

Firas A. Khasawneh, PhD

Work Address:

Firas A. Khasawneh
Assistant Professor of Mechanical Engineering
College of Engineering
Michigan State University
428 S Shaw Lane, Room 2503
East Lansing, MI 48824

Office: 517-432-0471
E-mail: khasawn3@egr.msu.edu
Website: www.firaskhasawneh.com

EDUCATION

Duke University, Durham, NC *Dec 2010*
Ph.D., Mechanical Engineering and Materials Science
Dissertation "Stability analysis of time delay systems using spectral element method"
Advisor: Dr. Brian Mann.

University of Missouri-Columbia, Columbia, MO *Aug 2006*
M.S., Mechanical and Aerospace Engineering.
Thesis "Characterization of drillability of sandwich structures of Carbon fiber reinforced epoxy composite over Titanium alloy"
Advisor: Dr. Sherif El-Gizawy

Jordan University of Science and Technology, Irbid, Jordan *Feb 2004*
B.S., Mechanical Engineering.

RESEARCH EXPERIENCE

Michigan State University, East Lansing, MI *Aug 2017 - present*
Assistant Professor

- Started a research program that investigates using topological data analysis, information theory, and nonlinear time series analysis for studying dynamical systems.

State University of New York Polytechnic Institute, Utica, NY *Aug 2013 - Aug 2017*
Assistant Professor

- Started a new collaborative project with researchers at UAlbany and Michigan State University that aims to explore the connection and advance the theory at the intersection of topological data analysis, dynamical systems, and machine learning.
- Started a research program that investigates using topological data analysis for studying the time series of dynamical systems.
- Initiated a collaboration with a researcher in the Complex Systems and Nonlinear Dynamics group at Chemnitz University of Technology in Germany to study the stability of machining compliant structures.

Duke University, Durham, NC *Jan 2013 - Aug 2013*
Postdoctoral Associate

- Studied energy generation from multiple buoys attached to the ocean floor and subject to stochastic waves.

Visiting Assistant Professor *Aug 2011 - Aug 2013*

- Compared prominent numerical methods used to study delay equations.
- Studied parameter identification in periodic delay differential equations with distributed delay.

Postdoctoral Associate *Jan 2011 - May 2011*

- Developed a numerical technique to ascertain the stability of delay equations with incommensurate period and delay.

Associate in Research *Aug 2007 - Dec 2010*

- Developed the finite element method to investigate the stability of delay differential equations.

University of Missouri, Columbia, MO *Aug 2004 - Aug 2007*
Research Assistant

- Studied sandwich-structure drillability of carbon fiber reinforced epoxy over titanium alloy.

