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Research Interests	<ul style="list-style-type: none">• Remote sensing• Machine learning, pattern recognition• Precision agriculture• Signal Processing• Wearable sensors• Structural Health Monitoring,
Employment History	<ul style="list-style-type: none">• Research Assistant Professor October 2019- present Geosystems Research Institute Mississippi State University Developing and implementing new remote-based soil moisture measurements from GNSS-reflectivity using CYGNSS satellites and UAVs for the USDA supported project. Developing ground penetrating radar systems for underground biomass estimation. Utilized cloud computing, machine learning, signal processing, and data analysis for precision agriculture and geographical data. Provide comprehensive training and co-supervising to two graduate students.• Postdoctoral Associate June 2017 – October 2019 Computer Laboratory of Ambient and Wearable Systems Department of Electrical and Computer Engineering University of Alabama, Tuscaloosa, AL While in this position, I served as a scientist on a project named Personnel Automatic Cigarette Tracker, which is supported by the National Institute on Drug Abuse of the National Institutes of Health (NIH) under Award Number R01DA035828. A unique multi-sensory wearable system was developed for cigarette smoking detection and assessment of it with other biometric information. The wearable system consists of IMU, ECG and bio-impedance sensors, breathing and proximity sensor, and GPS module. In addition, other daily activities (eating/drinking, reading and walking, etc.) and vital metrics (breathing and heart rate) were investigated. With a wearable egocentric camera, cigarette and lighter objects were detected by using a deep neural network. My responsibilities are 1) signal processing 2) pattern recognition 3) human activity analysis 5) Machine and Deep learning model development.• Postdoctoral Associate October 2015-June 2017 Department of Mechanical and Materials Engineering Florida International University, Miami, FL With Dr. Tansel research group at Florida International University, I developed a Structural Health Monitoring (SHM) technique and introduced the sensorless SHM systems for the nonlinear type of defect and damages. My responsibilities are 1) Experimental system design 2) signal processing 3) pattern recognition 3) algorithm development.• Assistant Professor January 2014-October 2015 Department of Electrical & Electronics Eng. Marmara University, Faculty of Technology Istanbul, Turkey

	<ul style="list-style-type: none"> • Research/Teaching Graduate Assistant January 2004-January 2014 Department of Electronics & Computer Education Marmara University Istanbul, Turkey
Education	<ul style="list-style-type: none"> • Doctor of Philosophy January 2013 Department of Electronics and Communication Marmara University, Istanbul Turkey • Master of Science January 2007 Department of Electronics and Communication Marmara University, Istanbul Turkey • Bachelor of Science June 2003 Department of Electronics and Computer Marmara University, Istanbul Turkey
Courses Taught	<ul style="list-style-type: none"> • Electronics Circuits (<i>Spring 2015</i>) • Microcontrollers (<i>Fall 2015, Spring 2015</i>) • Test and Measurement (<i>Fall 2015</i>) • Communication (<i>Fall 2014</i>) • Fiber optic and Applications (<i>Fall 2015</i>)
Project Experience	<ul style="list-style-type: none"> • UAV-based autonomous unsupervised weed detection for corn fields, MSCPB \$55,000 (PI) • Estimating hive strength and pollination efficiency using a machine learning approach, Advancing Collaborative Research Program (ACR), \$30,000 (Co/PI) (current), • Advancement of UAS/UAV Application Systems, USDA Agricultural Research Service (USDA-ARS), Award NACA 58-6064-9-007, \$863,092 (researcher) (current) • Monitoring of Smoking by Personal Automatic Cigarette Tracker, NIH (researcher)
Prof. Activities	<p>Journal Referee for</p> <ul style="list-style-type: none"> • IEEE Sensors • IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing • MDPI Remote sensing • Sensors & Actuators: A. Physical • Signal, Image and Video Processing • Journal of Ambient Intelligent and Smart Environment
Computer Skills	<ul style="list-style-type: none"> • Languages: C, C++ • Tools: Matlab, Python, Tensorflow, Labview, Cloud computing • Design tools: Multisim, Proteus
Certifications	<p>"Protecting Human Research Participants". The National Institutes of Health (NIH), July 2017</p>

