Murat Saraçlar

Boğaziçi University, Electrical and Electronics Engineering Department, Bebek 34342 Istanbul, Türkiye
http://busim.ee.boun.edu.tr/~murat/

EDUCATION	
	Johns Hopkins University, Baltimore, MD
	Ph.D. in Electrical and Computer Engineering, 2001
	Title: Pronunciation modeling for conversational speech recognition.
	Committee: Prof F. Jelinek, Prof A. Andreou, Prof G. Meyer, Dr. S. Khudanpur, Dr. M. Riley.
	M.S.E. in Electrical and Computer Engineering, 1997

Bilkent University, Ankara, Turkey
B.S in Electrical and Electronics Engineering, 1994

EXPERIENCE

Professor	*Jan 2017 – present*
Associate Professor	*Oct 2011 – Jan 2017*
Assistant Professor	*Jan 2005 – Oct 2011*
Electrical and Electronics Engineering Department	**Bogaziçi University**

Senior Technical Specialist	*May 2004 – Jan 2005*
Senior Technical Staff Member	*September 2000 – May 2004*
AT&T Labs – Research	**Florham Park, NJ**

Research Assistant	*September 1996 – September 2000*
Center for Language and Speech Processing	**Johns Hopkins University**

Teaching Assistant	*Sep 1994 – May 1996; Jan 1999 – May 1999*
Electrical and Computer Engineering Department	**Johns Hopkins University**

EXPERIENCE (VISITING POSITIONS AND SUMMER WORKSHOPS)

Academic Visitor	*November 2012 – August 2013*
IBM T.J. Watson Research Center	

Visiting Research Scientist	*September 2011 – November 2012*
Google Inc.	

Senior Researcher — *July 2011 – August 2011*
CLSP Summer Workshop on Human Language Technology
Confusion-based Statistical Language Modeling for Machine Translation and Speech Recognition

Senior Researcher — *July 2008 – August 2008*
CLSP Summer Workshop on Human Language Technology
Multilingual Spoken Term Detection

Group Leader — *July 2007 – August 2007*
Enterface'07: The SIMILAR NoE Summer Workshop on Multimodal Interfaces
Speech and Sliding Text Aided Sign Retrieval from Hearing Impaired Sign News Videos,
Multimodal Speaker Identity Conversion, Mobile-Phone Based Gesture Recognition.

Researcher — *July 1997 – August 1997*
DoD Workshop on Innovative Techniques for LVCSR at Johns Hopkins University
Pronunciation Modeling Group

Student Assistant — *July 1996 – August 1996*
DoD Workshop on Innovative Techniques for LVCSR at Johns Hopkins University
Automatic Learning of Word Pronunciations from Data

AWARDS   ISCA Best Paper Award for articles published in Computer Speech and Language (2007-2011)
for the article titled "Discriminative n-gram language modeling", 2012.

IBM Faculty Award, 2010.

Turkish Academy of Sciences Young Scientist (TUBA-GEBIP) Award, 2009.

AT&T Labs Research Excellence Award
for outstanding contribution to the Switchboard Bake-Off competition, 2002.

GRANTS   Researcher, TUBITAK (117E059): Searching of Turkish Sign Language Videos with Visual Queries, 2018-2021.

PI, TUBITAK (116E076): Keyword Search on Low-Resource Languages, 2017-2020.

PI, IARPA Babel Program (IBM Subcontract), 2014-2016.

PI, TUBITAK-NSF (109E142): Semi-Supervised Discriminative Training of Language Models, 2010-2014.

PI, TUBITAK Career (105E102): Turkish Broadcast News Transcription and Retrieval, 2006-2011.

Researcher, TUBITAK (110E264): Similar Case Retrieval in Radiological Databases, 2011-2013.

Researcher, TUBITAK-RFBR (108E113): Methods and multimodal interfaces for contactless communication of handicapped people with information inquiry systems, 2009-2011.

Researcher, TUBITAK (107E261): Morphology Based Language Modeling for Turkish Speech Recognition, 2008-2010.

Researcher, TUBITAK (107E021): Sign Language Tutor, 2007-2009.

Researcher, TUBITAK (107E001), COST-2101: Performance and security improvement with multi-biometrics, 2007-2010.

Researcher, EU IST (FP6-507609), SIMILAR Network of Excellence, 2005-2007.

PI, Bogazici University Research Fund (14A02D3): Unsupervised Discriminative Language Modeling Approaches for Automatic Speech Recognition, 2014-2015.

