

# İsmail Ulutürk

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## EDUCATION

**University of South Florida**, Tampa, Florida, USA

- PhD in [Electrical Engineering](#) Apr 2017 – May 2020
  - Co-Advisors: Prof. İsmail Uysal, Prof. Kwang-Cheng Chen
  - Research Focus: Machine Learning applications for wireless and techno-social networks.
- MSEE in [Electrical Engineering](#) Jan 2013 – Dec 2017
  - Focus: Machine Learning, Statistical Inference, Network Science.

**Istanbul Technical University**, Istanbul, Turkey

- B.S. in [Electrical Engineering](#). Sep 2008 – Jun 2012
  - Graduation Project: Real-Time Localization of Mobile Nodes in Wireless Sensor Networks

## 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. Conducting a validation study on publicly available bot detection tools and developing an open-sourced data annotation tool. Python & JavaScript.

**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, and identified distinct markers for spatial segregation of refugees. Analysis in Python.

**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.

## SOFTWARE PROJECTS

**social-annotate:** 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.

## WORK EXPERIENCE

**University of South Florida**, Tampa, Florida, USA

Graduate Assistant

Jan 2013 – Jan 2020

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

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

R&D Engineer (One of the first 10 employees)

Sep 2010 – Oct 2018

- Done R&D for an IoT and RTLS solution that is currently deployed in multiple hospitals. Worked on every aspect from conception to deployment, with a focus on research and hardware development.
  - This project won The Best Health-Care RFID Implementation from RFID Journal Awards 2018.
- Shipped 6 mass-produced RF devices: Designed, troubleshoot, and validated all the circuitry end-to-end from concept to delivery for RF wearables and gateways; including Wi-Fi and Bluetooth.
- Worked together with respective coworkers to manage mass production logistics, 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.
- 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.

## PUBLICATIONS

### JOURNALS

- [J4] [Uluturk, I., & Varol, O.](#) (under review). **Social-Annotate: Browser extension to annotate and collect social media data.** *Journal of Open Source Software*.

- [J3] Uluturk, I., & Uysal, I., & Chen, K.C. (under revision). Collaborative Multi-Agent Trajectory Optimization for Aerial Networks using Reinforcement Learning. IEEE Wireless Communications Letters.
- [J2] Varol, O., & Uluturk, I. (2019). Journalists on Twitter: Self-branding, Audiences, and Involvement of Bots. Journal of Computational Social Science.
- [J1] Varol, O., & Uluturk, I. (2018). Deception strategies and threats for online discussions. First Monday, 22(5).

#### BOOK CHAPTERS

- [B1] 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 CONFERENCES

- [C5] Uluturk, I., & Varol, O. Social Bot Followers of Journalists on Twitter. IC2S2, 2020.
- [C4] 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.
- [C3] Uluturk, I., Uysal, I., & Chen, K.C. Efficient 3D Placement of Access Points in an Aerial Wireless Network. CCNC 2019.
- [C2] Uluturk, I., & Uysal, I. A novel approach for generating fast multi-class SVM topologies with nested dichotomies. IJCNN 2016.
- [C1] 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, Flask, Plotly, Bokeh, etc.
- Experienced in C, MATLAB, R, Embedded Software, JavaScript, HTML, CSS, Git,  $\LaTeX$
- Familiar with SQL, GNU/Linux systems, 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.

**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.

#### VOLUNTEERING

- ITU Control and Automation Society (OTOKON) Education Committee, Chair 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.

#### STUDENT PROJECTS & AWARDS

- Student Research Award, The Florida High Tech Corridor (FHTC) Council, USA 2020
  - Brought a total of \$124,989 in FHTC matching research awards through industry partnership.
- Dissertation Fellowship, University of South Florida, Tampa, USA 2019
  - Chosen from a university-wide pool of doctoral candidates for a total of \$8,000 + tuition and fees.
- ITU Hezarfen UAV Team for AUVSI-SUAS Competition, Maryland, USA 2012
  - Team lead, responsible for avionics and communication subsystems.
- 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.
- Koc University Summer Research Fellowship, Istanbul, Turkey 2010
  - Conducted research with Dr. Metin Sezgin on freehand sketch recognition of circuit schematics.

#### PERSONAL

I spend most of my free time cooking and reading. I also enjoy electronic music, opera, and watercolors.

[CV compiled on 2020-08-01]