Awards	2023-2025	Mississippi Corn promotion Board Competitive Grants Program
	2007-2013	Scholarship, Scientific and Technological Research Council of Turkey
	2015-2016	Scholarship, Scientific and Technological Research Council of Turkey

Patents	Tansel Ibrahim, Volkan Senyurek, Muhammed Unal, Amin Baghalian, and Shervin Tashakori. "Implementation of Heterodyne Effect In SHM And Talking SHM Systems." U.S. Patent No 10,191,013 B2, January 29, 2019.
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Peer-Reviewed Journal Publications	<ol style="list-style-type: none"> 1) M. M. Nabi, V. Senyurek, F. Lei, M. Kurum and A. C. Gurbuz, (2023). "Quasi-Global Assessment of Deep Learning-Based CYGNSS Soil Moisture Retrieval," in <i>IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing</i>, vol. 16, pp. 5629-5644, doi: 10.1109/JSTARS.2023.3287591. 2) Senyurek, V., Farhad, M., Gurbuz, A., Kurum, M., Adeli, (2022). A Fusion of Reflected GPS Signals with Multispectral Imagery to Estimate Soil Moisture at Sub-field Scale form Small UAS platforms. <i>Journal of Selected Topics in Applied Earth Observations and Remote Sensing</i>. vol. 15, pp. 6843-6855 doi: 10.1109/JSTARS.2022.3197794 3) Nabi, M., Senyurek, V., Gurbuz, Ali., Kurum, M. (2022) Deep Learning-based Soil Moisture Retrieval in CONUS using CYGNSS Delay Doppler Maps. <i>Journal of Selected Topics in Applied Earth Observations and Remote Sensing</i>. vol. 15, pp. 6867-6881, doi: 10.1109/JSTARS.2022.3196658. 4) Lei F., Senyurek V., Kurum M., et al. (2022). Quasi-global machine learning-based soil moisture estimates at high spatio-temporal scales using CYGNSS and SMAP observations, <i>Remote Sensing of Environment</i>, 276, 113041. 5) Senyurek, V., Gurbuz C., & Kurum, M. (2021). Assessment of Interpolation Errors of CYGNSS Soil Moisture Estimations. <i>IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing</i>, 14, 9815-9825. 6) Senyurek, Volkan, et al. (2021), Electromyogram in Cigarette Smoking Activity Recognition. <i>Signals</i> 2.1 87-97. 7) Senyurek, V.; Lei, F.; Boyd, D.; Gurbuz, A.C.; Kurum, M.; Moorhead, R. (2020), Evaluations of Machine Learning-Based CYGNSS Soil Moisture Estimates against SMAP Observations. <i>Remote Sens.</i>, 12, 3503. 8) Senyurek, V.; Lei, F.; Boyd, D.; Kurum, M.; Gurbuz, A.C.; Moorhead, R. (2020), Machine Learning-Based CYGNSS Soil Moisture Estimates over ISMN sites in CONUS. <i>Remote Sens.</i> 2020, 12, 1168. 9) M. H. Imtiaz, D. Hossain, V. Y. Senyurek, P. Belsare, S. Tiffany, and E. Sazonov, (2020), Wearable Egocentric Camera as a Monitoring Tool of Free-living Cigarette Smoking: A Feasibility Study, <i>Nicotine & Tobacco Research</i>, doi:10.1093/ntr/ntz208. 10) V. Senyurek, M. Imtiaz, P. Belsare, S. Tiffany, and E. Sazonov, (2020), A CNN-LSTM Neural Network for Recognition of Puffing in Smoking Episodes Using
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Wearable Sensors, *Biomed. Eng. Lett.* (2020). <https://doi.org/10.1007/s13534-020-00147-8>.

