Melih Bastopcu

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CURRENT APPOINTMENT

University of Illinois Urbana-Champaign, IL, USA
Postdoctoral Research Associate, Coordinated Science Laboratory, September 2021 to present
Mentors: Prof. Rasoul Etesami and Prof. Tamer Başar

EDUCATION

University of Maryland, College Park, MD, USA
Ph.D., Electrical Engineering, August 2016 to August 2021
Advisor: Prof. Sennur Ulukus

Bilkent University, Ankara, Turkey
Bachelor of Science, Electrical Engineering, September 2011 to June 2016

RESEARCH INTERESTS

Information theory, wireless communications, and networks with a current focus on age of information, resource allocation, low latency systems, communication network design, dissemination of information in social networks, and strategic information transmission.

ACADEMIC EXPERIENCE

Postdoctoral Research Associate   University of Illinois Urbana-Champaign
September 2021 –   Champaign, IL, USA
Dissemination of misinformation, influence maximization on social networks,
and strategic information transmission

Research Assistant   University of Maryland
August 2016 to August 2021   College Park, MD, USA
Optimization of age of information, low latency wireless communication systems

TEACHING EXPERIENCE

Instructor   University of Illinois Urbana-Champaign
August 2023 to December 2023   Champaign, IL, USA
Instructor of Section F in ECE 313 - Probability with Engineering Applications Course

Graduate Teaching Assistant   University of Maryland
August 2018 to June 2019   College Park, MD, USA
System Theory (ENEE 660) in Fall 2019,
Engineering Probability (ENEE 324) in Spring & Fall 2018, Spring 2019.

MENTORING & ADVISING

Mentoring Graduate & Undergraduate Students
- Raj Kiriti Velicheti (since September 2021, advisor Prof. Tamer Başar)
- Shubham Aggarwal (since September 2021, advisor Prof. Tamer Başar)
- Muhammad Aneeq uz Zaman (since September 2021, advisor Prof. Tamer Başar)
- Asrin Efe Yorulmaz (junior exchange student from Bogazici University, since January 2023)

HONORS AND AWARDS

- **Travel Grant for Midwest Workshop on Control and Game Theory,**   April 2023
  at The University of Minnesota Twin Cities in Minneapolis, MN, USA

- **Best Student Paper Award–First Place,**   September 2021
  IEEE SPAWC 2021, Lucca, Italy

- **ISR Graduate Student Award, University of Maryland,** 2020-2021
  awarded by Institute for Systems Research
- **Future Faculty Program (FFP) Fellowship, University of Maryland,** January 2020
  selected to receive a comprehensive training on career-long success in academia
- **The 2018-2019 George Corcoran Memorial Award, University of Maryland,** June 2020
  in recognition of excellence in teaching by a graduate student
- **ECE Outstanding Teaching Assistant Award, University of Maryland,** 2017-2018
- **Distinguished Graduate Fellowship, University of Maryland** August 2016 to August 2017
  awarded by the Clark School of Engineering for Ph.D. studies
- **Research Excellence Award, Bilkent University** May 2016
  awarded by the Department of Electrical and Electronics Engineering
- **Senior/Voluntary Project Award, Bilkent University** May 2016
  awarded by the Department of Electrical and Electronics Engineering
- **Undergraduate Fellowship, Bilkent University** September 2011 to June 2016
  awarded by the Department of Electrical and Electronics Engineering for B.S. studies
- **Ranked 299th in National University Entrance Examination** 2011
  among 1.5 million participants

PUBLICATIONS

Google Scholar: https://scholar.google.com/citations?user=gQyJJqcAAAAJ&hl=en&oi=ao

Book Chapters

1. **M. Bastopcu,** B. Buyukates and S. Ulukus, Age of Information in Source Coding, *Age of information: Foundations and Applications,* Cambridge University Press (CUP), 2021.

Submitted Journal Papers (Under Review)

1. **M. Bastopcu,** S. R. Etesami, and T. Başar, *Online and Offline Dynamic Influence Maximization Games Over Social Networks,* Submitted to IEEE Transactions on Control of Network Systems.

2. R. K. Velicheti, **M. Bastopcu,** and T. Başar, *Value of Information in Games with Multiple Strategic Information Providers.* Available on arXiv:2306.14886.