| | | |
|--|---|--------------------------|
| INTERNATIONAL RESEARCH EXPERIENCE | Chemnitz University, Chemnitz, Germany | |
| | Visiting Researcher | <i>July 2017</i> |
| | Studied the stability in turning rods with time varying parameters due to metal removal. | |
| | University of Bristol, Bristol, U.K. | |
| | Postdoctoral Researcher | <i>May - Aug 2011</i> |
| | Developed numerical continuation techniques for noisy/stochastic systems. | |
| | Visiting Researcher | <i>May - June 2010</i> |
| | Determined periodic orbits of nonlinear delay equations and identified their stability. | |
| | Visiting Researcher | <i>Sept 2009</i> |
| | Studied continuation analysis for bifurcations in nonlinear equations. | |
| Budapest University of Technology and Economics, Budapest, Hungary | | |
| Visiting Researcher | <i>June - July 2008</i> | |
| Investigated stability analysis of delay integro-differential equations. | | |
| Visiting Researcher | <i>May - July 2007</i> | |
| Presented an explanation of improved low-speed stability in machining using an alternative force model. | | |
| RESEARCH SUPPORT | NSF-MPS-CDS&E | <i>Sep 2016–Aug 2019</i> |
| | Amount: \$93, 111. Status: funded | |
| | A National Science Foundation (NSF) proposal titled “Collaborative Research: Machine Learning on Topological Data Analysis Features of Dynamical Systems” submitted to the Computational and Data-Enabled Science and Engineering (CDS&E) program within the Mathematical & Physical Sciences Directorate. | |
| | NSF-ENG-DCSD | <i>Apr 2016–Mar 2019</i> |
| | Amount: \$196, 499. Status: funded | |
| | A National Science Foundation (NSF) proposal titled “Collaborative Research: A Unified Framework for the Investigation of Time Series Using Topological Data Analysis,” submitted to the Dynamics, Control and Systems Diagnostics (DCSD) program within the Engineering Directorate (ENG). | |
| | SUNY RF Undergraduate Research Support | <i>May 2014</i> |
| | A grant of \$5, 000 was awarded by the Research Foundation of SUNY to support an undergraduate research project titled “Numerical and Experimental Investigations of Chatter in Boring Processes.” | |
| | Support From The Institute For Mathematics and Its Applications (IMA) at the University of Minnesota | |
| | <ul style="list-style-type: none"> • Building a Pendulum Experiment <i>Jul 2015</i> The IMA provided \$1, 150 for building a pendulum and collecting data for a project related to using topological data analysis. This unique and unprecedented investment of the IMA in a physical experiment is a testament to the promise of the proposed work. • Collaboration Trip <i>May 2015</i> The IMA provided financial support for a 9-day trip to collaborate with Dr. Elizabeth Munch, who was a Postdoctoral Associate at the IMA, on a project related to using topological data analysis to dynamical systems. • Workshop Attendance Support From The IMA <i>Feb 2015</i> The IMA provided financial support for a 2-week trip to attend a workshop titled Algebraic Topology in Dynamics, Differential Equations, and Experimental Data, and to collaborate with Dr. Elizabeth Munch, who was a Postdoctoral Associate at the IMA, on a project related to using topological data analysis to dynamical systems. | |
| RESEARCH MENTORING | Michigan State University, East Lansing, MI | |
| | Advisor of graduate students | |
| | Audun Myers (PhD) | <i>Aug 2018–present</i> |
| | Melih Yesilli (PhD) | <i>Aug 2018–present</i> |
| | Joshua Templeman (PhD) | <i>Aug 2018–present</i> |
| | Mohammad Bukhari (switched schools and degree program) | <i>Jan 2018-May 2018</i> |
| | Advisor of undergraduate research students | |
| Advising Volkan Yildirim whose research project is titled “Characterizing Whirling in Shafts Using Numerically Stable Expressions” | <i>Jan 2020–present</i> | |
| Advised Nehemiah Mork whose research project is titled “Design a Magnetic Pendulum with | | |

Varying Potential”

May 2018–Dec 2018

Advised Philipp Waeltermann on two research projects:

Nov 2017–Dec 2018

- “Inverse Scattering of Celestial Objects in Orbit Using Earth-surface Observations of Their Light Intensity”
- “Classification of Time Series Data using Topological Data Analysis and Machine Learning”

Advised Brianna Forsthoefel & Genevieve Kobrossi on two research projects: “Characterizing Cardiac Arrhythmia Using Measures of Periodicity and Chaos, ” and “Motion Tracking of A Double Pendulum Using High-speed Cameras.”

Sep 2017–Apr 2018

State University of New York Polytechnic Institute, Utica, NY

Advisor of undergraduate research students

Aug 2015–Aug 2017

Advised David Petrushenko whose research project is titled “Numerical and Experimental Investigations of Simple and Double Pendulums”

Advised Nicholas Vaccaro whose research project is titled “Nonlinear Response of a Magnetic Pendulum”

Advisor of SUNY RF STEM Passport scholar

May–Jul 2015

Advised Danielle Baldwin whose research project was titled “Investigation of Machining Dynamics Using Continuation Analysis.”

Advisor of Barry Goldwater Scholar Nominees

Jan 2015, Jan 2017

Advised David Petrushenko whose research project was titled “Utilizing Topological Data Analysis and Machine Learning for Classifying Dynamic Behavior” in 2017.

Advised Rebecca Sheely whose research project was titled “Numerical and Experimental Investigation of Nonlinear Structural Dynamics” in 2015.

Advisor of SUNY RF Summer Undergraduate Researcher

May–Jul 2014

Advised Jeremy Frampton whose research project was titled “Numerical and Experimental Investigations of Chatter in Boring Processes.”