- 11) P. Belsare, V. Senyurek, M. Imtiaz, S. Tiffany, and E. Sazonov, (2019) "Computation of Cigarette Smoke Exposure Metrics from Breathing" *IEEE Transactions on Biomedical Engineering*, doi: 10.1109/TBME.2019.2958843
- 12) V. Senyurek, M. Imtiaz, P. Belsare, S. Tiffany, and E. Sazonov, "Smoking Detection Based on Regularity Analysis of Hand to Mouth Gestures" *Biomedical Signal Processing and Control*, 51. 106-112 (2019)
- 13) V. Senyurek, M. Imtiaz, P. Belsare, S. Tiffany, and E. Sazonov, "Cigarette Smoking Detection with an Inertial Sensor and A Smart Lighter," *Sensors*, vol. 19(3), 2019.
- 14) S Tashakori, A Baghalian, V Y Senyurek, S Farhangdoust, D McDaniel, I Tansel. (2018). "Composites Bond Inspection Using Heterodyne Effect and SuRE Methods". *Shock and Vibration*. 1, 1-6 (2018)
- 15) Baghalian, A., Tashakori, S., Senyurek, V. Y., Unal, M., McDaniel, D., & Tansel, I. N. (2018). "Development of Comprehensive Heterodyne Effect Based Inspection (CHEBI) Method for Inclusive Monitoring of Cracks". *Measurement*, 128, 89-95 (2018)
- 16) Baghalian, A., Senyurek, V. Y., Tashakori, S., McDaniel, D., & Tansel, I. N. (2018). "A Novel Nonlinear Acoustic Health Monitoring Approach for Detecting Loose Bolts" *Journal of Nondestructive Evaluation*, 37(2), 24.
- 17) S Tashakori, A Baghalian, VY Senyurek, M Unal, D McDaniel, IN Tansel, "Implementation of heterodyning effect for monitoring the health of adhesively bonded and fastened composite joints", *Applied Ocean Research* 72, 51-59 (2018)
- 18) Masudul Haider Imtiaz, Raul I. Ramos-Garcia, Volkan Yusuf Senyurek, Stephen Tiffany, Edward Sazonov. "Development of a Multisensory Wearable System for Monitoring Cigarette Smoking Behavior in Free-Living Conditions", *Electronics* 2017, 6(4), 104
- 19) V. Y. Senyurek, A. Baghalian, S. Tashakori, D. McDaniel, I. N. Tansel "Localization of multiple defects using the compact phased array (CPA) method", *Journal of Sound and Vibration*, 413. (2018): 383-394
- 20) Baghalian A, T, Shervin, Senyurek V, McDaniel D, Tansel "Non-Contact Quantification of Longitudinal and Circumferential Defects in Pipes using the Surface Response to Excitation (SuRE) Method" *International Journal of Prognostics and Health Management*. 8. (2017): 1-8
- 21) T, Shervin, Baghalian A, Unal M, Fekrmandi H, Senyurek V, McDaniel D, Tansel "Contact and non-contact approaches in load monitoring applications using surface response to excitation method." *Measurement*. 89. (2016): 197-203
- 22) Senyurek, V. Y. "Detection of cuts and impact damage at the aircraft wing slat by using Lamb wave method." *Measurement* 67 (2015): 10-23.