PI, Bogazici University Research Fund (07HA201D): Feature Selection for Turkish Discriminative Language Models, 2007-2010.

PI, Bogazici University Research Fund (05HA202): Automatic Speech Recognition of Turkish Broadcast News, 2005-2009.

PROFESSIONAL   *Editorial Board Memberships*
ACTIVITIES   Computer Speech and Language (2009-)
IEEE Signal Processing Letters (2009-2012)
IEEE Transactions on Audio Speech and Language Processing (AE: 2012-2016, SAE: 2019-)
Language Resources and Evaluation (2010-2016)

IEEE Signal Processing Society Speech and Language Technical Committee (2007-2009, 2015-2018)
IEEE Turkish Branch Executive Committee – Technical Activities (2008-2009)

Technical/Area Chair/Coordinator
Annual Conference of the International Speech Communication Association (Interspeech 2011, 2013, 2016,2019); IEEE Automatic Speech Recognition and Understanding Workshop (ASRU 2011,2019); IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2008, 2009); Human Language Technology Conference / Conference on Empirical Methods in Natural Language Processing (HLT/EMNLP 2005)

Reviewer
Computational Linguistics; Computer Speech and Language; IEEE Signal Processing Magazine; IEEE Transactions on Audio, Speech and Language Processing; IEEE Transactions on Speech and Audio Processing; Pattern Recognition Letters; Speech Communication

PATENTS   M. Saraclar, R.W. Sproat.
System and method of lattice-based search for spoken utterance retrieval
(US Patent 7912699, issued Mar 22, 2011; US Patent 8670977, issued Mar 11, 2014;
US Patent 9286890, issued Mar 15, 2016; US Patent 9965552, issued May 8, 2018)

D.C. Gibbon, L. Begeja, K. Hanson, Z. Liu, B.S. Renger, M. Saraclar, B. Shahraray
Method for retrieving information from presentations and meetings using a network
(US Patent 9569333, issued Feb 14, 2017)

H. Sak, M. Saraclar.
Sub-lexical language models with word level pronunciation lexicons
(US Patent 9292489, issued Mar 22, 2016)

V. Goffin, A. Ljolje, M. Saraclar.
Low latency real-time vocal tract length normalization
(US Patent 7567903, issued Jul 28, 2009; US Patent 8909527, issued Dec 9, 2014;
US Patent 9165555, issued Oct 20, 2015)

V. Goffin, M.D. Riley, M. Saraclar.
Low latency real-time speech transcription
(US Patent 7930181, issued Apr 19, 2011; US Patent 7941317, issued May 10, 2011)

PUBLICATIONS   K Oflazer, M Saraclar. (Eds.)
Books   Turkish Natural Language Processing.
Springer, 2018.

PUBLICATIONS   K Oflazer, M Saraclar.
Book   Turkish and Its Challenges for Language and Speech Processing.
Chapters   *Turkish Natural Language Processing*, 1-19, Springer, 2018.

DZ Hakkani-Tur, M Saraclar, G Tur, K Oflazer, D Yuret.
Morphological Disambiguation for Turkish.
Turkish Natural Language Processing, 53-67, Springer, 2018.

E Arisoy, M Saraclar.
Language modeling for Turkish text and speech processing.
Turkish Natural Language Processing, 69-92, Springer, 2018.

E Arisoy, M Saraclar.
Turkish Speech Recognition.
Turkish Natural Language Processing, 93-114, Springer, 2018.

C. Chelba, T.J. Hazen, B. Ramabhadran, and M. Saraclar.
Speech Retrieval.
Spoken Language Understanding, Wiley, 2011.

PUBLICATIONS **Editorials**

M. Saraclar, C. Chelba, and B. Ramabhadran.
Editorial for the special issue on spoken content retrieval.
Computer Speech and Language, 28(5):1019-1020, Sep 2014.

PUBLICATIONS **Journal Articles**

I. Sen, M. Saraclar and Y.P. Kahya.
Differential Diagnosis of Asthma and COPD Based on Multivariate Pulmonary Sounds Analysis.
IEEE Transactions on Biomedical Engineering, 2021.

O.D. Kose, M.C. Gursoy, M. Saraclar, A.E. Pusane, T. Tugcu.
Machine Learning-Based Silent Entity Localization Using Molecular Diffusion.
IEEE Communications Letters, 24(4):807-810, Apr 2020.