TEACHING EXPERIENCE

Michigan State University, East Lansing, MI

Assistant Professor of Mechanical Engineering

Aug 2017 - present

- Teaching more than 20 undergraduate students in the spring of 2020 an elective course on intermediate dynamics.
- Instructed 26 graduate students on Theory of Vibration and utilized PDF templates to facilitate material delivery and to better engage the students in the classroom.
- Taught 139 undergraduate students the basics of mechanical vibration.
- Taught two independent study courses with one undergraduate student. The objective of the first course was to numerically generate datasets that will be used to classify objects in orbit using the light intensity captured by a simulated earth-based camera. The second course focused on using machine learning tools and texture features to classify different time series.

State University of New York Polytechnic Institute, Utica, NY

Assistant Professor of Mechanical Engineering

Aug 2013 - Aug 2017

- Taught a total of 90 sophomores in two classes: Statics and Dynamics.
- Developed and used a flipped classroom model in a section of Statics with about 20 sophomores, and partially flipped a Dynamics section with 20 students.
- Instructed 34 juniors on Design of Experiments and incorporated *R* software assignments.
- Taught an online graduate course on Design of Experiments and incorporated *R* software assignments.

Duke University, Durham, NC

Pratt School of Engineering, Visiting Assistant Professor

Aug 2011 - Aug 2013

- Taught 243 sophomores and managed 13 teaching assistants while teaching two courses: Mechanics of Solids, and Dynamics.
- Instructed 18 graduate students and 3 seniors on Finite Element Method.

DukeTIP in India, Instructor

May 2012 - June 2012

- Taught 15 gifted Indian students a course on design challenges in engineering and physics. The DukeTIP (Talent Identification Program) took place on the Infosys campus in Mysore, India.

Pratt School of Engineering, Instructor

Jan 2011 - May 2011

- Instructed 60 sophomores on Dynamics.

Pratt School of Engineering, Teaching Assistant *Jan 2008 - Dec 2008*

- Conducted review and help sessions in addition to grading homework assignments and lab reports for Dynamics classes with a total of 80 students. Developed and led lab experiments.

University of Missouri, Columbia, MO

Mechanical & Aerospace Engineering, Teaching Assistant *Jan 2005 - May 2007*

- Developed new experiments and lab tutorials in Manufacturing Methods, led lab experiments and help sessions, and occasionally prepared and presented lectures.

OUTREACH

Board of Cooperative Educational Services (BOCES) *Oct 2015*

Participated in a career interest shadowing experience organized by Oneida-Herkimer-Madison BOCES for a high-school senior.

Voyager Academy in Durham, North Carolina *Dec 2009*

Performed science demonstration on electricity and magnetism for fifth graders.

Forest View Elementary School in Durham, North Carolina *Jan 2008*

Performed science demonstration on sound and vibration for the second grade class. Students learned about sound, vibration, natural frequencies, standing waves and traveling waves.

SERVICE

The National Science Foundation, Proposal Reviewer *Fall 2014-present*

- Evaluated research proposals that were submitted to the engineering directorate.

SIAM MDS20, Session co-organizer *Sep 2019-May 2020*

- Co-organized a mini-symposium titled "Topological Time Series Analysis," at the SIAM Conference on the Mathematics of Data Science (SIAM MDS20), May 5–8, 2020.

ME Awards committee, Member *July 2019-present*

ASME 2016 IDETC/CIE, Symposium co-organizer *Oct 2015-present*

- Co-organizer for the symposium on time-delay systems which is part of the Multi-body Systems and Nonlinear Dynamics Conference.

The U.S. Army Research Office, Proposal Reviewer *Dec 2011*

- Evaluated research proposals related to quantification of experimental measurements from nonlinear oscillators.

