

MEHMET SAYGIN SEYFIOGLU

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University of Washington
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EDUCATION

Ph.D. 2019 - Ongoing

University of Washington, Seattle, US
Electrical and Computer Engineering

M.Sc. 2015 - 2017

TOBB University of Economics and Technology, Ankara, Turkey
Electrical and Electronics Engineering

Thesis : Deep Neural Network Initialization and Training Methodologies for Radar Micro- Doppler Signature Classification

B.Sc. 2010 - 2015

TOBB University of Economics and Technology, Ankara, Turkey
Electrical and Electronics Engineering
Senior Design Project : Auto-Tune: A Voice Pitch Tuner

RESEARCH AND WORKING EXPERIENCE

University of Washington, Seattle, US
Graphics and Imaging Laboratory (GRAIL)

Advisors: Prof. Linda Shapiro

- Research Assistant *Sep. 2019 – Ongoing*
 - Working on detection of Alzheimer's Disease by using multi-modal data that include magnetic resonance imaging, positron emission tomography, and whole genome sequence.

Defense Technologies Engineering and Trade Inc. (STM), Ankara, Turkey
Big Data Products and Services Group

- Expert Data Scientist *May 2018 – Aug. 2019*
 - Worked on a project with an aim to generate relevant network vulnerability test (NVT) scripts for desired common vulnerabilities and exposures (CVE).
 - Implemented a deep learning model that predicts the exploitability score of vulnerabilities for the given CVE description text.
 - Implemented a retrieval-based algorithm for code generation based on word and document embeddings.
 - Implemented a hybrid model that uses both handcrafted and neural features for detection of cyber security events from noisy short text.
 - Prepared and taught Introduction to Deep Learning and Introduction to Machine Learning courses covering both theoretical and practical aspects of deep/machine learning for Middle East Technical University Technopolis' employees.
- Data Scientist *Dec. 2016 – May 2018*
 - Developed a driver behavior analysis model for TEMSA, a private bus manufacturer, by using both signal processing and machine learning algorithms.

- Implemented a named entity recognition model for the recognition of cyber security related named entities by combining bidirectional long-short term memory networks and convolutional neural networks.
- Developed a sentiment analysis model from customer reviews for Turkish Airlines.

TOBB ETU, Ankara, Turkey

Cognitive Radar and Remote Sensing Group

Advisors: Prof. Sevgi Zübeyde Gürbüz, Prof. Ahmet Murat Özbayoğlu, Prof. Ayşe Melda Yüksel Turgut

- Research and Teaching Assistant *May 2015 – Dec. 2016*
 - Mainly conducted research on micro-Doppler analysis and machine learning for human activity recognition in collaboration with Prof. Moeness G. Amin's group at Villanova University/USA.
 - Contributed to the development of a novel simulated dataset for initialization of deep residual networks for micro-Doppler gait classification.
 - Experienced implementing novel deep architectures in both low and high level frameworks such as Tensorflow and Keras.
 - Implemented state-of-the-art handcrafted features for micro-Doppler gait classification under low SNR in a project led by ASELSAN, the largest defense industry company in Turkey.
 - Invited as a visiting researcher for developing the machine learning model for the classification of bird species by using radar in Prof. Felix Liechti's group at Swiss Ornithological Institute/Switzerland.
- Undergraduate Research Assistant *May 2013 – May 2015*
 - Mainly worked in Advanced Imaging Technologies (TUYGUN) project led by HAVELSAN, one of the largest defense industry companies in Turkey.
 - Proposed a novel hybrid target detection algorithm that combines both spatial and spectral features of hyperspectral images.
 - Performed research based on data fusion where hyperspectral and lidar data are fused to simulate airborne radar clutter.
 - Involved in writing of 4 international conference papers relating image/hyperspectral image processing as an undergraduate student. Also delivered an oral and a poster presentation in international conferences as a senior student.

The Scientific and Technological Research Council of Turkey (TÜBİTAK) Space Technologies Research Institute (UZAY), Ankara, Turkey

Remote Sensing Group

- Research Intern *Jan. 2014 – April 2014*
 - Implemented pan-sharpening algorithms for the national earth observation satellite RASAT.
 - Implemented a NIR based haze removal algorithm for GÖKTÜRK-II satellite imagery.

TEACHING EXPERIENCE

Teaching Assistant, TOBB University of Economics and Technology, Electrical and Electronics Engineering

BIL 543	- Machine Learning	2016-2017 Spring
BIL 587	- Computer Vision	2016-2017 Spring
ELE 361	- Communication Systems & Laboratory	2016-2017 Fall
ELE 465	- Radar & Sonar Systems	2015-2016 Summer
ELE 371	- Signals & Systems	2015-2016 Spring
ELE 202	- Circuit Theory II & Laboratory	2015-2016 Fall
ELE 201	- Circuit Theory & Laboratory	2014-2015 Summer

PUBLICATIONS

Google Scholar Profile: <https://scholar.google.com.tr/citations?user=65TuoYUAAAAJ&hl=en>

Book Chapters

1. S. Z. Gürbüz, B. Erol, **M. S. Seyfioglu** and M. G. Amin, "Robustness of Kinematic Approaches to Train DNNs for Micro-Doppler Classification Under Low Sample Support," invited chapter in Deep Neural Network Design for Radar Applications, IET (In Preparation, expected to be published in late 2020)

