

# 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

WORKING 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.

**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 and tested 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.

SOFTWARE SKILLS **Programming Languages:**

Python, UNIX shell scripting, MATLAB, C

C++, Java, ML, R, Prolog, SQL

*extensive experience  
familiarity*

**Tools & Libraries:**

Kaldi, OpenFST, Tensorflow, Keras, SRILM, L<sup>A</sup>T<sub>E</sub>X

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| CONFERENCE PUBLICATIONS    | <ol style="list-style-type: none"> <li>1. <b>N. Flemotomos</b>, P. Georgiou, D.C. Atkins, and S. Narayanan, “Role Specific Lattice Rescoring for Speaker Role Recognition from Speech Recognition Outputs”, <i>ICASSP 2019</i>. (accepted)</li> <li>2. <b>N. Flemotomos</b>, Z. Chen, D.C. Atkins, and S. Narayanan, “Role Annotated Speech Recognition for Conversational Interactions”, <i>2018 IEEE SLT Workshop</i>.</li> <li>3. <b>N. Flemotomos</b>, P. Papadopoulos, J. Gibson, and S. Narayanan, “Combined Speaker Clustering and Role Recognition in Conversational Speech”, <i>Proc. Interspeech 2018</i>.</li> <li>4. <b>N. Flemotomos</b>, V.R. Martinez, J. Gibson, D.C. Atkins, T.A. Creed, and S. Narayanan, “Language Features for Automated Evaluation of Cognitive Behavior Psychotherapy Sessions”, <i>Proc. Interspeech 2018</i>.</li> <li>5. K. Singla, Z. Chen, <b>N. Flemotomos</b>, J. Gibson, D. Can, D.C. Atkins, and S. Narayanan, “Using Prosodic and Lexical Information for Learning Utterance-level Behaviors in Psychotherapy”, <i>Proc. Interspeech 2018</i>.</li> </ol> |   |  |
| GRADUATE COURSEWORK        | Mathematics of High-Dimensional Data, Machine Learning Theory, Deep Learning, Machine Learning from Signals, Pattern Recognition, Statistics, Probability, Random Processes   |   |  |
| AWARDS AND DISTINCTIONS    | <b>Annenberg Ph.D. Fellowship</b><br>University of Southern California  | Aug 2016 to present   |  |
|                            | <b>Travel Grant</b><br>International Speech Communication Association (ISCA)  | Sep 2018  |  |
|                            | <b>Honorable Mention</b><br>4th International Olympiad on Astronomy and Astrophysics, Beijing, China  | Sep 2010  |  |
| TEACHING EXPERIENCE        | <b>University of Southern California</b> , Los Angeles, CA, U.S.A.<br><i>Teaching Assistant</i><br>Speech Recognition and Processing for Multimedia   | Spring 2019   |  |
|                            | <b>Society of Astronomy and Space</b> , Volos, Greece<br><i>Teaching Assistant</i><br>Preparation for the International Olympiad on Astronomy and Astrophysics  | Summer 2011 & 2012  |  |
| SERVICE AND VOLUNTARY WORK | <b>Hellenic Student Association of USC</b><br>Student volunteer and board member  | Jan 2018 to present   |  |
|                            | <b>IEEE Engineering in Medicine &amp; Biology Society NTUA Student Chapter</b><br>President<br>Student volunteer  | Sep 2014 to Jun 2015<br>Sep 2013 to Jun 2014  |  |
|                            | <b>7th International Olympiad on Astronomy and Astrophysics</b><br>Student volunteer  | Aug 2014  |  |
|                            | <b>Greek Astronomy Magazine ‘Ouranos’ (‘Sky’)</b><br>Member of the writing team   | Sep 2012 to Mar 2015  |  |
|                            | <b>AEGEE-Athina</b><br>politically independent student organisation aiming at a democratic, diverse Europe<br>Volunteer   | Sep 2012 to Sep 2013  |  |
| LANGUAGES                  | <b>Greek</b> , Native Speaker<br><b>English</b> , Proficient Level<br><b>French</b> , Intermediate Level<br><b>Japanese</b> , Beginner Level  | <i>Certificate of Proficiency in English</i><br><i>Diplôme Approfondi de Langue Française (DALF C1-C2)</i><br><i>Level N5 of the Japanese-Language Proficiency Test</i> |  |