

# Melih Barsbey

melih.barsbey@gmail.com • +90 (536) 505-5854

## SUMMARY

Computer engineering PhD student with a research focus on probabilistic machine learning: approximate inference and model selection in latent variable models, causal discovery, matrix/tensor factorizations. Advised by Prof. A. Taylan Cemgil. Industry experience on algorithm development and implementation in the domain of time series analysis and various financial data. Background in research, experiment design, statistical inference, and instruction in cognitive science.

## EDUCATION

### Boğaziçi University, Istanbul, Turkey

- Ph.D. in Computer Engineering Sep 2016 – Present
  - Focus: Machine learning, Bayesian statistics
  - Advisor: Prof. A. Taylan Cemgil (2018 - Present)
  - Advanced to candidacy as of Jun 2018
  - Cumulative GPA: 4.00 / 4.00
- M.A. in Psychology Sep 2011 – Aug 2014
  - Focus: Cognitive science of mental representations
  - Thesis: Perceptual simulations beyond the sentence: the effect of narrative shifts on perceptual simulations
  - Cumulative GPA: 4.00 / 4.00
- B.A. in Psychology Sep 2007 – Jun 2011
  - Cumulative GPA: 3.79 / 4.00
  - Change of major at the end of first year from Industrial Engineering to Psychology with a GPA of 3.52 / 4.00

### Robert College, Istanbul, Turkey

- High School Sep 2002 – Jun 2007

## BUSINESS EXPERIENCE AND ACADEMIC APPOINTMENTS

### Arute Solutions Software Consulting Inc., Istanbul, Turkey

- Senior Data Scientist (Part-Time) Sep 2017 – May 2020
  - Algorithm development, software design and implementation of the flagship data science product, conducting cash transaction forecasting in over 8000 ATMs.
  - Leading the data science team in the development of a new product in bank branch forecasting and what-if simulation of cash management
  - Consultancy projects such as call time optimization, employee churn prediction

### Acibadem University, Istanbul, Turkey

- Instructor, Department of Psychology Nov 2014 – Sep 2017
  - Courses Taught: Descriptive and Inferential Statistics, Psycholinguistics

### Boğaziçi University, Istanbul, Turkey

- Research Assistant, Department of Psychology Nov 2012 – Sep 2014
  - Courses Assisted: Statistics for Behavioral Sciences

### University of California, Berkeley, California, U.S.A.

- Visiting Researcher, Department of Psychology Aug 2012 – Oct 2012
  - Researcher in Concepts and Cognition Lab

## EXAMS, AWARDS & SCHOLARSHIPS

- University Entrance Exam; Science and Mathematics 2007
- National Placement: 50th. *Among 1,600,000 participants.*
- GRE Scores – Verbal Reasoning: 170 / 170. Quantitative Reasoning: 170 / 170. Analytical Writing: 5.0 / 6.0 2014
- M.A. Scholarship from The Scientific and Technological Research Council of Turkey (TÜBİTAK) 2012 – 2014
- PhD Scholarship from The Scientific and Technological Research Council of Turkey (TÜBİTAK) 2016 – 2019

## PUBLICATIONS AND PREPRINTS

### CONFERENCES AND OTHER SCIENTIFIC MEETINGS

- [6] Kurutmaz, M. B. \*, **Barsbey, M. \***, Cemgil, A. T., Yıldırım, S., & Şimşekli, U. *Bayesian Model Selection for Identifying Markov Equivalent Causal Graphs*. Paper presented at *Advances in Approximate Bayesian Inference*, 2019. \*Equal contribution
- [5] Kurutmaz, M. B., Cemgil, A. T., Şimşekli, U., **Barsbey, M.**, & Yıldırım, S. *Bayesian Learning of Non-Negative Matrix/Tensor Factorizations by Simulating Pólya Urns*. Paper presented at Symposium on Advances in Approximate Bayesian Inference, Montréal, Canada, Dec 2018.
- [4] **Barsbey, M.** *Heuristics in an agent-based simulation: Investigating the effect of model complexity on learning performance*. Poster presented at Summer Institute on Bounded Rationality by Max Planck Institute on Human Development, Berlin, Germany, Jul 2017.
- [3] **Barsbey, M.**, & Lombrozo, T., *Linguistic differences in explanation requests and their effects on the evaluation of explanations: the case of English and Turkish*. Poster presented at the annual meeting of the Cognitive Science Society, Berlin, Germany. Aug 2013.
- [2] **Barsbey, M.**, Coşkun, T., Selçuk, Ş., & Ülkümen, A. D., *Mortality Salience and Self-Defining Memories*. Poster presented at the annual meeting of Center on Autobiographical Memory Research, Aarhus, Jun 2013.
- [1] **Barsbey, M.**, Aktan, D. N., & Bayram, O., *The effect of ambient temperature on decision making processes*. Poster presented at the biennial meeting of the Turkish Psychology Society, Istanbul, Turkey, Apr 2012.

### PREPRINTS

- [2] Cemgil, A. T., Kurutmaz, M. B., Yildirim, S., **Barsbey, M.**, Simsekli, U. *Bayesian Allocation Model: Inference by Sequential Monte Carlo for Nonnegative Tensor Factorizations and Topic Models using Polya Urns*. *arXiv preprint arXiv:1903.04478*. Mar 2019.
- [1] **Barsbey, M.** *Perceptual simulations beyond the sentence: the effect of narrative shifts on perceptual simulations*. Unpublished master's thesis. Boğaziçi University, Istanbul, Turkey, Aug 2014.

## PROFESSIONAL ACTIVITIES

**Summer Institute on Bounded Rationality: Predictions under Uncertainty,**  
Max Planck Institute on Human Development, Berlin, Germany

- Participant & Researcher

2017

## PROGRAMMING AND SOFTWARE SKILLS

- Python, Julia, C/C++
- TensorFlow, PyTorch, Python scientific computation libraries
- MATLAB, SQL, L<sup>A</sup>T<sub>E</sub>X, SPSS

## RELEVANT GRADUATE COURSEWORK

- Artificial Neural Networks
- Advanced Deep Learning
- How to Generate (Almost) Anything: Deep Generative Models
- Natural Language Processing
- Monte Carlo Methods
- Principles of Artificial Intelligence
- Mathematical Fundamentals of Artificial Intelligence
- Complex Networks
- Evolutionary Systems

## LANGUAGES

- Turkish (Native)
- English (Advanced)
- German (Intermediate)

[CV compiled on 2020-07-11]