3. S. Aggarwal, M. A. Zaman, **M. Bastopcu,** and T. Başar, *Weighted Age of Information based Scheduling for Large Population Games on Networks.* Available on arXiv:2209.12888.

4. **M. Bastopcu,** S. R. Etesami, and T. Başar, *The Role of Gossiping for Information Dissemination over Networked Agents,* Available on arXiv:2201.08365.

Journal Papers (Published/To Appear)

1. P. Kaswan, **M. Bastopcu** and S. Ulukus, *Timely Cache Updating in Parallel Multi-Relay Networks,* IEEE Transactions on Wireless Communications, to appear.

2. **M. Bastopcu,** and S. Ulukus, *Using Timeliness in Tracking Infections,* Entropy, special issue on Age of Information: Concept, Metric and Tool for Network Control, 24(6), 779, May 2022.

3. B. Buyukates, **M. Bastopcu,** and S. Ulukus, *Version Age of Information in Clustered Gossip Networks,* IEEE Journal on Selected Areas in Information Theory, 3(1):85-97, March 2022.

4. **M. Bastopcu** and S. Ulukus, *Age of Information for Updates with Distortion: Constant and Age-Dependent Distortion Constraints,* IEEE/ACM Transactions on Networking, 29(6):2425-2438, December 2021.

5. **M. Bastopcu,** B. Buyukates and S. Ulukus, *Selective Encoding Policies for Maximizing Information Freshness,* IEEE Transactions on Communications, 69(9):5714-5726, September 2021.

6. **M. Bastopcu** and S. Ulukus, *Information Freshness in Cache Updating Systems,* IEEE Transactions on Wireless Communications, 20(3):1861-1874, March 2021.

7. **M. Bastopcu** and S. Ulukus, *Minimizing Age of Information with Soft Updates,* Journal of Communications and Networks, special issue on Age of Information, 21(3):233-243, July 2019.

8. **M. Bastopcu,** A. Derinoz, A. Yilmaz and Y Erdem, *Textured Surfaces as a New Platform for Nanoparticle Synthesis*, Soft Matter, 14(21):4311-4316, April 2018.

Conference Papers

1. R. K. Velicheti, **M. Bastopcu,** S. R. Etesami, and T. Başar, *Learning How to Strategically Disclose Information.* Submitted.

2. S. Aggarwal, M.A. uz Zaman, **M. Bastopcu,** and T. Başar, *Large Population Games on Constrained Unreliable Networks,* Proc. 62nd IEEE Conference on Decision and Control (CDC 2023), Singapore, Dec 13-15, 2023.

3. S. Aggarwal, M.A. uz Zaman, **M. Bastopcu,** and T. Başar, *Large Population Games with Timely Scheduling over Constrained Networks,* Proc. 2023 American Control Conference (ACC 2023), San Diego, California, May 31-June 2, 2023.

4. R. K. Velicheti, **M. Bastopcu,** and T. Başar, *Strategic Information Design with Multiple Senders,* Proc. 2023 American Control Conference (ACC 2023), San Diego, California, May 31-June 2, 2023.

5. **M. Bastopcu,** S. R. Etesami, and T. Başar, *The Dissemination of Time-Varying Information Over Networked Agents With Gossiping,* IEEE International Symposium on Information Theory, Espoo, Finland, June 2022.

6. **M. Bastopcu,** B. Buyukates, and S. Ulukus, *Gossiping with Binary Freshness Metric,* IEEE Global Communications Conference, Madrid, Spain, December 2021.

7. B. Buyukates, **M. Bastopcu** and S. Ulukus, *Age of Gossip in Networks with Community Structure,* IEEE International Workshop on Signal Processing Advances in Wireless Communications, Lucca, Italy, September 2021. **(Best Student Paper Award-First Place)**

8. P. Kaswan, **M. Bastopcu** and S. Ulukus, *Freshness Based Cache Updating in Parallel Relay Networks,* IEEE International Symposium on Information Theory, Melbourne, Australia, July 2021.

9. **M. Bastopcu** and S. Ulukus, *Timely Tracking of Infection Status of Individuals in a Population,* IEEE Infocom Workshop on Age of Information, May 2021.