Journals

1. **M. S. Seyfioglu**, B. Erol and S. Z. Gürbüz and M. G. Amin "DivNet: Residual Transfer Learning for Human Motion Classification from Diversified Radar Micro-Doppler Signatures." in *IEEE Transactions on Aerospace and Electronic Systems*, December 2018 Link: <https://ieeexplore.ieee.org/abstract/document/8572732>
2. **M. S. Seyfioglu**, A. M. Özbayoğlu and S. Z. Gürbüz "Deep Convolutional Autoencoder for Radar-Based Classification of Similar Aided and Unaided Human Activities." in *IEEE Transactions on Aerospace and Electronic Systems*, January 2018 Link: <http://ieeexplore.ieee.org/document/8283539/>
3. **M. S. Seyfioglu** and S. Z. Gürbüz "Deep Neural Network Initialization Methods for Micro-Doppler Classification with Low Training Sample Support." *IEEE Geoscience and Remote Sensing Letters* 14.12 (2017): 2462-2466. Link: <http://ieeexplore.ieee.org/document/8119733/>

Conference Papers

1. S. Yağcıoğlu, **M. S. Seyfioglu**, B. Bardak, B. Çıtamak, S. Güldamlasioğlu, A. Yüksel, E. İ. Tatlı "Detecting Cybersecurity Events from Noisy Short Text" North American Chapter of the Association for Computational Linguistics (NAACL) 2019, Minneapolis. Link: <https://www.aclweb.org/anthology/N19-1138/>
2. **M. S. Seyfioglu**, B. Erol, S. Z. Gürbüz, M. G. Amin, "Diversified radar micro-Doppler simulations as training data for deep residual neural networks." Radar Conference (RadarConf18), 2018 IEEE. Link: <https://ieeexplore.ieee.org/abstract/document/8378629/>
3. B. Erol, **M. S. Seyfioglu**, S. Z. Gürbüz, M. G. Amin, "Data-driven cepstral and neural learning of features for robust micro-Doppler classification." Radar Sensor Technology XXII. Vol. 10633. International Society for Optics and Photonics, 2018. Link: <https://www.spiedigitallibrary.org/conference-proceedings-of-spie/10633/106330J/Data-driven-cepstral-and-neural-learning-of-features-for-robust/10.1117/12.2304396.short?SSO=1>
4. **M. S. Seyfioglu**, M. U. Demirezen, "A Hierarchical Approach for Sentiment Analysis and Categorization of Turkish Written Customer Relationship Management Data," 2017 IEEE Federated Conference on Computer Science and Information Systems (FedCSIS), Prague. Link: <http://ieeexplore.ieee.org/document/8104566/>

5. **M. S. Seyfioglu**, A. Serinöz, A. M. Özbayoğlu, S. Z. Gürbüz, "Feature diverse hierarchical classification of human gait with CW radar for assisted living," *2017 IET International Conference on Radar Systems*, Belfast. Link: <http://digital-library.theiet.org/content/conferences/10.1049/cp.2017.0379>
6. **M. S. Seyfioglu**, S. Z. Gürbüz, A. M. Özbayoğlu and A. M. Yüksel, "Deep learning of micro Doppler features for aided and unaided gait recognition," *2017 IEEE Radar Conference (RadarConf)*, Seattle, WA, USA, 2017, pp. 1125-1130. doi: 10.1109/RADAR.2017.7944373. Link: <http://ieeexplore.ieee.org/document/7944373/>
7. **M. S. Seyfioglu**, Ş Bayındır and S. Z. Gürbüz, "Automatic spectral signature extraction for hyperspectral target detection," *2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Milan, 2015, pp. 4452-4455. Link: <http://ieeexplore.ieee.org/document/7326815/>
8. **M. S. Seyfioglu** and S. Z. Gürbüz, "Airborne radar clutter simulation using hyperspectral and LiDAR imagery," *2014 IEEE Geoscience and Remote Sensing Symposium*, Quebec City, QC, 2014, pp. 2938-2941. Link: <http://ieeexplore.ieee.org/document/6947092/>
9. M. Teke, **M. S. Seyfioglu**, A. Ağçal and S. Z. Gürbüz, "Optimal pansharpening of RASAT satellite imagery," *2014 22nd Signal Processing and Communications Applications Conference (SIU)*, Trabzon, 2014, pp. 1967-1970. Link: <http://ieeexplore.ieee.org/document/6830642/>
10. S. Z. Gürbüz, M. B. Ozcan, A. B. Parım, S. Demirhan, Z. Hayran, M. C. Karaduman, **M. S. Seyfioglu**, B. Tekeli, B. Çağlıyan "Target detection and ranging with the 2.4 GHz MIT Coffee Can radar," *2014 22nd Signal Processing and Communications Applications Conference (SIU)*, Trabzon, 2014, pp. 1450-1453. Link: <http://ieeexplore.ieee.org/document/6830513/>

ACHIEVEMENTS & SCHOLARSHIPS

- Selected as Principal Candidate for "**Fulbright PhD Scholarship**". Scholarship includes a total of \$100,000 in funding for 2 years of university tuition and monthly stipend. (2019-present).
- Awarded "**Full Scholarship**" for MSc. Education from TOBB University, covering monthly stipends and tuition fee waiver (2015-2016).
- Awarded scholarship from TÜBİTAK, covering monthly stipends (2015-2016).
- Awarded scholarship from HAVELSAN, covering monthly stipends (2014-2015).

COMPUTING SKILLS

Programming	: Python, MATLAB, Java, C/C++, Git, Docker, Bash, SQL
Machine Learning	: Tensorflow, Keras, Pytorch, Scikit-Learn
Type Setting	: Latex, Microsoft Office