B. Yusuf, B. Gundogdu, M. Saraclar.
Low Resource Keyword Search With Synthesized Crosslingual Exemplars.
IEEE/ACM Transactions on Audio, Speech, and Language Processing, 27(7):1126-1135, Apr 2019.

B. Gundogdu, B. Yusuf, M. Saraclar.
Generative RNNs for OOV Keyword Search.
IEEE Signal Processing Letters, 26(1):124-128, Jan 2019.

B. Gundogdu, B. Yusuf, M. Saraclar.
Joint learning of distance metric and query model for posteriorgram-based keyword search.
IEEE Journal of Selected Topics in Signal Processing, 11(8):1318-1328, Oct 2017.

E. Dikici, M. Saraclar.
Semi-supervised and unsupervised discriminative language model training for automatic speech recognition.
Speech Communication, 83:54-63, Oct 2016.

I. Sen, M. Saraclar, Y.P. Kahya.
A Comparison of SVM and GMM Based Classifier Configurations for Diagnostic Classification of Pulmonary Sounds.
IEEE Transactions on Biomedical Engineering, 62(7):1768-1776, Feb 2015.

I. Sen, M. Saraclar, Y.P. Kahya.
Computerized Diagnosis of Respiratory Disorders.
Methods of Information in Medicine, 53(4):291-295, Jul 2014.

I. Sen, M. Saraclar, Y.P. Kahya.
Exploring an optimal vector autoregressive model for multi-channel pulmonary sound data.
Computer Methods and Programs in Biomedicine, 111(3):550-560, Sep 2013.

C. Mermer, M. Saraclar, R. Sarikaya.
Improving Statistical Machine Translation Using Bayesian Word Alignment and Gibbs Sampling.
IEEE Transactions on Audio, Speech and Language Processing, 21(5):1090-1101, May 2013.

C. Demir, M. Saraclar, A.T. Cemgil.
Single-Channel Speech-Music Separation for Robust ASR With Mixture Models.
IEEE Transactions on Audio, Speech and Language Processing, 21(4):725-736, Apr 2013.

E. Dikici, M. Semerci, M. Saraclar and E. Alpaydin.
Classification and Ranking Approaches to Discriminative Language Modeling for ASR.
IEEE Transactions on Audio, Speech and Language Processing, 21(2):291-300, Feb 2013.

H. Sak, T. Gungor, and M. Saraclar.
Morpholexical and Discriminative Language Models for Turkish Automatic Speech Recognition.
IEEE Transactions on Audio, Speech and Language Processing, 20(8):2341-2351, Oct 2012.

S. Parlak and M. Saraclar.
Performance Analysis and Improvement of Turkish Broadcast News Retrieval.
IEEE Transactions on Audio, Speech and Language Processing, 20(3):731-741, Mar 2012.

E. Arisoy, M. Saraclar, B. Roark, I. Shafran.
Discriminative Language Modeling with Linguistic and Statistically Derived Features.
IEEE Transactions on Audio, Speech and Language Processing, 20(2):540-550, Feb 2012.

D. Can and M. Saraclar.
Lattice Indexing for Spoken Term Detection.
IEEE Transactions on Audio, Speech and Language Processing, 19(8):2338-2347, Nov 2011.

M. Hruz, P. Campr, E. Dikici, A. Kindiroglu, Z. Krnoul, A. Ronzhin, H. Sak, D. Schorno, H. Yalcin,
L. Akarun, O. Aran, A. Karpov, M. Saraclar, M. Zelezny.
Automatic Fingersign-to-Speech Translation System.
Journal on Multimodal User Interfaces, 4(2):61-79, 2011.

H. Sak, T. Gungor and M. Saraclar.
Resources for Turkish Morphological Processing.
Language Resources and Evaluation, 45(2):249-261, May 2011.

E. Arisoy, D. Can, S. Parlak, H. Sak, M. Saraclar.
Turkish Broadcast News Transcription and Retrieval.
IEEE Transactions on Audio, Speech and Language Processing, 17(5):874-883, July 2009.

E. Arisoy and M. Saraclar.
Dynamic Vocabulary Adaptation for LVCSR of Turkish.
IEEE Transactions on Audio, Speech and Language Processing, 17(1):163-173, Jan 2009.

O. Aran, I. Ari, L. Akarun, P. Campr, M. Hruz, E. Dikici, S. Parlak, M. Saraclar.
Speech and Sliding Text Aided Sign Retrieval from Hearing Impaired Sign News Videos.
Journal on Multimodal User Interfaces, 2(2):117-131, Sep 2008.