Chaos, Reviewer *Nov 2019*

Nonlinear dynamics, Reviewer *Sep 2015*

International Journal for Numerical Methods in Engineering, Reviewer *May 2015*

Mathematical and Computer Modelling of Dynamical Systems, Reviewer *Feb 2015*

Periodica Polytechnica, Reviewer *Dec 2014*

The IMA Journal of Applied Mathematics, Reviewer *Feb 2014*

International Journal of Dynamics and Control, Reviewer *Oct 2013*

Boundary Value Problems, Reviewer *Sept 2013*

Journal of Vibration and Acoustics, Reviewer *Feb 2013*

Journal of Sound and Vibration, Reviewer *Dec 2012*

Computers & Mathematics with Applications, Reviewer *Aug 2011*

International Journal of Computer Mathematics, Reviewer *Dec 2011*

Journal of Nonlinear Dynamics, Reviewer *Feb 2009*

International Journal of Machine Tools and Manufacture, Reviewer *Mar 2008*

SUNY Polytechnic Institute, Utica, NY

- **Member of the curriculum committee** *Sep 2015-Aug 2017*

- **SUNY Poly SMARTT/CGAM Laboratories** *Aug 2015*

Served on two committees for the SUNY Manufacturing Alliance for Research and Technology Center (SMARTT), and the Center for Global Advanced Manufacturing (CGAM):

- Leader of the SMARTT committee, Machining Processing - Machining
- Member in the SMARTT committee, Digital electro-mechanical learning lab

- **Academic advisor** *Aug 2014-Aug 2017*

Currently advising 20 mechanical engineering students.

- **Member of the search committee for a TT-NE position** *Aug 2015-Aug 2017*

Evaluated candidates for a tenure track (TT) position in Nanoengineering (NE).

- **Member of the search committee for TT-ME positions** *Aug 2014-May 2015*

Evaluated candidates for 2 tenure track (TT) positions in mechanical engineering (ME).

- **Member of the committee for academic honesty** *Aug 2014-Jul 2015*
 - **Member of the SUNY2020-CGAM equipment committee** *Aug 2013-Jan 2014*
- Served on a committee to identify and compile a list of equipment worth a total of 10 million dollars, which is part of the SUNY 2020 initiative. This initiative leverages SUNY Poly's partnership with industry through the Center for Global Advanced Manufacturing (CGAM).

COMPUTING SKILLS

Software: MATLAB, Python, R, Mathematica, L^AT_EX, Inkscape, Microsoft Office Suite
Operating Systems: Linux, Windows

AFFILIATION

Society of Manufacturing Engineers (SME)
 American Society of Mechanical Engineers (ASME)
 Society for Industrial and Applied Mathematics (SIAM)

PUBLICATIONS

Published

- Myers, A.D., and Khasawneh, F.A., "On the automatic parameter selection for permutation entropy," *Chaos*, 2020, DOI: 10.1063/1.5111719.
- Tempelman, J.R., and Khasawneh, F.A., "A Look into Chaos Detection through Topological Data Analysis," *Physica D: Nonlinear Phenomena*, 2020, DOI: 10.1016/j.physd.2020.132446.
- Yesilli, M.C., Khasawneh, F.A., and Otto, A., "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. DOI: 10.1016/j.cirpj.2019.11.003.
- Myers, A., Munch, E., and Khasawneh, F.A., "Persistent Homology of Complex Networks for Dynamic State Detection," *Physical Review E*, (100) 022314, 2019. DOI: 10.1103/PhysRevE.100.022314.
- Khasawneh, F.A. and Segalman, D.J., "Exact and numerically stable expressions for Euler-Bernoulli and Timoshenko beam modes," *Applied Acoustics*, (151), 215–228, 2019. DOI: 10.1016/j.apacoust.2019.03.015.
- Li, Z., Khasawneh, F.A., Yin, X., Li, A., and Song, Z., "A New Microscopic Traffic Model Using a Spring-Mass-Damper-Clutch System," *IEEE Transactions on Intelligent Transportation Systems*, 2019, DOI: 10.1109/TITS.2019.2926146.
- Khasawneh, F.A. and Munch, E., "Topological Data Analysis for True Step Detection in Periodic Piecewise Constant Signals," *Proceedings of the Royal Society A*, 2018, (474)20180027, DOI: 10.1098/rspa.2018.0027.
- Edgell, R.A., Khasawneh, F.A., and Moustafellos, J., "Reimagining entrepreneurship: Design culture exposure as a positive mediator for entrepreneurial capacity," *Journal of Creativity and Business Innovation*, 2018, 4. Accepted on 9/3/2018.
- Khasawneh, F.A. and Otto, A., "Effect of the interaction between tool and workpiece modes on turning with round inserts," *International Journal of Dynamics and Control*, 2017, 1-11.
- Khasawneh F.A., Munch E., "Utilizing Topological Data Analysis for Studying Signals of Time-Delay Systems." In: Insperger T., Ersal T., Orosz G. (eds) *Time Delay Systems. Advances in Delays and Dynamics*, vol 7. Springer, 2017.
- Lehotzky, D., Insperger, T., Khasawneh, F., and Stepan, G., "Spectral element method for stability analysis of milling processes with discontinuous time-periodicity," *International Journal of Advanced Manufacturing Technology*, 2017, (89)25032514. DOI: 10.1007/s00170-016-9044-z
- Khasawneh, F.A. and Munch, E., "Chatter Detection in Turning Using Persistent Homology," *Mechanical Systems and Signal Processing*, 2016, (70-71), 527-541. DOI: 10.1016/j.ymsp.2015.09.046i
- Otto, A., Khasawneh, F.A. and Radons, G., "Position-dependent stability analysis of turning with tool and workpiece compliance," *The International Journal of Advanced Manufacturing Technology*, Springer-London, 2015, (79), 1453-1463. DOI: 10.1007/s00170-015-6929-1
- Khasawneh, F.A. and Mann, B.P., "A spectral element approach for the stability analysis of time-periodic delay equations with multiple delays," *Communications in Nonlinear Science and Numerical Simulation*, 2013, 18(8), 2129–2141. DOI: 10.1016/j.cnsns.2012.11.030
- Torkamani, S., Butcher, E.A., and Khasawneh, F.A., "Parameter Identification in Periodic Delay Differential Equations with Distributed Delay," *Communications in Nonlinear Science and*

