İsmail Ulutürk

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EDUCATION

University of South Florida, Tampa, Florida, USA

- PhD Candidate in Electrical Engineering — Apr 2017 – May 2020 (Expected)
  - Advisor: Prof. Ismail Uysal
  - Research Focus: Wireless and social networks, and Machine Learning applications for them.
- MSEE in Electrical Engineering, GPA: 3.24 / 4.00 — Jan 2013 – Dec 2017
  - Focus: Machine Learning, Statistical Inference, Network Science.
  - Relevant Coursework: • Statistical Inference • Mathematical Statistics • Random Processes • Statistical Pattern Recognition • Network Science • Data Mining

Istanbul Technical University, Istanbul, Turkey

- B.S. in Electrical Engineering, GPA: 3.22 / 4.00 — Sep 2008 – Jun 2012
  - Graduation Project: Real-Time Localization of Mobile Nodes in Wireless Sensor Networks

WORK EXPERIENCE

University of South Florida, Tampa, Florida, USA

Graduate Assistant (Research/Teaching split appointment) — Jan 2013 – Jan 2020

- Research: See research projects below.
- Teaching: Deep Learning, Signals & Systems. Mainly handled projects and programming assignments.

Borda Technology, Istanbul, Turkey & Tampa, Florida, USA

Senior Hardware R&D Engineer — Jan 2013 – Oct 2018

- Designed, troubleshot, and validated all the circuitry from concept to production for 6 mass-produced RF devices in the market for healthcare applications, including the entire Active RFID product range.
- Worked together with respective coworkers to oversee mass production, develop test tools for production, improve enclosure and UX design, and develop in-house quick prototyping options.
- Led EM and regulatory compliance efforts. Held internal lectures and trained interns on EMC concepts.

Hardware R&D Engineer — Sep 2010 – Jan 2013

- Wrote embedded software in C for multiple MCU platforms, both on bare metal and with an RTOS.
- Developed, conducted, and documented assessment and validation tests for different RFID technologies.

RESEARCH PROJECTS

Collaborative Trajectory Control for Aerial Networks: Decentralized multi-agent trajectory planning of UAV based access points to implement a flexible aerial Radio Access Network (RAN) that can be rapidly deployed in previously unknown environments, utilizing Network Science and Reinforcement Learning.

Social Bots on Twitter: Studying the implications for the significant existence of social bots on Twitter, with a focus on bot detection and data science approaches. Currently conducting a validation study on publicly available bot detection tools and developing an open-sourced data annotation tool.

Study on Social Integration of Refugees in Turkey: Using an unprocessed 1.95GB Call Detail Record (CDR) dataset from 50k users, I have constructed mobility networks based on a variable high-order network topology in Python, and identified distinct markers for spatial segregation of refugees.

Sketch Recognition of Circuit Schematics (Undergraduate): Worked on translating freehand sketches of circuit schematics on paper to SPICE netlists. Lack of temporal information from the input method made segmentation a challenge. Implemented a dynamic programming based segmentation solution in Java.

RECENT SOFTWARE PROJECTS

content-annotator: A highly configurable and extendable Chrome extension that greatly simplifies manual annotation of users and content on social media sites. Open-source, main author and maintainer. JavaScript.

gently-multiagent: A Multi-agent Aerial Vehicular Network simulator that is easy to customize, with simulation environments for Reinforcement Learning. Only author. Work in progress. Python.

PUBLICATIONS

JOURNALS

[3] Uluturk, I., & Uysal, I., & Chen, K.C. (under review). **Collaborative Multi-Agent Trajectory Optimization for Aerial Networks using Reinforcement Learning.** *IEEE Wireless Communications Letters*.

[2] Varol, O., & Uluturk, I. (2019). **Journalists on Twitter: Self-branding, Audiences, and Involvement of Bots.** *Journal of Computational Social Science*.

[1] Varol, O., & Uluturk, I. (2018). **Deception strategies and threats for online discussions.** *First Monday*, 22(5).

BOOK CHAPTERS

[1] Salah, A. A., Altuncu, M. T., Balcisoy, S., Frydenlund, E., Mamei, M., Arslanlı, K. Y., ... Uluturk, I. (2019). **Policy implications of the D4R Challenge.** *Guide to mobile data analytics in refugee scenarios: the 'Data for Refugees Challenge' study*, (pp. 481-498).

REFEREED CONFERENCE PROCEEDINGS

[4] Uluturk, I., Uysal, I., & Varol, O. **Refugee Integration in Turkey: A Study of Mobile Phone Data for D4R Challenge.** Data for Refugees Challenge Workshop, 2019.

[3] Uluturk, I., Uysal, I., & Chen, K.C. **Efficient 3D Placement of Access Points in an Aerial Wireless Network.** CCNC 2019.

[2] Uluturk, I., & Uysal, I. **A novel approach for generating fast multi-class SVM topologies with nested dichotomies.** IJCNN 2016.

[1] Kilinc, O., Dalzell, A., Uluturk, I., & Uysal, I. **Inertia Based Recognition of Daily Activities with ANNs and Spectrotemporal Features.** ICMLA 2015.

COMPUTER SKILLS

- Frequent user of Python and its ecosystem for research, simulations, and data analysis.
  - NumPy, scikit-learn, TensorFlow, Keras, pandas, Matplotlib, NetworkX, Jupyter, etc.
- Experienced in C, MATLAB, Git, LaTeX, Embedded Software, JavaScript, HTML, CSS, Flask, Heroku
- Familiar with SQL, GNU/Linux systems, and shared high-performance computing platforms.

CLASS PROJECTS

Detection of Social Bots on Twitter: I have built a working social bot detector with a mean AUC of 0.84 using Twitter API, public Honeypot data, Random Forest classifiers, and engineered features, using Python.

Analysis of Zika Fever Epidemic in Colombia: I have identified that simple diffusion based epidemic models were lacking due to the spreading mechanisms of Zika, and constructed a Small-World Network using land and air transportation networks to explain the spread within the country using Python.

Wastewater Treatment Plant Aerator Fan Control: Using real data from a plant in Valrico, Florida and M5P Regression Trees we achieved a correlation coefficient of 0.927 with control signal from a real expert.

STUDENT PROJECTS & AWARDS

- Dissertation Fellowship, University of South Florida, Tampa, USA 2019
  - Chosen from a university-wide pool of candidates.
- ITU Hezarfen UAV Team for AUVSI-SUAS Competition, Maryland, USA 2012
  - Team lead, responsible for avionics and communication subsystems.
- Received a Congratulatory Award from the President of the Republic of Turkey 2011
  - Awarded during his university commencement speech, for participation in successful student projects.
- ITU Hezarfen CanSat Team for Annual International CanSat Competition, Texas, USA 2011
  - **First place** out of 16 teams. Responsible for avionics, communications, and embedded software.
- Real-Time Attendee Tracking for ITU Human Resources Congress, Istanbul, Turkey 2010
  - Developed frontend software in C# and managed UHF RFID hardware.

STUDENT ORGANIZATIONS

- ITU Control and Automation Society (OTOKON), Chair of Education Committee 2009-2011
  - Taught widely attended, public, and free "Introduction to Programming with C" classes for 4 semesters.
  - Organized "Embedded Software" and "Practical Electronics" classes to boost attendance in projects.

GETTING PERSONAL

I spend most of my free time cooking and reading. I also enjoy electronic music, opera, and watercolors. Have been slowly yet steadily reading through the bibliography of Philip K. Dick for 5 years now.

[*CV compiled on 2020-01-01*]