C. Chelba, T.J. Hazen, and M. Saraclar.
Retrieval and Browsing of Spoken Content.
IEEE Signal Processing Magazine, 25(3):39-49, May 2008.

M. Creutz, T. Hirsimaki, M. Kurimo, A. Puurula, J. Pylkkonen, V. Siivola, M. Varjokallio, E. Arisoy,
M. Saraclar, and A. Stolcke.
Morph-Based Speech Recognition and Modeling of Out-of-Vocabulary Words Across Languages.
ACM Transactions on Speech and Language Processing, 5.1 Article 3, December 2007.

B. Roark, M. Saraclar, and M. Collins.
Discriminative n-gram language modeling.
Computer Speech and Language, 21(2):373-392, April 2007.

M. Saraclar and B. Roark.
Utterance classification with discriminative language modeling.
Speech Communication, 48(3-4):276-287, March-April 2006.

M. Saraclar and S. Khudanpur.
Pronunciation change in conversational speech and its implications for automatic speech recognition.
Computer Speech and Language, 18(4):375-395, October 2004.

M. Saraclar, H. Nock, and S. Khudanpur.
Pronunciation modeling by sharing gaussian densities across phonetic models.
Computer Speech and Language, 14(2):137-160, April 2000.

M. Riley, W. Byrne, M. Finke, S. Khudanpur, A. Ljolje, J. McDonough, H. Nock, M. Saraclar, C. Wooters, and G. Zavaliagkos.
Stochastic pronunciation modelling from hand-labelled phonetic corpora.
Speech Communication, 29(2-4):209-224, November 1999.

Publications
Peer-Reviewed Conference Papers

B. Yusuf, L. Ondel, L. Burget, J. Cernocky, M. Saraclar.
A Hierarchical Subspace Model for Language-Attuned Acoustic Unit Discovery.
In *Proceedings of ICASSP*, Toronto, Canada, 2021.

B Gundogdu, B Yusuf, M Yesilbursa, M Saraclar.
Vector quantized temporally-aware correspondence sparse autoencoders for zero-resource acoustic unit discovery.
In *Proceedings of Interspeech*, Shanghai, China, 2020.

K Polat, M Saraçlar.
Unsupervised Discovery of Sign Terms by K-Nearest Neighbours Approach.
In *Proceedings of ECCV, SLRTP Workshop*, 2020.

NC Tamer, M Saraçlar.
Improving Keyword Search Performance in Sign Language with Hand Shape Features.
In *Proceedings of ECCV, SLRTP Workshop*, 2020.

K Polat, M Saraçlar.
Unsupervised term discovery for continuous sign language.
In *Proc. LREC2020 9th Workshop on the Representation and Processing of Sign Languages*, 2020.

NC Tamer, M Saraçlar.
Cross-lingual keyword search for sign language.
In *Proc. LREC2020 9th Workshop on the Representation and Processing of Sign Languages*, 2020.

ÖD Köse, M Saraçlar.
Recurrent Neural Audiovisual Word Embeddings for Synchronized Speech and Real-Time MRI.
In *Proceedings of ICASSP*, Barcelona, Spain, 2020.

NC Tamer, M Saraçlar.
Keyword Search for Sign Language.
In *Proceedings of ICASSP*, Barcelona, Spain, 2020.

RD Siyli, B Gundogdu, M Saraclar, L Akarun.
Unsupervised Key Hand Shape Discovery of Sign Language Videos with Correspondence Sparse Autoencoders.
In *Proceedings of ICASSP*, Barcelona, Spain, 2020.

B Yusuf, M Saraclar.
An Empirical Evaluation of DTW Subsampling Methods for Keyword Search.
In *Proceedings of Interspeech*, Graz, Austria, 2019.

B Yusuf, A Gok, B Gundogdu, OD Kose, M Saraclar.
Temporally-Aware Acoustic Unit Discovery for Zerospeech 2019 Challenge.
In *Proceedings of Interspeech*, Graz, Austria, 2019.

N Dereli, M Saraclar
Convolutional Neural Networks for Financial Text Regression
In *Proceedings of ACL: SRW*, Florence, Italy, 2019.

M Unlu, E Arisoy, M Saraclar.
Question answering for spoken lecture processing.
In *Proceedings of ICASSP*, Brighton, UK, 2019.

B Gundogdu, M Saraclar
Similarity Learning Based Query Modeling for Keyword Search.
In *Proceedings of Interspeech*, Stockholm, Sweden, 2017.