Numerical Simulation, 2013, 18(4),1016–1026, DOI: 10.1016/j.cnsns.2012.09.001

Khasawneh, F.A., Bobrenkov, O.A., Mann, B.P. and Butcher E.A., “Investigation of period doubling islands in milling with simultaneously engaged helical flutes,” *Journal of Vibration and Acoustics*, ASME, 2012, 134, 021008. DOI: 10.1115/1.4005022

Khasawneh, F.A. Barton, D.A.W. and Mann, B.P., “Periodic solutions of nonlinear delay differential equations using spectral element method,” *Nonlinear Dynamics*, 2011, 1–18. DOI: 10.1007/s11071-011-0017-3

Khasawneh, F.A., Mann, B.P. and Butcher, E.A., “A multi-interval Chebyshev collocation approach for the stability of periodic delay systems with discontinuities,” *Communications in Nonlinear Science and Numerical Simulation*, 2011, 16(11), 4408–4421. DOI: 10.1016/j.cnsns.2011.03.025

Khasawneh, F.A. and Mann, B.P., “A spectral element approach for the stability of delay systems,” *International Journal for Numerical Methods in Engineering*, 2011, 87, 566–592. DOI: 10.1002/nme.3122

Khasawneh, F.A. and Mann, B.P., “Stability of delay integro-differential equations using spectral element method,” *Mathematical and Computer Modelling*, 2011, 54, 2493–2503. DOI: 10.1016/j.mcm.2011.06.009

Khasawneh, F.A., Mann, B.P., Insperger, T. and Stépán, G., “Increased stability of low-speed turning with a distributed force and continuous delay model,” *Journal of Computational and Nonlinear Dynamics*, 2009, 4, 041003. DOI: 10.1115/1.3187153

Tweten, D., Lipp, G.M., Khasawneh, F.A., and Mann, B.P., “On the comparison of semi-analytical methods for the stability analysis of delay differential equations,” *Journal of Sound and Vibration*, 2012, 331, 4057–4071. DOI: 10.1016/j.jsv.2012.04.009

Bobrenkov, O.A., Khasawneh, F.A., Butcher E.A. and Mann, B.P., “Analysis of milling dynamics for simultaneously engaged cutting teeth,” *Journal of Sound and Vibration*, 2010, 329, 585–606. DOI: 10.1016/j.jsv.2009.09.032

Mann, B.P. and Khasawneh, F.A., “An energy balance technique for oscillator parameter identification,” *Journal of Sound and Vibration*, 2009, 321, 65–78. DOI: 10.1016/j.jsv.2008.09.036

Mann, B.P., Khasawneh, F.A. and Fales, R.A., “Using information to generate derivative coordinates from noisy time series,” *Communications in Nonlinear Science and Numerical Simulation*, 2011, 16, 2999–3004. DOI: 10.1016/j.cnsns.2010.11.011

Preprints:

Myers, A.D., Khasawneh, F.A., “Delay parameter selection in permutation entropy using topological data analysis.” arXiv: 1905.04329.

