Kaan Gokcesu
Resume

Department of Electrical and Electronics Engineering
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Research Interests

Machine learning, convex optimization, online learning, data science, information theory, decision theory, adaptive filtering, communication systems, statistical signal processing, big data, and mathematical finance.

Education

Bilkent University, Ankara, Turkey

M.S. in Electrical and Electronics Engineering, CGPA: **4.00 / 4.00** — Aug 2015 – Present
Expected Graduation Date: June 2017

B.S. in Electrical and Electronics Engineering, CGPA: **3.96 / 4.00** — Sep 2011 – June 2015
Graduated as the **Salutatorian**

National University of Singapore, Singapore

B.Eng. in Electrical and Electronics Engineering — Aug 2013 – May 2014
Exchange Program

Private Ari Science High School, Ankara, Turkey

High School Degree, Natural Sciences Field, CGPA: **98.28/100** — Sep 2007 – June 2011
Graduated as the **2nd** in class

Awards and Honors

- **7 journal papers** in highly respected **IEEE Transactions**.
- **8 conference papers** in high impact conference proceedings.
- Graduated as the **Salutatorian** from Bilkent University.
- Received the **5th rank** among 2M high school graduates in University Entrance Examinations.
- Received the **2nd rank** in TUBITAK's Weighted ALES (National GRE) and GPA Score List.
- TUBITAK 1512 Government Funding for R&D Project
- TUBITAK Scholarship for the M.S. studies.
- Full Scholarship from Bilkent University during M.S. Studies
- Bilkent University Academic Excellence Award, 2015
- Bilkent University High Honor Student during B.S. Studies
- Faculty Award for Best Performance from National University of Singapore, 2014
- Comprehensive Scholarship at Bilkent University during B.S. Studies
- Prime Ministry Outstanding Achievement Fellowship during B.S. Studies
- TUBITAKs Cryptology Summer School, 2012
- Isbank Golden Youngsters Prize, 2011
- Received the **1st** place in Cankaya University Mathematics Competition
- TUBITAK National **Physics Olympiads Finalist**, Summer School, Winter School, Spring School
- Graduated as the **2nd** in class from high school

Journal Papers

1. N. D. Vanli, **K. Gokcesu**, M. O. Sayin, H. Yildiz and S. S. Kozat, "Sequential Prediction Over Hierarchical Structures," **IEEE Transactions on Signal Processing**, vol. 64, no. 23, pp. 6284-6298, Dec. 2016.
2. I. Delibalta, **K. Gokcesu**, M. Simsek, L. Baruh and S. S. Kozat, "Online Anomaly Detection With Nested Trees," in **IEEE Signal Processing Letters**, vol. 23, no. 12, pp. 1867-1871, Dec. 2016.
3. **K. Gokcesu** and S. S. Kozat, "An Online Minimax Optimal Algorithm for Adversarial Multi-Armed Bandit Problem," submitted to **IEEE Transactions on Neural Networks and Learning Systems**, 2016
4. **K. Gokcesu** and S. S. Kozat, "Online Density Estimation of Nonstationary Sources Using Exponential Family of Distributions," submitted to **IEEE Transactions on Neural Networks and Learning Systems**, 2016
5. **K. Gokcesu** and S. S. Kozat, "Online Anomaly Detection with Minimax Optimal Density Estimation," submitted to **IEEE Transactions on Signal Processing**, 2016
6. M. Neyshabouri, **K. Gokcesu**, S. Ciftci and S. S. Kozat, "A Nearly Optimal Contextual Bandit Algorithm," submitted to **IEEE Transactions on Signal Processing**, 2016

Working Papers

1. **K. Gokcesu**, and S. S. Kozat, "A Universally Optimal Low-Complexity Algorithm under Exp-Concave Losses", to be submitted to **IEEE Transactions on Signal Processing**, 2016. *(draft available with permission of supervisor)*
2. **K. Gokcesu**, and S. S. Kozat, "An Efficient Asymptotically Optimal Algorithm for Adversarial Bandits with Multiple Plays", to be submitted to **IEEE Transactions on Neural Networks and Learning Systems**, 2016.*(draft available with permission of supervisor)*
3. **K. Gokcesu**, and S. S. Kozat, "Minimax Optimal Algorithms for Expert Selection under Convex and Non-convex Loss Functions", to be submitted to **IEEE Transactions on Signal Processing**, 2016.*(draft available with permission of supervisor)*
4. **K. Gokcesu**, and S. S. Kozat, "Multimodel Density Estimation with Growing and Decaying Trees", to be submitted to **IEEE Transactions on Signal Processing**, 2016.*(draft available with permission of supervisor)*
5. **K. Gokcesu**, and S. S. Kozat, "Adversarial Bandits with Universally Holding High Probability Bounds", to be submitted to **IEEE Transactions on Neural Networks and Learning Systems**, 2016.*(draft available with permission of supervisor)*
6. **K. Gokcesu**, and S. S. Kozat, "Unification of Bandit and Expert Framework with Feedback Cost", to be submitted to **IEEE Transactions on Signal Processing**, 2016.*(draft available with permission of supervisor)*