D Ayata, M Saraclar, A Ozgur
BUSEM at SemEval-2017 Task 4A Sentiment Analysis with Word Embedding and Long Short Term Memory RNN Approaches
In *Proceedings of SemEval*, Vancouver, Canada, 2017.

B Gundogdu, M Saraclar
Distance Metric Learning for Posteriorgram Based Keyword Search
In *Proceedings of ICASSP*, New Orleans, LA, USA, 2017.

G. Cetinkaya, B. Gundogdu, and M. Saraclar.
Pre-filtered dynamic time warping for posteriorgram based keyword search.
In *Proceedings of SLT*, San Diego, CA, USA, 2016.

E. Arisoy and M. Saraclar.
Compositional Neural Network Language Models for Agglutinative Languages.
In *Proceedings of Interspeech*, San Fransisco, CA, USA, 2016.

E. Dikici and M. Saraclar.
MT-based artificial hypothesis generation for unsupervised discriminative language modeling.
In *Proceedings of EUSIPCO*, Nice, France, 2015.

M. Saraclar, E. Dikici, and E. Arisoy.
A Decade of Discriminative Language Modeling for Automatic Speech Recognition.
In *Speech and Computer*, Athens, Greece, 2015.

L. Sari, B. Gundogdu, and M. Saraclar.
Fusion of LVCSR and Posteriorgram Based Keyword Search.
In *Proceedings of Interspeech*, Dresden, Germany, 2015.

E. Arisoy and M. Saraclar.
Multi-Stream Long Short-Term Memory Neural Network Language Model.
In *Proceedings of Interspeech*, Dresden, Germany, 2015.

E. Dikici and M. Saraclar.
Unsupervised Training Methods for Discriminative Language Modeling.
In *Proceedings of Interspeech*, Singapore, 2014.

M. Saraclar, A. Sethy, B. Ramabhadran, L. Mangu, J. Cui, X. Cui, B. Kingsbury, and J. Mamou.
An empirical study of confusion modeling in keyword search for low resource languages.
In *Proceedings of ASRU*, Olomouc, Czech Republic, 2013.

E. Dikici, E. Prud'hommeaux, B. Roark, and M. Saraclar.
Investigation of MT-based ASR Confusion Models for Semi-Supervised Discriminative Language Modeling.
In *Proceedings of Interspeech*, Lyon, France, 2013.

A. Celebi and M. Saraclar.
Semi-Supervised Discriminative Language Modeling with Out-of-Domain Text Data.
In *Proceedings of NAACL-HLT*, Atlanta, GA, USA, 2013.

C. Demir, A.T. Cemgil, and M. Saraclar.
Effect of speech priors in single-channel speech-music separation for ASR.
In *Proceedings of Interspeech*, Portland, OR, USA, 2012.

E. Dikici, A. Celebi, and M. Saraclar.
Performance Comparison of Training Algorithms for Semi-Supervised Discriminative Language Modeling.
In *Proceedings of Interspeech*, Portland, OR, USA, 2012.

J. Fayolle, M. Saraclar, F. Moreau, C. Raymond, and G. Gravier.
Lexical-phonetic automata for spoken utterance indexing and retrieval.
In *Proceedings of Interspeech*, Portland, OR, USA, 2012.

D. Karakos, B. Roark, I. Shafran, K. Sagae, M. Lehr, E. Prud'hommeaux, P. Xu, N. Glenn, S. Khudanpur, M. Saraclar, D. Bikel, M. Dredze, C. Callison-Burch, Y. Cao, K. Hall, E. Hasler, P. Koehn, A. Lopez, M. Post, D. Riley.
Deriving conversation-based features from unlabeled speech for discriminative language modeling.
In *Proceedings of Interspeech*, Portland, OR, USA, 2012.

C. Demir, A.T. Cemgil, and M. Saraclar.
Catalog-Based Single-Channel Speech-Music Separation with the Itakura-Saito Divergence.
In *Proceedings of EUSIPCO*, Bucharest, Romania, 2012.

A. Celebi, H. Sak, E. Dikici, M. Saraclar, M. Lehr, E. Prud'hommeaux, P. Xu, N. Glenn, D. Karakos, S. Khudanpur, B. Roark, K. Sagae, I. Shafran, D. Bikel, C. Callison-Burch, Y. Cao, K. Hall, E. Hasler, P. Koehn, A. Lopez, M. Post, D. Riley.
Semi-supervised Discriminative Language Modeling for Turkish ASR.
In *Proceedings of ICASSP*, Kyoto, Japan, 2012.

