Doğan Can

dogancan@usc.edu, dogancanbaz@gmail.com
http://dogancan.github.io/

RESEARCH INTERESTS	Machine Learning, Neural Networks, Automatic Speech Recognition, Natural Language Processing, Information Retrieval, Machine Translation, Spoken Dialogue Modeling, Weighted Finite State Automata, Algorithms and Theory

EDUCATION

◇ **Ph.D. in Computer Science** — University of Southern California, Los Angeles

· Thesis : Weighted Factor Automata: A Finite-State Framework for Spoken Content Retrieval, Advisor: Shrikanth S. Narayanan

· Courses : Advanced Natural Language Processing, Statistical Machine Translation, Artificial Intelligence, Computer Vision, Advanced Analysis of Algorithms, Convex Optimization, Statistics

· GPA : 4.00/4.00

◇ **M.Sc. in Electrical Engineering** — Boğaziçi University, İstanbul

· Thesis : Indexing, Retrieval and Detection Techniques for Spoken Term Detection, Advisor: Murat Saraçlar

· Courses : Mathematical Methods for Signal Processing, Spectral Estimation, Advanced Speech Processing, Neural Networks

· GPA : 4.00/4.00

◇ **Coursework in Electrical Engineering** — Rensselaer Polytechnic Institute, Troy

· Courses : Random Processes, Detection and Estimation Theory, Information Theory, Pattern Recognition, Digital Image and Video Processing

· GPA : 3.84/4.00

◇ **B.Sc. in Electrical Engineering** — Boğaziçi University, İstanbul

· Courses : Speech Processing, Natural Language Processing

· GPA : 3.72/4.00

EXPERIENCE

◇ **Machine Learning Engineer**

Apple — April 2019 - Present

· Org. : Siri

◇ **Senior Machine Learning Engineer**

Behavioral Signals — May 2018 - April 2019

· Group : Machine Learning Research

– design and development of a scalable state-of-the-art speech recognition engine used at production (Kaldi, Tornado, WebSocket, Docker, AWS ECS)

◇ **Graduate Research Assistant**

Signal Analysis and Interpretation Lab, USC — August 2010 - May 2018

· Project : PyKaldi

– design and development of a Python wrapper for Kaldi speech recognition toolkit (Python, C++, CLIF)

- · Project : DARPA LORELEI Program
  - – research on multi-task learning of multilingual distributed text representations (Tensorflow)
- · Project : iARPA BABEL Program
  - – research on weighted finite-state transducer based lattice indexing, retrieval and ranking for spoken content retrieval (C^{++}, OpenFst, Kaldi)
  - – research on end-to-end deep learning for spoken content retrieval (PyTorch)
- · Project : NIAAA Automating Behavioral Coding
  - – research on modeling the dialogue in psychotherapy sessions and automatic prediction of behavioral codes (NLTK, CRFsuite, Wapiti)
  - – design and development of data annotation tools and guidelines used by the research team
- · Project : Barista
  - – design and development of an online speech processing framework (Kaldi, C^{++}, actor model)

◇ **Research Intern**

IBM Research   June 2013 - August 2013

- · Project : Automatic Assessment of Language Learners' English Skills
  - – research on finite-state techniques for pronunciation assessment (C^{++}, OpenFst)

◇ **Graduate Research Assistant**

Signal and Image Processing Lab, Boğaziçi University   September 2007 - July 2010

- · Project : Turkish Broadcast News Transcription and Retrieval
  - – research on lattice indexing, retrieval and scoring for keyword search (C^{++}, OpenFst)
  - – development of the speech recognition systems used in the project (AT&T amtools, IBM Attila, HTK)

◇ **Researcher**

CLSP Summer Workshop on Human Language Technology   July 2008 - August 2008

- · Group : Multilingual Spoken Term Detection
  - – research on lattice indexing and pronunciation modeling for keyword search (C^{++}, OpenFst)

◇ **Teaching Assistant**

ECSE Dept, Rensselaer Polytechnic Institute   August 2006 - May 2007

- · Courses : Sensing and Imaging, Probability for Engineering Applications, Laboratory Introduction to Embedded Control

SKILLS
- ◇ Languages: English (fluent), Turkish (native)
- ◇ Programming Languages: C/C^{++}, Python, Perl, bash, MATLAB, LaTeX, HTML/JavaScript, Ruby, Julia, Rust, Swift
- ◇ Machine Learning: PyTorch, Tensorflow, Theano, Keras, Blocks, scikit-learn, libSVM, Weka
- ◇ Speech: Kaldi, IBM Attila, AT&T LVR (FSM, GRM, AMTOOLS, DCD), HTK, SRILM
- ◇ NLP: OpenFst, NLTK, spaCy, CoreNLP, Moses, UCAM-SMT, SGNMT, CRFsuite, Wapiti

HONORS & AWARDS
- ◇ Annenberg Graduate Fellowship (University of Southern California)
- ◇ Graduate Scholarship (Scientific & Technological Research Council of Turkey)

◇ Outstanding Academic Merit Scholarship (Boğaziçi University)

PUBLICATIONS

Journal Articles

◇ N. Malandrakis, A. Ramakrishna, V. Martinez, T. Sorensen, **D. Can**, and S. S. Narayanan
"The ELISA Situation Frame extraction for low resource languages pipeline for LoReHLT'2016."
In *Machine Translation*, 32(1-2), 127-142, 2018