Conference Papers

1. **K. Gokcesu**, and S. S. Kozat, "Universal Estimation of Time-Varying Distributions," to appear in **42nd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP2017)**, 2016.
2. I. Delibalta, **K. Gokcesu**, M. Simsek, L. Baruh and S. S. Kozat, "Online Anomaly Detection With Nested Trees," to appear in **42nd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP2017)**, 2016.
3. **K. Gokcesu**, and S. S. Kozat, "A Rate Optimal Switching Bandit Algorithm," submitted to **25th European Signal Processing Conference (EUSIPCO2017)**, 2016.
4. **K. Gokcesu**, and S. S. Kozat, "A General Framework for Adversarial Bandits," submitted to **25th European Signal Processing Conference (EUSIPCO2017)**, 2016.
5. **K. Gokcesu**, Tolga Ergen, and S. S. Kozat, "Sequential Density Estimation in Time Series with Changing Statistics," submitted to **25th IEEE Signal Processing and Communications Applications Conference (SIU2017)**.

6. Tolga Ergen, **K. Gokcesu**, M. Simsek, and S. S. Kozat, "Novelty Detection using Soft Partitioning and Hierarchical Models," submitted to **25th IEEE Signal Processing and Communications Applications Conference (SIU2017)**.

7. **K. Gokcesu**, Tolga Ergen, and S. S. Kozat, "Universal Switching Multi-Armed Bandit Algorithm," submitted to **25th IEEE Signal Processing and Communications Applications Conference (SIU2017)**.

8. Tolga Ergen, **K. Gokcesu**, and S. S. Kozat, "An Efficient Bandit Algorithm for General Cost Definitions," submitted to **25th IEEE Signal Processing and Communications Applications Conference (SIU2017)**.

Academic & Industrial Experience

Research Assistant
Bilkent University, Ankara, Turkey 2015 - Present
- Efficient online algorithms with minimax performance bounds
in adversarial multi-armed bandit and expert settings
- Minimum redundancy achieving density estimation algorithms
- Anomaly detection problem

Cofounder
Hercules Biomedical R&D Ankara, Turkey 2015 - Present
Development of smart wearable technologies for
- Monitoring of regained muscle control in patients suffering from nerve damage
- Tracking of muscle development, detection of muscle fatigue and analysis of injury risk in athletes
- Government Funding from TUBITAK

Teaching Assistant
Bilkent University, Ankara, Turkey 2015 - Present
- EEE 424 (Digital Signal Processing) in Fall 2016
- EEE 212 (Microprocessors) in Spring 2016
- EEE 102 (Introduction to Digital Circuit Design) in Spring 2016
- EEE 424 (Digital Signal Processing) in Fall 2015
- CS 113 (Introduction to Computing for Engineers) in Spring 2013. (Undergraduate TA)

Intern Engineer
POLARAN Inc. Ankara, Turkey Aug. 2014 - Sep. 2014
- Implementation of both the encoder and decoder for polar codes in C and VHDL.
- Serial interface between FPGA and MATLAB for computer customizable systems.
- Supervisor: Prof. Erdal Arikan

Intern Engineer
ASELSAN Inc. Ankara, Turkey July 2014 - Aug. 2014
- Design and implementation of a full communication system.
- Performance comparisons (BER, PAPR) of digital modulation schemes utilizing
convolutional coding and viterbi decoding algorithms.
- Supervisor: Ertugrul Kolagasioglu

Projects

Senior Project:
Development of an underwater acoustic localization and tracking system based on GPS intelligent buoys.
- Group leader of a six member team.
- Colloborated with ASELSAN Inc. in development stage, and METEKSAN Inc. in the experiment stage
- Personally responsible of the design of positioning and tracking algorithms, calculation of performance (CRLB) bounds, and all other theoretical analysis and implementation of the control center.

Voice call program with LPC-10: Designed a Java based p2p program that utilizes LPC-10 coding.

Coin Classifier: Classification of coins using sound recognition in Android.

Persistence Of Vision (POV): Designed an air writer with 8051 MCU, an accelerometer, I2C, ASSEMBLY

Analog Design Project: Building of an analog radio from scratch, including all the necessary circuitry.

Digital Design Project: Vigenere ciphering device with an FPGA board, VGA monitor and PS2 keyboard

Programming Project: Group leader in the design of a physics website using HTML, Java applets, Java

Skills

Languages: Turkish (Native), English (Fluent)

Programming: MATLAB, Java, Python, C, C++, Assembly, VHDL, LaTeX

Test Scores: GRE: 160/170/4, TOEFL iBT: 108

Hobbies

Travelling: Went backpacking around Europe in the summer of 2012, traveled Southeast Asia during the year of exchange program, hope to travel all over the world.

Gastronomy: Cook regularly, always try different things, enjoy going out of recipes and putting my own twists