K. Sagae, M. Lehr, E. Prud'hommeaux, P. Xu, N. Glenn, D. Karakos, S. Khudanpur, B. Roark, M. Saraclar, I. Shafran, D. Bikel, C. Callison-Burch, Y. Cao, K. Hall, E. Hasler, P. Koehn, A. Lopez, M. Post, D. Riley.
Hallucinated N-best Lists for Discriminative Language Modeling.
In *Proceedings of ICASSP*, Kyoto, Japan, 2012.

P. Xu, S. Khudanpur, M. Lehr, E. Prud'hommeaux, N. Glenn, D. Karakos, B. Roark, K. Sagae, M. Saraclar, I. Shafran, D. Bikel, C. Callison-Burch, Y. Cao, K. Hall, E. Hasler, P. Koehn, A. Lopez, M. Post, D. Riley.
Continuous Space Discriminative Language Modeling.
In *Proceedings of ICASSP*, Kyoto, Japan, 2012.

C. Demir, A.T. Cemgil, and M. Saraclar.
Gain Estimation Approaches in Catalog-Based Single-Channel Speech-Music Separation.
In *Proceedings of ASRU*, Hawaii, USA, 2011.

H. Sak, M. Saraclar, and T. Gungor.
Discriminative Reranking of ASR Hypotheses with Morpholexical and N-Best-List Features.
In *Proceedings of ASRU*, Hawaii, USA, 2011.

C. Demir, A.T. Cemgil, and M. Saraclar.
Catalog-based single-channel speech-music separation for automatic speech recognition.
In *Proceedings of EUSIPCO*, Barcelona, Spain, 2011.

C. Demir, M. Saraclar, and A.T. Cemgil.
Semi-supervised Single-Channel Speech-Music Separation for Automatic Speech Recognition In *Proceedings of Interspeech*, Florence, Italy, 2011.

E. Dikici, M. Semerci, M. Saraclar, and E. Alpayd″n.
Data Sampling and Dimensionality Reduction Approaches for Reranking ASR Outputs Using Discriminative Language Models.
In *Proceedings of Interspeech*, Florence, Italy, 2011.

C. Mermer and M. Saraclar.
Bayesian Word Alignment for Statistical Machine Translation.
In *Proceedings of ACL-HLT*, Portland, OR, USA, 2011.

U. Firat, S.N. Engin, M. Saraclar, and A.B. Ertuzun.
Wind Speed Forecasting Based On Second Order Blind Identification and Autoregressive Model.
In *Proceedings of ICMLA*, Washington DC, USA, 2010.

C. Demir, A.T. Cemgil, and M. Saraclar.
Catalog-Based Single-Channel Speech-Music Separation.
In *Proceedings of Interspeech*, Makuhari, Japan, 2010.

H. Sak, M. Saraclar, and T. Gungor.
On-the-fly Lattice Rescoring for Real-time Automatic Speech Recognition.
In *Proceedings of Interspeech*, Makuhari, Japan, 2010.

I. Sen, M. Saraclar, and Y.P. Kahya.
Acoustic Mapping of the Lung Based on Source Localization of Adventitious Respiratory Sound Components.
In *Proceedings of EMBC*, Buenos Aires, Argentina, 2010.

E. Arisoy, M. Saraclar, B. Roark and I. Shafran.
Syntactic and Sub-lexical Features for Turkish Discriminative Language Models.
In *Proceedings of IEEE ICASSP*, Dallas, TX, USA, 2010.

H. Sak, M. Saraclar, and T. Gungor.
Morphology-based and Sub-word Language Modeling for Turkish Speech Recognition.
In *Proceedings of IEEE ICASSP*, Dallas, TX, USA, 2010.

H. Sak, M. Saraclar, and T. Gungor.
Integrating Morphology into Automatic Speech Recognition.
In *Proceedings of IEEE ASRU*, Merano, Italy, 2009.

T. Som, D. Can, and M. Saraclar.
HMM-based Sliding Video Text Recognition for Turkish Broadcast News.
In *Proceedings of ISCIS*, N. Cyprus, 2009.

E. Dikici and M. Saraclar.
Investigating the Effect of Training Data Partitioning for GMM Supervector Based Speaker Verification.
In *Proceedings of ISCIS*, N. Cyprus, 2009.

H. Sak, T. Gungor and M. Saraclar.
A Stochastic Finite-State Morphological Parser for Turkish.
In *Proceedings of ACL-IJCNLP*, Singapore, 2009.

