

# Nikolaos (Nikos) Flemotomos

✉ flemotom@usc.edu 📞 +1 213 421 7498 🌐 nikosfl.github.io

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RESEARCH INTERESTS	Speech Processing, Recognition, and Understanding, Natural Language Processing, Speaker Diarization and Identification, Machine Learning for Healthcare
EDUCATION	<p><b>University of Southern California</b>, Los Angeles, CA, U.S.A.</p> <ul style="list-style-type: none"><li>• Ph.D., Electrical Engineering <span style="float: right;">expected May 2022</span></li><li>• M.Sc., Computer Science (<i>GPA: 3.94/4.00</i>) <span style="float: right;">Aug 2021</span></li><li>• M.Sc., Electrical Engineering (<i>GPA: 4.00/4.00</i>) <span style="float: right;">Dec 2018</span></li></ul> <p><b>National Technical University of Athens</b>, Athens, Greece</p> <ul style="list-style-type: none"><li>• Diploma, Electrical and Computer Engineering (<i>GPA: 9.34/10.00</i>) <span style="float: right;">Apr 2016</span></li></ul>
RESEARCH EXPERIENCE	<p><b>University of Southern California</b>, Los Angeles, CA, U.S.A</p> <p>Signal Analysis and Interpretation Laboratory (SAIL)</p> <p><i>Graduate Research Assistant</i> <span style="float: right;">May 2017 to present</span></p> <ul style="list-style-type: none"><li>• Leveraging speaker role information in various speech processing tasks (e.g., diarization, speech recognition).</li><li>• 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.</li></ul> <p><b>Apple</b>, Los Angeles, CA, U.S.A. (remote workplace)</p> <p>Siri - Automatic Speech Recognition R&amp;D</p> <p><i>Machine Learning Engineering Intern</i> <span style="float: right;">May 2021 to Aug 2021</span></p> <ul style="list-style-type: none"><li>• Explored adaptation methods for end-to-end speech recognition.</li></ul> <p><b>Microsoft Research</b>, Bellevue, WA, U.S.A</p> <p>Speech and Dialogue Research Group</p> <p><i>Research Intern</i> <span style="float: right;">May 2019 to Aug 2019</span></p> <ul style="list-style-type: none"><li>• Worked on speaker identification and diarization in meeting scenarios.</li><li>• Proposed a novel algorithm for continuous speaker identification based on memory-augmented neural networks (presented at ICASSP '20).</li></ul> <p><b>Czech Technical University in Prague</b>, Prague, Czech Republic</p> <p>Biomedical Data and Signal Processing Group (BioDat)</p> <p><i>Research Intern</i> <span style="float: right;">Mar 2016 to Jun 2016</span></p> <ul style="list-style-type: none"><li>• Developed an algorithm for automatic sleep staging from polysomnographic signals, motivated by ideas used in speech recognition.</li></ul> <p><b>National Technical University of Athens</b>, Athens, Greece</p> <p>Computer Vision, Speech Communication and Signal Processing Group (CVSP)</p> <p><i>Undergraduate Research Assistant</i> <span style="float: right;">Feb 2015 to Mar 2016</span></p> <ul style="list-style-type: none"><li>• Explored the Teager-Kaiser energy operator for energy estimation in speech signals.</li><li>• 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.</li></ul>
TEACHING EXPERIENCE	<p><b>University of Southern California</b>, Los Angeles, CA, U.S.A.</p> <p><i>Teaching Assistant</i> <span style="float: right;">Spring 2019, 2020 &amp; 2021</span></p> <p>Speech Recognition and Processing for Multimedia</p>
SOFTWARE SKILLS	<p><b>Programming Languages:</b></p> <p>Python, UNIX shell scripting, MATLAB, C, R</p> <p><b>Tools:</b></p> <p>Tensorflow, PyTorch, Kaldi, OpenFST, SRILM, L<sup>A</sup>T<sub>E</sub>X</p>

JOURNAL PUBLICATIONS	1. Z. Chen, <b>N. Flemotomos</b> , K. Singla, T.A. Creed, D.C. Atkins, and S. Narayanan, “An Automated Quality Evaluation Framework of Psychotherapy Conversations with Local Quality Estimates” ( <i>under review</i> ).	
	2. <b>N. Flemotomos</b> , V.R. Martinez, Z. Chen, T.A. Creed, D.C. Atkins, and S. Narayanan, “Automated Quality Assessment of Cognitive Behavioral Therapy Sessions Through Highly Contextualized Language Representations”, <i>PLOS ONE</i> , 2021.	
	3. <b>N. Flemotomos</b> , V.R. Martinez, Z. Chen, K. Singla, V. Ardulov, R. Peri, D. Caperton, J. Gibson, M.J. Tanana, P. Georgiou, J. Van Epps, S.P. Lord, T. Hirsch., Z.E. Imel, D.C. Atkins, and S. Narayanan. “Automated Evaluation of Psychotherapy Skills Using Speech and Language Technologies”, <i>Behavior Research Methods</i> , 2021.	
	4. S.B. Goldberg, <b>N. Flemotomos</b> , 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.	
PEER REVIEWED CONFERENCE & WORKSHOP PROCEEDINGS	1. Z. Chen, <b>N. Flemotomos</b> , V. Ardulov, T.A. Creed, Z.E. Imel, D.C. Atkins, and S. Narayanan. “Feature Fusion Strategies for End-to-End Evaluation of Cognitive Behavior Therapy Sessions”, <i>EMBC</i> , 2021.	
	2. <b>N. Flemotomos</b> , P. Georgiou, and S. Narayanan. “Linguistically Aided Speaker Diarization Using Speaker Role Information”, <i>Odyssey</i> , 2020. <b>Best Student Paper Finalist</b>	
	3. <b>N. Flemotomos</b> , and D. Dimitriadis. “A Memory Augmented Architecture for Continuous Speaker Identification in Meetings”, <i>ICASSP</i> , 2020.	
	4. T.J. Park, M. Kumar, <b>N. Flemotomos</b> , 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	
	5. V.R. Martinez, <b>N. Flemotomos</b> , 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.	
	6. <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</i> , 2019.	
	7. <b>N. Flemotomos</b> , Z. Chen, D.C. Atkins, and S. Narayanan, “Role Annotated Speech Recognition for Conversational Interactions”, <i>SLT</i> , 2018.	
	8. <b>N. Flemotomos</b> , P. Papadopoulos, J. Gibson, and S. Narayanan, “Combined Speaker Clustering and Role Recognition in Conversational Speech”, <i>Interspeech</i> , 2018.	
	9. <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>Interspeech</i> , 2018.	
	10. 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>Interspeech</i> , 2018.	
INVITED TALKS	1. <b>Alberta Hospital Edmonton/University of Alberta</b> Forensic Grand Rounds <i>Towards Automated Large-Scale Evaluation of Psychotherapy</i>	Sep 2021
	2. <b>University of Southern California</b> Interaction Lab <i>Who Spoke When? and how speaker roles can help us find the answer</i>	Apr 2021