CURRICULUM VITAE

MEHMET SAYGIN SEYFIOĞLU – ELECTRICAL AND COMPUTER ENGINEERING

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University of Washington
Seattle, WA

EDUCATION

Ph.D. **2019 - Ongoing**
University of Washington, Seattle, WA
Electrical and Computer Engineering

M.Sc. **2015 - 2017**
TOBB University of Economics and Technology, Ankara, Turkey
Electrical and Electronics Engineering
Thesis Title **:** 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

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

- Data Scientist *Dec. 2016 – Present*
  - Developed the machine learning modules of state-of-the-art NLP research that aims to build an intelligent tool 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. (in submission to NAACL19)
  - 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.
  - 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 state of the art haze removal algorithm for RASAT satellite imagery.

TEACHING EXPERIENCE

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

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

Instructor, Defense Technologies Engineering and Trade Inc. (STM) Academy

Machine Learning -	https://www.stmakademi.com/en/training/machine-learning	2017 December
Deep Learning -	https://www.stmakademi.com/en/training/deep-learning	2018 May

PUBLICATIONS & REVIEWS

Review: Contributed as a reviewer for the IEEE Sensors Journal, IEEE Geoscience and Remote Sensing Letters and various other conference papers.

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

Thesis

1. **M. S. Seyfioğlu**, "Deep Neural Network Initialization and Training Methodologies for Radar Micro-Doppler Signature Classification", Master's Thesis, TOBB University of Economics and Technology, December 2017.

Book Chapter

1. S. Z. Gürbüz, B. Erol, **M. S. Seyfioğlu** 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 early 2020)

Journals

1. **M. S. Seyfioğlu**, B. Erol and S. Z. Gürbüz and M. G. Amin "DNN Transfer Learning from Diversified Micro-Doppler for Motion Classification." in *IEEE Transactions on Aerospace and Electronic Systems – Link:* https://arxiv.org/abs/1811.08361

2. **M. S. Seyfioğlu**, 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. Seyfioğlu** 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. Seyfioğlu,** B. Çıtamak, B. Bardak, S. Güldamlasıoğlu, A. Yüksel, E. İ. Tatlı "Detecting Cybersecurity Events from Noisy Short Text" NAACL. 2019. *Link:* https://arxiv.org/pdf/1904.05054.pdf

2. **M. S. Seyfioğlu**, 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. Seyfioğlu,** 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. Seyfioğlu**, 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. Seyfioğlu**, 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. Seyfioğlu**, 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. Seyfioğlu**, 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. Seyfioğlu** 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. Seyfioğlu**, 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. Seyfioğlu**, 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/

11. Z. Hayran, A. B. Parım, **M. S. Seyfioğlu**, "A survey of pitch correction methods", 3rd ATMM (Audio Technologies for Music and Media) International Conference, pp. 67-78, 2014

LANGUAGES

Turkish	**:** Native
English (TOEFL IBT)	**:** Total **104**/120

SKILLS

Programming	**:** Python, MATLAB, Java, C/C++, Git, Docker, Bash, SQL
Machine Learning Libraries	**:** Tensorflow, Keras, Theano, Scikit-Learn
Operating Systems	**:** Linux (Debian based distros), Windows
Vector Graphics Editor	**:** Adobe Illustrator, Inkscape
Type Setting	**:** Latex, Microsoft Office

ACHIEVEMENTS & SCHOLARSHIPS

- Selected as Principal Candidate for **"Fulbright PhD Scholarship".** The scholarship includes a total of $100,000 in funding for 2 years of university tuition and monthly stipends. (2018-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).