S. Parlak and M. Saraclar.
Spoken Information Retrieval for Turkish Broadcast News.
In *Proceedings of ACM-SIGIR*, Boston, MA, USA, 2009.

D. Can, E. Cooper, A. Ghoshal, M. Jansche, S. Khudanpur, B. Ramabhadran, M. Riley, M. Saraclar, A. Sethy, M. Ulinski, C. White.
Web derived Pronunciations for Spoken Term Detection.
In *Proceedings of ACM-SIGIR*, Boston, MA, USA, 2009.

E. Arisoy, T. Pellegrini, M. Saraclar, L. Lamel.
Enhanced Morfessor Algorithm with Phonetic Features: application to Turkish.
In *Proceedings of SPECOM*, St.Petersburg, Russia, 2009.

P. Santemiz, O. Aran, M. Saraclar, L. Akarun.
Extraction of Isolated Signs from Sign Language Videos via Multiple Sequence Alignment.
In *Proceedings of SPECOM*, St.Petersburg, Russia, 2009.

D. Can and M. Saraclar.
Score Distribution Based Term Specific Thresholding for Spoken Term Detection.
In *Proceedings of NAACL-HLT*, Boulder, CO, USA, 2009.

D. Can, E. Cooper, A. Sethy, C. White, B. Ramabhadran, M. Saraclar.
Effect of Pronunciations on OOV Queries in Spoken Term Detection.
In *Proceedings of IEEE ICASSP*, Taiwan, 2009.

C.M. White, A. Sethy, B. Ramabhadran, P. Wolfe, E. Cooper, M. Saraclar, J. Baker.
Unsupervised Pronunciation Validation.
In *Proceedings of IEEE ICASSP*, Taiwan, 2009.

E. Arisoy, B. Roark, I. Shafran, M. Saraclar.
Discriminative N-gram Language Modeling for Turkish.
In *Proceedings of Interspeech*, Brisbane, Australia, 2008.

H. Sak, T. Güngör and M. Saraclar.
Turkish Language Resources: Morphological Parser, Morphological Disambiguator and Web Corpus.
In *Proceedings of the 6th International Conference on Natural Language Processing, GoTAL*, 2008.

S. Parlak and M. Saraclar.
Spoken Term Detection for Turkish Broadcast News.
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E. Arisoy, H. Sak and M. Saraclar.
Language Modeling for Automatic Turkish Broadcast News Transcription.
In *Proceedings of Interspeech*, Antwerp, Belgium, 2007.

Z. Liu and M. Saraclar.
Speaker Segmentation and Adaptation for Speech Recognition on Multiple-Speaker Audio Conference Data.
In *Proceedings of ICME*, Beijing, China, 2007.

M. Creutz, T. Hirsimäki, M. Kurimo, A. Puurula, J. Pylkkönen, V. Siivola, M. Varjokallio, E. Arisoy, M. Saraclar, and A. Stolcke.
Analysis of Morph-Based Speech Recognition and the Modeling of Out-of-Vocabulary Words Across Languages.
In *Proceedings of HLT-NAACL*, Rochester, NY, USA, 2007.

H. Sak, T. Güngör and M. Saraclar.
Morphological Disambiguation of Turkish Text with Perceptron Algorithm.
In *Proceedings of the 8th International Conference on Computational Linguistics and Intelligent Text Processing (CICLing)*, Mexico City, Mexico, 2007.

E. Arisoy and M. Saraclar.
Lattice extension and rescoring based approaches for LVCSR of Turkish.
In *Proceedings of Interspeech*, Pittsburgh, PA, USA, 2006.

M. Kurimo, M. Creutz, M. Varjokallio, E. Arisoy, and M. Saraclar.
Unsupervised segmentation of words into morphemes – Morpho Challenge 2005: Applications to automatic speech recognition.
In *Proceedings of Interspeech*, Pittsburgh, PA, USA, 2006.