	<p>23) Demetgul, M., Senyurek, V. Y., Uyandik, R., Tansel, I. N., & Yazicioglu, O. "Evaluation of the health of riveted joints with active and passive structural health monitoring techniques." <i>Measurement</i> 69 (2015): 42-51.</p> <p>24) Baspınar, U., Senyurek, V. Y., Dogan, B., & Varol, H. S. "A comparative study of denoising sEMG signals." <i>Turkish Journal of Electrical Engineering & Computer Sciences</i> 23 (2015): 931-944.</p> <p>25) Senyurek, Volkan Y., Ulvi Baspınar, and Huseyin S. Varol. "A Modified Adaptive Kalman Filter for Fiber Optic Gyroscope." <i>Revue Roumaine Des Sciences Techniques-Serie Electrotechnique Et Energetique</i> 59.2 (2014): 153-162.</p> <p>26) Yildiz, K., Şenyürek, V. Y., Yildiz, Z., & Özen, M. S. "A New Approach to the Determination of Warp-Weft Densities in Textile Fabrics by Using an Image Processing Technique." <i>Journal of Engineered Fabrics & Fibers (JEFF)</i>, (2014). 9(1).</p> <p>27) Baspınar, Ulvi, Huseyin Selcuk Varol, and Volkan Yusuf Senyurek. "Performance comparison of artificial neural network and Gaussian mixture model in classifying hand motions by using sEMG signals." <i>Biocybernetics and Biomedical Engineering</i> 33.1 (2013): 33-45.</p>
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Journal Publications (Others)	<p>1) B. Dogan, V.Y. Seyurek (2013). "Elektronik Denge Kontrol Modülü (EDKM)". <i>Otomasyon Dergisi</i>, Bileşim Yay. AŞ. Cilt 1. sf 368-370</p> <p>2) Demetgül M., Şenyürek V.Y., Yüce H. (2015). "Cıvatalı Birleştirmelerdeki Hasarların Lamb Dalgası Tekniğiyle Bulunması", <i>Marmara Fen Bilimleri Dergisi</i> 2015, 3: 76-82, DOI:10.7240/mufbed.66865</p> <p>3) Dogan, B., Senyürek, V., Y., "Akıllı Damper", ST Otomasyon Dergisi, <i>Alternatif Yayıncılık</i>, Sayı: 60, p.p. 116-119, Aralık, 2013.</p>
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Proceedings	<p>1) Kurum, M., Farhad, M., Senyurek, V., and Gurbuz, A.: Enabling subfield scale soil moisture mapping in near real-time by recycling L-band GNSS signals from drones, EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-10991, https://doi.org/10.5194/egusphere-egu23-10991.</p> <p>2) Bozdag, E., Senyurek, V., Nabi, M., Kurum, M., Gurbuz, A., "Fusing SENTINEL-1 with CYGNSS to account for vegetation effects in Soil Moisture Retrievals", <i>In IGARSS 2023 IEEE International Geoscience and Remote Sensing Symposium</i>,</p> <p>3) McCraine, C., Bheemanahalli, R., Senyurek, V., & Hu, J. (2022). "A Framework for Relating UAS Data to Soil Moisture and Health". STRATUS 2022 Conference. Syracuse, NY.</p> <p>4) P. Belsare et al., (2022), "Analyzing Impact of Mouthpiece-based Puff Topography Devices on Smoking Behavior using Wearable Sensors," <i>2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)</i>, Glasgow, Scotland, United Kingdom, pp. 1787-1791, doi: 10.1109/EMBC48229.2022.9871589.</p>
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- 5) Senyurek, V., Farhad, M., Gurbuz, A. C., Kurum, M., & Moorhead, R. (2021, November). SoilMoistureMapper: a GNSS-R approach for soil moisture retrieval on UAV. *In AI for Agriculture and Food Systems*.
- 6) Lei, F., Senyurek, V., Kurum, M., Gurbuz, A., Boyd, D., & Moorhead, R. (2021, July). Quasi-Global GNSS-R Soil Moisture Retrievals at High Spatio-Temporal Resolution from Cygnss and Smap Data. *In 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS* (pp. 6303-6306). IEEE.
- 7) Senyurek, V., Gurbuz, A., Kurum, M., Lei, F., Boyd, D., & Moorhead, R. (2021, July). Spatial and temporal interpolation of CYGNSS soil moisture estimations. *In 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS* (pp. 6307-6310). IEEE.
- 8) Kurum, M., Gurbuz, A. C., Barnes, S., Boyd, D. R., Duck, M., Farhad, M. M., ... & Senyurek, V. (2021, April). "A UAS-based RF testbed for water utilization in agroecosystems". *In Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping VI* (Vol. 11747, p. 117470J). International Society for Optics and Photonics.
- 9) Lei, F., Senyurek, V., Kurum, M., Gurbuz, A., Moorhead, R., & Boyd, D. (2020). Machine-Learning Based Retrieval of Soil Moisture at High Spatio-Temporal Scales Using CYGNSS and SMAP Observations. *In IGARSS 2020-2020 IEEE International Geoscience and Remote Sensing Symposium* (pp. 4470-4473). IEEE.
- 10) M. H. Imtiaz, D. Hossain, V. Y. Senyurek, P. Belsare and E. Sazonov, "PACT CAM: Wearable Sensor System to Capture the Details of Cigarette Smoking in Free-Living," 2020 IEEE Sensors, Rotterdam, Netherlands, 2020, pp. 1-4, doi: 10.1109/SENSORS47125.2020.9278805.
- 11) Volkan Senyurek, Masudul Imtiaz, Naemul Hassan, "Detection of drinking via a wrist-worn inertial sensor." 6th International Electronic Conference on Sensors and Applications. 14 November 2019.
- 12) V. Y. Senyurek, M. H. Imtiaz, P. Belsare, S. Tiffany, and E. Sazonov. "A Comparison of SVM and CNN-LSTM Based Approach for Detecting Smoke Inhalations from Respiratory Signal", 41st Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), July 23– 27, 2019. Berlin, Germany
- 13) M. H. Imtiaz, V. Y. Senyurek, P. Belsare, S. Tiffany, and E. Sazonov. "Objective Detection of Cigarette Smoking from Physiological Sensor Signals", 41st Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), July 23– 27, 2019. Berlin, Germany
- 14) M. H. Imtiaz, V. Y. Senyurek, P. Belsare, K. Nagaraja, and E. Sazonov. "Development of a Smart IoT Charger for Wearable Cigarette Smoking Monitor", *in IEEE SoutheastCon*, April 11-14, 2019. Huntsville, U.S.