Yesilli, M.C., Khasawneh, F.A., and Otto, A., “Chatter Detection in Turning Using Machine Learning and Similarity Measures of Time Series via Dynamic Time Warping.” arXiv: 1908.01678. Being revised for resubmission.

Yesilli, M.C., Khasawneh, F.A., Otto, A., “Topological feature vectors for chatter detection in turning processes.” arXiv: 1905.08671. Being revised for resubmission.

Perea, J., Munch, E., and Khasawneh, F.A., “Approximating continuous functions on persistence diagrams using template functions,” arXiv:1902.07190. Under review at *Journal of Machine Learning Research (JMLR)*.

Yesilli, M.C., Khasawneh, F.A., “Diagnosis of Chatter in Turning Using Signal Processing,” 15th International Manufacturing Science and Engineering Conference, MSEC2020. Under review.

CONFERENCE ARTICLES

Peer reviewed

Yesilli, M.C., Tymochko, S., Khasawneh, F.A., and Munch, E., “Chatter Diagnosis Using Topological Data Analysis in Milling Process”, The 18th IEEE International Conference on Machine Learning and Applications, Boca Raton, FL, USA, Special Session: Topological Data Analysis in Machine Learning, 2019. DOI: 10.1109/ICMLA.2019.00200.

Tymochko, S., Munch, E., and Khasawneh F.A., “Adaptive Partitioning for Template Functions on Persistence Diagrams.” The 18th IEEE International Conference on Machine Learning and Applications, Boca Raton, FL, USA, Special Session: Topological Data Analysis in Machine Learning, 2019. DOI: 10.1109/ICMLA.2019.00202.

Tempelman, J.R., Myers, A., Yesilli, M.C., and Khasawneh, F.A., "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). DOI: 10.1115/DETC2019-97673.

Khasawneh, F.A., Munch, E., and Perea, J., "Chatter classification in turning using machine learning and topological data analysis," IFAC TDS 2018, 51-14, 195-200, Budapest, Hungary June 28–30, 2018. doi: 10.1016/j.ifacol.2018.07.222.

Edgell, R., Khasawneh, F.A., and Moustafellos, J., "Reimagining Entrepreneurship: Design Culture Exposure as a Positive Mediator for Entrepreneurial Capacity," SSRN, 2018.

Petrushenko D. and Khasawneh F.A., "Uncertainty Propagation of System Parameters to the Dynamic Response: An Application to a Benchtop Pendulum." ASME 2017 International Mechanical Engineering Congress & Exposition, Volume 4B: Dynamics, Vibration, and Control. doi:10.1115/IMECE2017-71105.

Khasawneh, F.A., "Stability Analysis of Machining Processes Using Spectral Element Approach," invited session on machine tool dynamics at IFAC Workshop on Time Delay System, June 28–30, 2015, Ann Arbor, MI.

Khasawneh, F. A. and Munch, E., "Stability determination in turning using persistent homology and time series analysis," IMECE2014-40221, ASME 2014 International Mechanical Engineering Congress & Exposition, November 14-20, 2014, Montreal, Canada, 2014.

Khasawneh, F. A. and Munch, E., "Exploring equilibria in stochastic delay differential equations using persistent homology," DETC2014/VIB-35655, ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Buffalo, NY, August 17-20, 2014.

Khasawneh, F.A. and Mann, B.P., "Comparison between collocation methods and spectral element approach for the stability of periodic delay systems," KF-552, 9th IFAC Workshop on Time Delay Systems, Prague, The Czech Republic, June 7-9, 2010.

Khasawneh, F.A., Patel, B. and Mann, B.P., "A State-space temporal finite element approach for stability investigations of delay equations," SMASIS2009 – 1263, ASME 2009 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, Oxnard, California, September 21–23, 2009.