M. Kurimo, A. Puurula, E. Arisoy, V. Siivola, T. Hirsimaki, J. Pylkkonen, T. Alumae, and M. Saraclar.
Unlimited vocabulary speech recognition for agglutinative languages.
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SUPERVISORY   *Current PhD Students*
Alican Gok, Bogazici U. EE Dept. (2016-).
Gozde Cetinkaya, Bogazici U. EE Dept. (2016-).
Bolaji Yusuf, Bogazici U. EE Dept. (2018-)

Past PhD Students

Coskun Mermer
Unsupervised Learning of Word Alignments for Statistical Machine Translation
Bogazici U. EE Dept. (2008-2019)

Batuhan Gundogdu
Keyword Search for Low Resource Languages
Bogazici U. EE Dept. (2012-2017)

Erinc Dikici
Supervised, Semi-Supervised and Unsupervised Methods in Discriminative Language Modeling for
Automatic Speech Recognition
Bogazici U. EE Dept. (2009-2016)

Cemil Demir (Co-advised with A.T. Cemgil)
Single-Channel Speech-Music Separation for Robust ASR with Mixture of NMF Models
Bogazici U. EE Dept. (2007-2014)

Ipek Sen (Co-advised with Y.P. Kahya)
Multivariate Modeling and Diagnostic Classification of Pulmonary Sounds
Bogazici U. EE Dept. (2008-2013)

Hasim Sak (Co-advised with T. Gungor)
Integrating Morphology into Automatic Speech Recognition: Morpholexical and Discriminative Language Models for Turkish
Bogazici U. CmpE Dept. (2005-2011)

Ebru Arisoy
Statistical and Discriminative Language Modeling for Turkish LVCSR
Bogazici U. EE Dept. (2005-2009)
(Awarded "Serhat Özyar Onur Ödülü", 2010 and Bogazici U. Research Fund Thesis Award, 2010)

Current MS Students
Mustafa Can Deveci, Bogazici U. EE Dept. (2020-)
Mansur Yesilbursa, Bogazici U. EE Dept. (2020-)
Mehmet Sinan Yildirim, Bogazici U. EE Dept. (2020-)
Mahmut Esat Soydemir, Bogazici U. EE Dept. (2021-)

Past MS Students

Enver Fakhan (Co-advised with E. Arisoy)
Automatic Speech Recognition System Adaptation for Spoken Lecture Processing
Bogazici U. EE Dept. (2017-2021)

Korhan Polat
Unsupervised Term Discovery for Sign Language
Bogazici U. EE Dept. (2017-2020)

Nazif Can Tamer
Keyword Search for Sign Language
Bogazici U. EE Dept. (2017-2020)

Oyku Deniz Kose
Multimodal Representation Learning for Synchronized Speech and Videos
Bogazici U. EE Dept. (2017-2020)

Julide Gulen Alaydin
Query-by-Sign System for Turkish Sign Language Broadcasts
Bogazici U. EE Dept. (2016-2019)

Nesat Dereli
Deep Learning Based Text Regression
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Bolaji Yusuf
Using Crosslingual Information for Keyword Search in Low Resource Languages
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Deger Ayata
Applying Machine Learning and Natural Language Processing Techniques to Twitter Sentiment
Classification for Turkish and English
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Leda Sari
Keyword Search by Symbolic Indexing
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Gozde Cetinkaya
Pre-filtered Dynamic Time Warping for Posteriorgram Based Keyword Search
Bogazici U. EE Dept. (2014-2016)

Hakan Kurcenli
Effects of Reverberation on Monaural Speech Separation and Recognition
Bogazici U. EE Dept. (2011-2013)

Mesut Durukal
Searching a website via spoken questions
Bogazici U. EE Dept. (2009-2011)

Oguz Yilmaz
Speaker verification for microphone suitable data and audio diarization for Turkish broadcast news
Bogazici U. EE Dept. (2009-2011)

Dogan Can
Indexation, Retrieval and Decision Techniques for Spoken Term Detection
Bogazici U. EE Dept. (2007-2010)

Temucin Som
Bootstrapping a Speech Recognition System by Using Sliding Video Text Recognition
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Erinc Dikici
Effects of Data Duration, Model Size and Session Variability on Speaker Verification Performance
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Tuncay Aksungurlu
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Siddika Parlak
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C. Kayra Akman
A Computer Aided Transcription Tool
Bogazici U. EE Dept. (2005-2007)

Onur Cengelci (Co-advised with L. Arslan)
Voice Driven Keyword Spotter
Bogazici U. EE Dept. (2005-2006)

Summer Interns
Co-mentor for Srihari Reddy from Johns Hopkins University, 2004.
Supervisor and mentor for Ali Yazgan from Johns Hopkins University, 2003.

RESEARCH
INTERESTS

Speech and Language Processing; Large Vocabulary Automatic Speech Recognition: Acoustic, Pronunciation and Language Modeling; Applications of Speech Recognition: Spoken Information Retrieval, Speech Understanding; Statistical Natural Language Processing; Machine Learning.