10. **M. Bastopcu** and S. Ulukus, *Cache Freshness in Information Updating Systems,* Conference on Information Sciences and Systems, Baltimore, MD, March 2021.

11. **M. Bastopcu** and S. Ulukus, *Timely Group Updating,* Conference on Information Sciences and Systems, Baltimore, MD, March 2021.

12. **M. Bastopcu** and S. Ulukus, *Maximizing Information Freshness in Caching Systems with Limited Cache Storage Capacity,* 54th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, November 2020.

13. **M. Bastopcu** and S. Ulukus, *Partial Updates: Losing Information for Freshness,* IEEE International Symposium on Information Theory, Los Angeles, CA, June 2020.

14. B. Buyukates, **M. Bastopcu** and S. Ulukus, *Optimal Selective Encoding for Timely Updates with Empty Symbol,* IEEE International Symposium on Information Theory, Los Angeles, CA, June 2020.

15. **M. Bastopcu** and S. Ulukus, *Who Should Google Scholar Update More Often?,* IEEE Infocom Workshop on Age of Information, Toronto, Canada, July 2020.

16. **M. Bastopcu,** B. Buyukates and S. Ulukus, *Optimal Selective Encoding for Timely Updates,* Conference on Information Sciences and Systems, Princeton, NJ, March 2020.

17. **M. Bastopcu** and S. Ulukus, *Age of Information for Updates with Distortion,* IEEE Information Theory Workshop, Visby, Gotland, Sweden, August 2019.

18. **M. Bastopcu** and S. Ulukus, *Scheduling a Human Channel,* 52nd Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, October 2018.

19. **M. Bastopcu** and S. Ulukus, *Age of Information with Soft Updates,* 56th Annual Allerton Conference on Communications, Control and Computing, Monticello, IL, October 2018.

20. **M. Bastopcu,** A. Gungor and H. E. Guven, *An Efficient Algorithm for Model Based Blind Deconvolution,* Computational Imaging II, Anaheim, CA, April 2017.

PROJECTS

- **Weight Adjustments to Mitigate Overfitting in Deep Neural Networks,** December 2018
  CMSC 726 Machine Learning course project, University of Maryland
- **Poly-Eye,** September 2015 to June 2016
  FPGA-based real-time object tracking with multiple cameras on a spherical surface, undergraduate final project in Bilkent University
- **Money Detection for Visually Impaired People,** December 2015
  EEE 497 Digital Signal Processing Laboratory course project, Bilkent University

SKILLS

Computer Skills: MATLAB, LATEX, C, Python
Language Skills: Turkish (Native), English

COURSEWORK

CMSC 726: Machine Learning, ENEE 620: Random Processes, ENEE 621: Estimation and Detection Theory, ENEE 623: Digital Communications, ENEE 625: Multi-user Communication, ENEE 627: Information Theory, ENEE 660: System Theory, ENEE 661: Nonlinear Control Systems, ENEE 662: Convex Optimization, ENEE 664: Optimal Control, MATH 630: Real Analysis I, MATH 631: Real Analysis II

SERVICE

Technical Program Committee (TPC) member:
- 6th Age of Information Workshop (in conjunction with IEEE INFOCOM), 2023

Conference/Workshop Session Chair:
- New Directions in Age of Information (in conjunction with IEEE ISIT), 2022
- Tools from AoI, Network Science and SIT to Address Online Misinformation (in conjunction with ITA Workshop), 2023

Technical Reviewer (journals):
- IEEE Transactions on Wireless Communications
- IEEE Transactions on Information Theory
- IEEE Transactions on Communications
- IEEE/ACM Transactions on Networking
- IEEE Transactions on Mobile Computing
- IEEE Internet of Things Journal
- IEEE Systems Journal
- IEEE Transactions on Network Science and Engineering
- IEEE Journal on Selected Areas in Communications
- Entropy

Technical Reviewer (conferences):
- IEEE International Symposium on Information Theory (ISIT)
- IEEE International Conference on Communications (ICC)
- IEEE Information Theory Workshop (ITW)
- IEEE INFOCOM WKSHPS AoI
- IEEE CDC
- IEEE ACC

AFFILIATIONS

Member of IEEE

REFERENCES

- **Sennur Ulukus**
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