- 15) Baghalian, A, Tashakori, S., Senyurek, V., Unal, M., and Tansel. I. "Heterodyning Effect in Composites Bond Inspection." *Proceedings of the Eleventh International Workshop on Structural Health Monitoring*, September 12–14, 2017.
- 16) Tashakori, S., Baghalian, A, Senyurek, V., Unal, M., and Tansel. I. "Novel Approaches for Loose Bolt Detection With and Without Sensors using Heterodyning Effect." *Proceedings of the Eleventh International Workshop on Structural Health Monitoring*, September 12–14, 2017
- 17) Baghalian, A., Tahakori, S., Fekrmandi, H., Unal, M., Senyurek, V. Y., McDaniel, D., & Tansel, I. N. (2017). "Implementation of the Surface Response to Excitation Method for Pipes". In *Mechanics of Composite and Multi-functional Materials*, Volume 7 (pp. 261-266). Springer International Publishing.
- 18) Tashakori, S., Baghalian, A., Unal, M., Senyurek, V. Y., Fekrmandi, H., McDaniel, D., & Tansel, I. N. (2017). "Load Monitoring Using Surface Response to Excitation Method." In *Mechanics of Composite and Multi-functional Materials*, Volume 7 (pp. 209-214). Springer International Publishing.
- 19) S. Tashakori, A. Baghalian, J. Cuervo, V. Y. Senyurek, I. N. Tansel and B. Uragun, "Inspection of the machined features created at the embedded sensor aluminum plates," *2017 8th International Conference on Recent Advances in Space Technologies (RAST)*, Istanbul, 2017, pp. 517-522.
- 20) A. Baghalian, S. Tashakori, J. R. Soto, V. Y. Senyurek, I. N. Tansel and B. Uragun, "Internal defect detection in hollow cylindrical structures using the Surface Response to Excitation (SuRE) Method," *2017 8th International Conference on Recent Advances in Space Technologies (RAST)*, Istanbul, 2017, pp. 523-527.
- 21) V. Y. Şenyürek, M. Ünal and H. S. Varol, "Genetic Optimized Wavelet Denoising for FOG Signals", *International Symposium on Innovations in Intelligent Systems and Applications*, 21-24 June 2010, Kayseri & Cappadocia, TURKEY.
- 22) Böcekçi V.G., Şenyürek V. Y., Başpınar U., Varol H. S., Denoising of the Interferogram Video Signals by 2D Wavelet Transform Technique, *The Fifth International Symposium on Wavelets Applications to World Problems "IWW" 2010*, İstanbul.
- 23) M. Demetgül, İ.N. Tansel, V. Y. Şenyürek, O. Yazıcıoğlu, "Milling Tool Wear Detection using Lamb Wave", *1. International Conference on Sustainable Life In Manufacturing*, June 24-25, 2010, ISPARTA-TURKEY.
- 24) I. Usta, E. Sancak, M. Yuksek, A. Beyit & V. Y. Senyurek, "Effect of metal filament wire containing knitting fabrics on electromagnetic shielding effectiveness (EMSE)", *ITC&DC - International Textile, Clothing & Design Conference*, 3-6 October, 2010, DUBROVNIK – CROATIA.
- 25) M. Akalın, M. O.Sözen, İ. Usta, E Sancak, A. Beyit, V. Y. Şenyürek, "An Investgation of Electromagnetic Shilging Properties of Nonwoven Fabrics with

