

# MELIH CAN YESILLI

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## EDUCATION

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

## WORK EXPERIENCE

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| <b>Teaching Assistant</b><br><i>Michigan State University</i>   | January 2019 - present                                      |
| <ul style="list-style-type: none"><li>· ME451L - Control Systems Laboratory (Spring 2019, Spring 2020)</li><li>· ME461 - Mechanical Vibrations (Fall 2020)</li></ul>  |   |
| <b>Research Assistant</b><br><i>Michigan State University</i>   | August 2018 - present<br><i>Advisor: Dr.Firas Khasawneh</i> |
| <ul style="list-style-type: none"><li>· 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.</li><li>· Investigating transfer learning performance of learned models</li></ul> |   |
| <b>Engineering Trainee</b><br><i>Roketsan Missiles Inc.</i>   | November 2017 - April 2018                                  |
| <ul style="list-style-type: none"><li>· Worked in Advanced Technologies and Systems department and focused on navigation of rocket and missiles.</li></ul>  |   |
| <b>Intern</b><br><i>Roketsan Missiles Inc.</i>  | June 2017 - July 2017                                       |
| <ul style="list-style-type: none"><li>· Designed filters for Attitude and Heading Reference System (AHRS) and tested them on experimental data</li></ul>  |   |
| <b>Intern</b><br><i>TEI -TUSAS Engine Industries, Inc.</i>  | July 2016 - August 2016                                     |
| <ul style="list-style-type: none"><li>· Worked in Engine Assembly and Testing department and participated in testing of aircraft engines.</li></ul>   |   |

## PUBLICATIONS

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### 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

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### 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 Dynamic 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

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**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

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<b>Measurement</b> <i>Reviewer</i>	June 2020
<b>Journal of Ambient Intelligence and Humanized Computing</b> <i>Reviewer</i>	September 2020

## PROFESSIONAL AFFILIATIONS & ORGANIZATIONS

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

## HONORS AND AWARDS

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<b>MSU Graduate Office Fellowship</b>	February 2020
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## CODE AND DATA REPOSITORIES

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- A. Myers, **M. C. Yesilli**, S. Tymochko, F. A. Khasawneh and E. Munch, (2020), Teaspoon: A Topological Signal Processing Package, [pypi/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](#)
- 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>
- 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

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<b>Modeling and Analysis</b>	Solidworks, Matlab
<b>Software &amp; Tools</b>	L <sup>A</sup> T <sub>E</sub> X, MathCad, Python, Sphinx, Inkscape, Parallel Computing, C/C++