

MELIH CAN YESILLI

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EDUCATION

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| Michigan State University, MI, US
PhD Student, Department of Mechanical Engineering | August 2018 - present |
| Middle East Technical University, Turkey
Bachelor of Science, Department of Mechanical Engineering | September 2013 - June 2018 |

WORK EXPERIENCE

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|---|---|
| Teaching Assistant
<i>Michigan State University</i> | January 2019 - present |
| <ul style="list-style-type: none">· ME451L - Control Systems Laboratory (Spring 2019, Spring 2020)· ME461 - Mechanical Vibrations (Fall 2020) | |
| Research Assistant
<i>Michigan State University</i> | August 2018 - present
<i>Advisor: Dr.Firas Khasawneh</i> |
| <ul style="list-style-type: none">· Studying data-driven analysis of complex dynamical systems and combining machine learning with tools from Topological Data Analysis to create new investigative methods to study dynamical systems.· Investigating transfer learning performance of learned models | |
| Engineering Trainee
<i>Rocketsan Missiles Inc.</i> | November 2017 - April 2018 |
| <ul style="list-style-type: none">· Worked in Advanced Technologies and Systems department and focused on navigation of rocket and missiles. | |
| Internship
<i>Rocketsan Missiles Inc.</i> | June 2017 - July 2017 |
| <ul style="list-style-type: none">· Designed filters for Attitude and Heading Reference System (AHRS) and tested it on experimental data | |
| Internship
<i>TEI -TUSAS Engine Industries, Inc.</i> | July 2016 - August 2016 |
| <ul style="list-style-type: none">· Worked in Engine Assembly and Testing department and participated in testing of aircraft engines. | |

PUBLICATIONS

Journal Papers

- M. C. Yesilli, F. A. Khasawneh, and A. Otto, "On transfer learning for chatter detection in turning using wavelet packet transform and ensemble empirical mode decomposition," *CIRP Journal of Manufacturing Science and Technology*, 2019, <https://doi.org/10.1016/j.cirpj.2019.11.003>
- M. C. Yesilli, F. A. Khasawneh, and A. Otto, "Chatter Detection in Turning Using Machine Learning and Similarity Measures of Time Series via Dynamic Time Warping," *arXiv preprint:1908.01678*, 2019. (Under review)
- M. C. Yesilli, F. A. Khasawneh, and A. Otto, "Topological feature vectors for chatter detection in turning processes", *arXiv preprint: 1905.08671*, 2019. (Under review)

Conference Papers

- **M.C., Yesilli**, F. A. Khasawneh, “Data Driven Model Identification for a Chaotic Pendulum with Variable Interaction Potential”. IDETC 2020, <https://doi.org/10.1115/DETC2020-22597>
- **M. C. Yesilli**, F. A. Khasawneh, “On Transfer Learning of Traditional Frequency and Time Domain Features In Turning,” *15th International Manufacturing Science and Engineering Conference*, MSEC 2020. (*Accepted*)
- **M. C. Yesilli**, S. Tymochko, F. A. Khasawneh, E. Munch, “Chatter Diagnosis Using Topological Data Analysis in Milling Process,” In 2019 *18th IEEE International Conference on Machine Learning and Applications*, IEEE, <https://doi.org/10.1109/ICMLA.2019.00200>
- J. R. Tempelman, A. Myers, **M. C. Yesilli**, “Experimental Investigations Into Broadband Vibration of Metastructures with Lattice Designs,” In *Proceedings of the ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, IDETC2019, <https://doi.org/10.1115/DETC2019-97673>

PRESENTED WORK

Contributed Talks

- **On Transfer Learning of Traditional Frequency and Time Domain Features In Turning**, MSEC2020 (Virtual Conference), September 2020
- **Data Driven Model Identification for a Chaotic Pendulum with Variable Interaction Potential**, IDETC/MSNDC (Virtual Conference), August 2020
- **Chatter Classification and Transfer Learning in Turning Using Topological Data Analysis and Discrete Time Warping**, MSU TDA Seminar, April 2020
- **Topological Feature Vectors for Chatter Detection in Turning Processes**, The 1st Midwest Graduate Student Conference: Geometry and Topology meet Data Analysis and Machine Learning, June 2019
- **Topological Feature Vectors for Chatter Detection in Turning Processes**, SIAM Conference on Applications of Dynamical Systems, May 2019
- **Chatter diagnosis in turning using Topological Data Analysis**, SIAM Great Lakes Section Meeting, April 2019

Poster

- A.D. Myers, **M.C. Yesilli**, S. Tymochko, F. Khasawneh and E. Munch, “Teaspoon: A comprehensive python package for topological signal processing.” *Topological Data Analysis and Beyond Workshop at NeurIPS 2020*.

CONFERENCE ACTIVITIES

Mini-symposium Co-organizer, *Topological Time Series Analysis*, SIAM Conference on Mathematics of Data Science, May 2020. (*canceled due to COVID-19*)

Session Chair, SIAM Conference on Applications of Dynamical Systems, May 2019

SERVICE

**Measurement
Reviewer**

June 2020

PROFESSIONAL AFFILIATIONS & ORGANIZATIONS

American Society of Mechanical Engineers (ASME) <i>Member</i>	October 2019 - present
Michigan State University Turkish Student Association(MSU-TSA) <i>Treasurer</i>	April 2019 - present
Society for Industrial and Applied Mathematics (SIAM) <i>Member</i>	November 2018 - present

HONORS AND AWARDS

MSU Graduate Office Fellowship	February 2020
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CODE AND DATA REPOSITORIES

- A. Myers, **M. C. Yesilli**, S. Tymochko, F. A. Khasawneh and E. Munch, (2020), Teaspoon: A Topological Signal Processing Package, [pypi/teaspoon](https://pypi.org/project/teaspoon/).
- N. Mork, **M. C. Yesilli**, F. A. Khasawneh, (2020). Design of chaotic pendulum with a variable interaction potential, Zenodo, DOI: [10.5281/zenodo.3784897](https://doi.org/10.5281/zenodo.3784897)
- F. A. Khasawneh, A. Otto and **M. C. Yesilli**, (2019), “Turning Dataset for Chatter Diagnosis Using Machine Learning”, Mendeley Data, v1, [http://dx.doi.org/10.17632/hvm4wh3jzx.1](https://dx.doi.org/10.17632/hvm4wh3jzx.1)
- M. C. Yesilli**, F. A. Khasawneh, and A. Otto, (2019), “Machine learning toolbox for Wavelet Packet Transform (WPT) and Ensemble Empirical Mode Decomposition (EEMD)”, [Github](#) repository.

TECHNICAL STRENGTHS

Modeling and Analysis	Solidworks, Matlab
Software & Tools	L ^A T _E X, MathCad, Python, Sphinx, Inkscape, Parallel Computing, C/C++