Metal Fiber” The Textile Institute Centenary Conference Textile: Global Vision 3-4 November 2010 Manchester, UK.

26) M. Demetgül, V. Y. Şenyürek, İ. Nur Tansel, O. Yazıcıoğlu, “Angular Crack Monitoring of Aluminum Plate by Lamb Wave Analysis”, 6TH international advanced technologies symposium (IATS'11), 16-18 May 2011, Elazığ-TURKEY.

27) K. Yıldız, V.Y. Şenyürek, Z. Yıldız, “Prediction of Warp-Weft Densities in Textile Fabrics by Image Processing”, 2nd International Symposium on Computing in Science & Engineering (ISCSE2011) June 1-4, 2011, İzmir-TURKEY.

28) V. Y. Şenyürek and H. S. Varol, “Low Cost Fiber Optic Angular Velocity Sensor” ELECO'2007, 5th International Conference on Electrical and Electronics Engineering, 5 - 9 December 2007, Bursa – TURKEY.

29) Uğur, M. H., Güngör, A., Usta, İ., Yıldız, Z. & Şenyürek, V. Y. (2011). “Electromagnetic Shielding Properties Of UV-Cured Aliphatic PUA/MWCNT/E-Glass Composites In The 3-13 GHz Frequency Range” International Congress of Innovative Textiles (ICONTEX). İstanbul, Turkey

30) IN Tansel, VY Şenyürek, M Ünal, A Baghalian, S Tashakori (2016). “Implementation of Heterodyne Effect in Structural Health Monitoring (SHM) Systems” The 29'th Florida Conference on Recent Advances in Robotics and Robot Showcase, FCRAR 2016, p. 254-257. Miami, FL.

31) IN Tansel, VY Şenyürek, M Ünal, A Baghalian, S Tashakori (2016). “Loose Bolt Detecting Sensorless SHM System” The 29'th Florida Conference on Recent Advances in Robotics and Robot Showcase, FCRAR 2016, p. 258-261. Miami, FL.

32) IN Tansel, VY Şenyürek, M Ünal, A Baghalian, S Tashakori (2016). “Loose Bolt Detection Using Smart Washers” The 29'th Florida Conference on Recent Advances in Robotics and Robot Showcase, FCRAR 2016, p. 220-224. Miami, FL.

References	<p>Edward Sazonov Professor Dept. of Electrical & Computer Engineering University of Alabama Tuscaloosa, AL. 35401 Email: esazonov@eng.ua.edu Phone: (205) 348-1981</p> <p>Ibrahim N. Tansel Professor Department of Mechanical and Materials Engineering Florida International University 10555 West Flagler Street, (EC-3420) Miami, FL 33174 Email: tanseli@fiu.edu Phone: (305)3335180</p>
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