MELIH CAN YESILLI

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EDUCATION

Michigan State University, MI, US August 2018 - present
PhD Candidate, Department of Mechanical Engineering GPA: 3.77/4

Middle East Technical University, Turkey September 2013 - June 2018
Bachelor of Science, Department of Mechanical Engineering GPA: 3.47/4

WORK EXPERIENCE

Graduate Research Assistant August 2018 - present
Michigan State University *Advisor: Dr. Firas Khasawneh*

· 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 November 2017 - April 2018
Roketsan Missiles Inc.
· Worked in Advanced Technologies and Systems department and focused on navigation of rockets and missiles

Intern June 2017 - July 2017
Roketsan Missiles Inc.
· Designed filters for Attitude and Heading Reference System (AHRS) and tested it on experimental data

Intern July 2016 - August 2016
TEI -TUSAS Engine Industries, Inc.
· Worked in Engine Assembly and Testing department and participated in testing of aircraft engines

TEACHING EXPERIENCE

Graduate Teaching Assistant January 2019 - January 2021
Michigan State University

· ME461 - Mechanical Vibrations (Fall 2020)
· ME451L - Control Systems Laboratory (Spring 2019, Spring 2020)
· ME422 - Introduction to Combustion - (Fall 2019)
· ME416 - Computer Assisted Design of Thermal Systems - (Fall 2019)

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. https://doi.org/10.1115/MSEC2020-8274
- **M. C. Yesilli**, S. Tymochko, F. A. Khasawneh, E. Munch, "Chatter Diagnosis in Milling Using Supervised Learning and Topological Features Vector," 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

- **Chatter Detection in Turning Using Dynamic Time Warping and Approximate and Eliminate Search Algorithm**, SIAM Conference on Applications of Dynamical Systems, May 2021
- **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

Minisymposium Co-organizer, *Topological Signal Processing,* SIAM Conference on Applications of Dynamical Systems, May 2021

Minisymposium 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

SoftwareX February 2021
Reviewer

Journal of Ambient Intelligence and Humanized Computing September 2020
Reviewer

Measurement June 2020
Reviewer

PROFESSIONAL AFFILIATIONS & ORGANIZATIONS

Association for Computing Machinery (ACM) March 2021 - present
Member

American Society of Mechanical Engineers (ASME) October 2019 - present
Member

Michigan State University Turkish Student Association(MSU-TSA) April 2019 - present
Treasurer

Society for Industrial and Applied Mathematics (SIAM) November 2018 - present
Member

HONORS AND AWARDS

MSU Graduate Office Fellowship ($5000) February 2020

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.

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

Programming	Python, MATLAB, Julia, C/C++, OpenMP, MPI
Software & Tools	Sphinx, LaTeX, Solidworks, Inkscape, Arduino