level labels as the only source of supervision. We propose to estimate the MIL aggregation function using an attention-based mechanism and apply our proposed model for the fine-grained sentiment analysis of reviews, and for the detection of foodborne outbreaks in online restaurant reviews..

Giannis Karamanolakis, Kevin Raji Cherian, Ananth Ravi Narayan, Jie Yuan, Da Tang, and Tony Jebara. Item recommendation with variational autoencoders and heterogenous priors. In *RecSys 2018 Workshop on Deep Learning for Recommender Systems*, 2018.

Georgios Paraskevopoulos, **Giannis Karamanolakis**, Elias Iosif, Aggelos Pikrakis, and Alexandros Potamianos. Sensory-aware multimodal fusion for word semantic similarity estimation. In *EUSIPCO 2017 Workshop on Multimodal Processing, Modeling, and Learning Approaches for Human-Computer/Robot Interaction (Multi-Learn)*, 2017.

Giannis Karamanolakis, Elias Iosif, Athanasia Zlatintsi, Aggelos Pikrakis, and Alexandros Potamianos. Audio-based distributional semantic models for music auto-tagging and similarity measurement. In *EUSIPCO 2017 Workshop on Multimodal Processing, Modeling, and Learning Approaches for Human-Computer/Robot Interaction (Multi-Learn)*, 2017.

Giannis Karamanolakis, Elias Iosif, Athanasia Zlatintsi, Aggelos Pikrakis, and Alexandros Potamianos. Audio-based distributional representations of meaning using a fusion of feature encodings. In *INTERSPEECH*, pages 3658–3662, 2016.

Fellowships, Honors, and Awards

Gerondelis Foundation Scholarship, 06/2018.

Joseph F. Traub Fellowship, Columbia University, 04/2018

Addressing the Opioid Epidemic, Design Challenge Award, Columbia University, 12/2017

Columbia Engineering Presidential Fellowship, 08/2017 - 05/2022

Eurobank EFG Scholarship, 06/2012

Hellenic Mathematic Society “Euclides” Award, 03/2010

Hellenic Mathematic Society “Thales” Award, 02/2009

Technical Skills

Programming: Python (Pytorch, Tensorflow, Keras), C++, MATLAB, R, C, Java, ...

Version Control & Project Management: Git, SVN, JIRA, Jenkins

Agile Development: Scrum, Kanban

Extracurricular Activities

Music: bass guitar, guitar, clarinet, ukulele, guitalele

Sports: windsurfing, tennis, squash, running, hiking

Dance: salsa (in progress), folk cretan

Photography: dslr, mobile

Languages

English (fluent), French (intermediate), Greek (native), Spanish (beginner)