◇ **D. Can**, R. Marin, P. G. Georgiou, Z. Imel, D. C. Atkins, S. S. Narayanan
""It sounds like...": A natural language processing approach to detecting counselor reflections in motivational interviewing."
In *Journal of counseling psychology*, 2016

◇ S. P. Lord **D. Can**, M. Yi, R. Marin, C. W. Dunn, Z. Imel, P. G. Georgiou, S. S. Narayanan, M. Steyvers and D. C. Atkins
"Advancing methods for reliably assessing motivational interviewing fidelity using the motivational interviewing skills code"
In *Journal of substance abuse treatment*, 2015

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

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

Peer-Reviewed Conference Papers

◇ **D. Can**, V. R. Martinez, P. Papadopoulos and S. S. Narayanan
"Pykaldi: A Python Wrapper for Kaldi"
In *Proceedings of ICASSP*, 2018

◇ K. Singla, **D. Can** and S. S. Narayanan
"A Multi-task Approach to Learning Multilingual Representations"
In *Proceedings of ACL*, 2018

◇ K. Singla, Z. Chen, N. Flemotomos, J. Gibson, **D. Can**, D. C. Atkins and S. S. Narayanan
"Using Prosodic and Lexical Information for Learning Utterance-level Behaviors in Psychotherapy."
In *Proceedings of Interspeech*, 2018

◇ J. Gibson, **D. Can**, P. Georgiou, D. C. Atkins and S. S. Narayanan
"Attention networks for modeling behaviors in addiction counseling."
In *Proceedings of Interspeech*, 2017

◇ D. Bone, J. Gibson, T. Chaspari, **D. Can** and S. S. Narayanan
"Speech and language processing for mental health research and care"
In Signals, Systems and Computers, 2016 50th Asilomar Conference on (pp. 831-835). IEEE.

◇ J. Gibson, **D. Can**, B. Xiao, Z. Imel, D. C. Atkins, P. Georgiou and S. S. Narayanan
"A Deep Learning Approach to Modeling Empathy in Addiction Counseling"
In *Proceedings of ISCA Interspeech*, 2016

◇ B. Xiao, **D. Can**, J. Gibson, Z. Imel, D. C. Atkins, P. Georgiou and S. S. Narayanan
"Behavioral Coding of Therapist Language in Addiction Counseling using Recurrent Neural Networks"
In *Proceedings of ISCA Interspeech*, 2016

◇ **D. Can** and S. S. Narayanan
"A Dynamic Programming Algorithm for Computing N-gram Posteriors from Lattices"
In *Proceedings of EMNLP*, 2015

◇ **D. Can**, D. C. Atkins and S. S. Narayanan
"A dialog act tagging approach to behavioral coding: A case study of addiction counseling conversations"
In *Proceedings of ISCA Interspeech*, 2015

◇ **D. Can**, J. Gibson, C. Vaz, P. G. Georgiou and S. S. Narayanan
"Barista: A framework for concurrent speech processing by USC-SAIL"
In *Proceedings of ICASSP*, 2014

◇ **D. Can** and S. S. Narayanan
"On the computation of document frequency statistics from spoken corpora using factor automata"
In *Proceedings of InterSpeech*, 2013

◇ F. Morbini, K. Audhkhasi, K. Sagae, R. Artstein, **D. Can**, P.Georgiou, S. Narayanan, A. Leuski, D. Traum
"Which ASR should I choose for my dialogue system."
In *Proceedings of SIGdial*, 2013

◇ **D. Can**, P. G. Georgiou, D. C. Atkins and S. S. Narayanan
"A Case Study: Detecting Counselor Reflections in Psychotherapy for Addictions using Linguistic Features"
In *Proceedings of ISCA Interspeech*, 2012

◇ B. Xiao, **D. Can**, P. G. Georgiou, D. C. Atkins and S. S. Narayanan
"Analyzing the Language of Therapist Empathy in Motivational Interview based Psychotherapy"
In *Proceedings of APSIPA Annual Summit and Conference*, 2012

◇ H. Wang, **D. Can**, A. Kazemzadeh, F. Bar and S. Narayanan
"A System for Real-Time Twitter Sentiment Analysis of 2012 U.S. Presidential Election Cycle"
In *Proceedings of ACL*, 2012

◇ O. Çakmak, A. Kazemzadeh, **D. Can**, S. Yıldırım and S. Narayanan
"Root-Word Analysis of Turkish Emotional Language"
Emotion Sentiment and Social Signals - ES^3 2012

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

◇ **D. Can** and M. Saraçlar
"Score Distribution Based Term Specific Thresholding for Spoken Term Detection"
In *Proceedings of NAACL-HLT*, 2009

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

◇ T. Som, **D. Can**, and M. Saraçlar
"HMM-based Sliding Video Text Recognition for Turkish Broadcast News"
In *Proceedings of IEEE ISCIS*, September 2009.

◇ **D. Can** and M. Saraçlar
"Turkish Broadcast News Transcription with Open-Source Software"
In *Proceedings of IEEE Signal Processing and Communications Applications Conference*, 2009 (in Turkish)