Noyan Cem Sevüktekin

CONTACT
INFORMATION

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OBJECTIVE

Seeking an internship position where I can use my skills in digital signal processing, statistical learning, and communication theory in problems of practical interest with systems-level extensions.

RESEARCH
INTERESTS

Statistical learning, signal processing, and control theory; sequential opinion aggregation on heterogeneous populations under finite horizon and explore/exploit constraints.

EDUCATION

Coordinated Science Laboratory, University of Illinois at Urbana-Champaign

Ph.D. Candidate, Electrical and Computer Engineering

Dissertation Title: *ADAM: Autonomously-aware Decision Making Systems*
Advisor: Andrew C. Singer

M.S. in Electrical and Computer Engineering, August 2015

Supported in part by Systems on Nanoscale Information fabriCs (SONIC), one of the six SRC STARnet Centers, sponsored by MARCO and DARPA. Theme: 2385.002; Task: D.2.2.2.

Bilkent University

B.S. in Electrical and Electronics Engineering, Summa Cum Laude, June 2013.
Class Ranking 3rd with CGPA 3.97

GRADUATE
COURSEWORK

- Statistical Learning Theory
- Control of Stochastic Systems
- Geometric Control Theory
- Robust Control Theory
- Information Theory
- Coding Theory
- Advanced Digital Communications
- Advanced Digital Signal Processing
- Detection and Estimation Theory
- Vector Space Signal Processing
- Real Analysis
- Random Processes

ONGOING
PROJECTS

ADAM: Autonomously-Aware Decision Making Systems
Distributed systems have access to a large number of interconnected sensory and computational units that together provide a rich information front. This enables distributed systems to operate beyond the limits of local training that may constrain the capabilities of the underlying nodes to carry out tasks that individual units could not based on local data alone. A fundamental challenge lies in processing relevant information in real-time without relying on labeled data. We explore the sub-network of nodes that provide relevant information sequentially, while making use of all available, relevant data.

Blind Exploration and Exploitation (BEE) of Experts
Should one try another slot machine (also known as a *one-armed bandit*) or stay with the luckiest one so far? An algorithm that has access to such random rewards faces what is called the exploration-and-exploitation trade-off. However, for applications such as online classification, hyperparameter selection, and distributed decision

making, this setup is inadequate since, in such problems, bandits provide opinions in small groups. We propose a technique to sequentially infer how rewarding each bandit is, while adaptively making decisions based on their opinions and exploring the best subsets of bandits.

This project is in collaboration with A.G. Schwing.

Theory of Stochastic Noisy Circuits

In practical systems, circuit components have uncertainties due to underlying manufacturing processes. Unless mitigated, these uncertainties can change the overall network response unpredictably, often requiring expensive Monte Carlo simulations to detect. A fundamental challenge arises when such systems are modeled stochastically due to the Johnson-Nyquist noise that imposes a doubly-stochastic behavior. We propose graph theoretic metrics, such as algebraic connectivity and Laplacian indices, to characterize the concentration of the true circuit response around its design.

This project is in collaboration with M. Raginsky and supported in part by Center for Advanced Electronics through Machine Learning (CAEML).

HONORS AND AWARDS		
2017	Best Student Paper Award	
	Asilomar Conference on Signals, Systems, and Computers	
2013	Ceremonial Citation in Electrical and Electronics Engineering	
	Bilkent University	
2013	Academic Distinction Award	
	Bilkent University	
2008–2013	Prime Ministry Scholarship of High Achievement	
	Republic of Turkey	

PROFESSIONAL			
May 16– August 19	2016	Design Engineer Intern, Kilby Labs, Texas Instruments Inc. Dallas, TX, USA.	
August	2012	Communication Engineer Intern, Department of Electronic Subsystems, Meteksan Defence Inc. Ankara, Turkey.	
August	2011	Communication Engineer Intern, Department of Telecommunications, Automation and Technical Support, BOTAS Petroleum Pipeline Inc. Ankara, Turkey.	

PUBLICATIONS

N. C. Sevüktekin and A. C. Singer "The Good, The Bad, Algorithmic Noise Tolerance (ANT), The Ugly". *To Appear in IEEE International Conference on Acoustic, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019.

N. C. Sevüktekin and A. C. Singer "Lossless Natural Sampling for PWM Generation". *IEEE Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2017. Best Student Paper Award.

N. C. Sevüktekin and A. C. Singer "On the Convergence between Natural Sampling and Uniform Sampling". *IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2015.

N. C. Sevüktekin and A. C. Singer "A Performance Bound On Low-Pass Reconstruction From PWM Signals". *IEEE International Conference on Communications (ICC)*, London, UK, June 2015.

N. C. Sevüktekin and A. C. Singer "I.I.D. Stochastic Analysis of PWM Signals". *IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2014.