

Nikolaos (Nikos) Flemotomos

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RESEARCH INTERESTS Speaker Diarization and Role Recognition, Speech Recognition, Machine Learning

EDUCATION **Ph.D., Electrical Engineering** started Aug 2016
University of Southern California, Los Angeles, CA, U.S.A.

M.Sc., Electrical Engineering Dec 2018
University of Southern California, Los Angeles, CA, U.S.A.
GPA: 4.00/4.00

Diploma (5-years degree), Electrical and Computer Engineering Apr 2016
National Technical University of Athens, Athens, Greece
Thesis: *Robust Acoustic Features for Distant Speech Recognition*
GPA: 9.34/10.00

RESEARCH EXPERIENCE **University of Southern California**, Los Angeles, CA, U.S.A.
Signal Processing and Interpretation Laboratory (SAIL)
Graduate Research Assistant May 2017 to present
Supervisor: Prof. Shrikanth Narayanan

- Exploring neural embeddings and alternative clustering approaches for speaker diarization.
- Combining Speaker Role Recognition (SRR) with other speech processing modules (e.g. diarization, speech recognition) in order both to improve the performance of SRR itself and to provide useful information to the modules it is combined with.
- Leading a subgroup that develops a real-world system which, after processing recordings of psychotherapy sessions, gives feedback to the therapist. The system is used for computer-aided therapist training.

Microsoft Research, Bellevue, WA, U.S.A.
Speech and Dialog Research Group
Research Intern May 2019 to Aug 2019
Supervisor: Dr. Dimitrios Dimitriadis

- Worked on speaker identification and diarization in meeting scenarios.
- Proposed a novel algorithm for continuous speaker identification based on memory-augmented networks.

Czech Technical University in Prague, Prague, Czech Republic
Biomedical Data and Signal Processing Group (BioDat)
Research Intern Mar 2016 to Jun 2016
Supervisor: Assoc. Prof. Lenka Lhotska

- Developed a novel algorithm for automatic sleep staging from polysomnographic signals, motivated by ideas used in speech recognition.

National Technical University of Athens, Athens, Greece
Computer Vision, Speech Communication and Signal Processing Group (CVSP)
Undergraduate Research Assistant Feb 2015 to Mar 2016
Supervisor: Prof. Petros Maragos

- Explored the Teager-Kaiser energy operator for energy estimation in speech signals.
- Developed a system for single-microphone distant speech recognition, comparing various acoustic feature sets, with an emphasis on those based on the AM-FM speech model.

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| SOFTWARE SKILLS | Programming Languages: Python, UNIX shell scripting, MATLAB, C, R Tools & Libraries: Kaldi, OpenFST, Tensorflow, Keras, SRILM, L ^A T _E X | |
| GRADUATE COURSEWORK | Computational Social Sciences, Mathematics of High-Dimensional Data, Machine Learning Theory, Deep Learning, Machine Learning from Signals, Pattern Recognition, Statistics, Probability, Random Processes | |
| TEACHING EXPERIENCE | University of Southern California , Los Angeles, CA, U.S.A. <i>Teaching Assistant</i> Speech Recognition and Processing for Multimedia Society of Astronomy and Space , Volos, Greece <i>Teaching Assistant</i> Preparation for the International Olympiad on Astronomy and Astrophysics | Spring 2019 & 2020 Summer 2011 & 2012 |
| HONORS AND AWARDS | Phi Kappa Phi Member (academic honor society) Annenberg Ph.D. Fellowship University of Southern California Gerontelis Graduate Studies Scholarship Gerontelis Foundation Travel Grant International Speech Communication Association (ISCA) Honorable Mention 4th International Olympiad on Astronomy and Astrophysics | Aug 2016 to Aug 2020 Apr 2020 Sep 2018 Sep 2010 |
| JOURNAL PUBLICATIONS | 1. N. Flemotomos , V.R. Martinez, Z. Chen, K. Singla, V. Ardulov, R. Peri, J. Gibson, M.J. Tanana, P. Georgiou, J. Van Epps, S.P. Lord, T. Hirsch., Z.E. Imel, D.C. Atkins, and S. Narayanan. ““Am I A Good Therapist?” Automated Evaluation Of Psychotherapy Skills Using Speech And Language Technologies” (<i>submitted</i>). 2. S.B. Goldberg, N. Flemotomos , V.R. Martinez, M. Tanana, P. Kuo, B.T. Pace, J.L. Villatte, P. Georgiou, J. Van Epps, Z.E. Imel, S. Narayanan, and D.C. Atkins. “Machine Learning and Natural Language Processing in Psychotherapy Research: Alliance as Example Use Case”, <i>Journal of Counseling Psychology</i> , 2020. | |
| CONFERENCE PROCEEDINGS | 1. N. Flemotomos , P. Georgiou, and S. Narayanan. “Linguistically Aided Speaker Diarization Using Speaker Role Information”, <i>Odyssey</i> , 2020. 2. N. Flemotomos , and D. Dimitriadis. “A Memory Augmented Architecture for Continuous Speaker Identification in Meetings”, <i>ICASSP</i> , 2020. 3. T.J. Park, M. Kumar, N. Flemotomos , M. Pal, R. Peri, R. Lahiri, P. Georgiou, and S. Narayanan. “The Second DIHARD Challenge: System Description for USC-SAIL Team”, <i>Interspeech</i> , 2019 4. V.R. Martinez, N. Flemotomos , V. Ardulov, K. Somandepalli, S.B. Goldberg, Z.E. Imel, D.C. Atkins, and S. Narayanan. “Identifying Therapist and Client Personae for Therapeutic Alliance Estimation”, <i>Interspeech</i> , 2019. 5. N. Flemotomos , P. Georgiou, D.C. Atkins, and S. Narayanan, “Role Specific Lattice Rescoring for Speaker Role Recognition from Speech Recognition Outputs”, <i>ICASSP</i> , 2019. | |

6. **N. Flemotomos**, Z. Chen, D.C. Atkins, and S. Narayanan, “Role Annotated Speech Recognition for Conversational Interactions”, *SLT*, 2018.
7. **N. Flemotomos**, P. Papadopoulos, J. Gibson, and S. Narayanan, “Combined Speaker Clustering and Role Recognition in Conversational Speech”, *Interspeech*, 2018.
8. **N. Flemotomos**, V.R. Martinez, J. Gibson, D.C. Atkins, T.A. Creed, and S. Narayanan, “Language Features for Automated Evaluation of Cognitive Behavior Psychotherapy Sessions”, *Interspeech*, 2018.
9. K. Singla, Z. Chen, **N. Flemotomos**, J. Gibson, D. Can, D.C. Atkins, and S. Narayanan, “Using Prosodic and Lexical Information for Learning Utterance-level Behaviors in Psychotherapy”, *Interspeech*, 2018.

REVIEWER 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2020)
 Behavior Research Methods