Khasawneh F.A., Mann, B.P., Bobrenkov, O.A. and Butcher E.A., "Self-excited vibrations in a delay oscillator: Application to milling with simultaneously engaged helical flutes," DETC2009 – 86636, ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, San Diego, California, August 30–September 2, 2009.

Khasawneh, F., Mann, B.P., Insperger, T. and Stépán, G., "Explanation for low-speed stability increases in machining: Application of a continuous delay model," invited session on "Time-Delay Systems, from Theory to Applications", DSCC2008 – 2287, Dynamic Systems and Control Conference 2008, Ann Arbor, Michigan, October 20-22, 2008.

Mann, B.P., Young, K.A. and Khasawneh, F.A., "Nonlinear responses of a buckled beam with induced residual stress," Euromech Colloquium 483 on Geometrically Non-linear Vibrations of Structures, Porto, Portugal, Jul. 9-11, 2007.

Conference abstracts

Myers, A.D., and Khasawneh, F.A., "Dynamic State Change Detection Using Ordinal Partition Networks," ENOC 2020, July 5-10, 2020, Lyon, France.

Khasawneh, F.A., and Munch, E., "Using Persistent Homology to Study Equilibria of Stochastic Delay Systems," 17th U.S. National Congress on Theoretical & Applied Mechanics, East Lansing, MI, June 15-20, 2014.

Khasawneh, F.A., Mann, B.P., Insperger, T. and Stépán, G., "Application of a distributed delay model to the stability of low speed machining," Workshop on Delay Differential Equations: Theory and Applications 2009, Bristol, United Kingdom, September 7-9, 2009.

Khasawneh, F.A. and Mann, B.P., "Stability of a continuous delay model for the distributed forces in turning," Twelfth Conference on Nonlinear Vibrations, Dynamics, and Multibody Systems, Blacksburg, Virginia, June 1-5, 2008.

- PRESENTATIONS** “Topological Data Analysis for Detecting Dynamic State Changes via Nodal Networks,” Joint Math Meetings (JMM) 2020, Denver, Colorado, January 17, 2020. (Invited talk)
- “Utilizing persistent homology for studying time series of dynamical systems,” College of engineering Control Seminar at University of Michigan, Ann Arbor, November 8, 2019. (invited talk)
- “Topological Data Analysis for Detecting Dynamic State Changes via Nodal Networks,” SIAM DS19, Snowbird, Utah, May 22, 2019.
- “Persistent homology of complex networks for dynamic state detection,” 2019 SIAM Great Lakes Section Meeting, University of Michigan, Ann Arbor, MI, April 27, 2019.
- “Topological Data Analysis of Time Series,” Ohio State University, May 3, 2018. (Invited talk)
- “Applications of Persistence to Time Series Analysis,” Chemnitz Technical University, Chemnitz, Germany, July 17, 2017.
- “Modeling and Analysis of the Dynamics of Manufacturing Processes,” Montana State University, Bozeman, MT, February 13, 2017.
- “Modeling and Analysis of the Dynamics of Manufacturing Processes,” Michigan State University, East Lansing, MI, February 9, 2017.
- “Stability Analysis of Machining Processes Using Spectral Element Approach,” IFAC-TDS 2015, Ann Arbor, MI, June 29, 2015.
- “Towards Utilizing Topological Data Analysis for Studying Machining Models,” Invited Lecture, Institute for Mathematics and Its Applications Annual Program Seminars, University of Minnesota, Minneapolis, MN, February 19, 2014.
- “Applications of Current Modeling Technology to Analysis of Machine Tool Behavior,” Con-Med, Utica, NY, June 11, 2013.
- “Stability Analysis of Time Delay Systems Using Spectral Element Method,” State University of New York Institute of Technology, Utica, NY, May 8, 2013.
- “Spectral element approach for studying the stability of delay systems,” German Jordanian University, Amman, Jordan, July 1, 2012.
- “Comparison between collocation methods and spectral element approach for the stability of periodic delay systems,” IFAC-TDS 2010, Prague, The Czech Republic, June 7, 2010.
- “Comparison between collocation methods and spectral element approach for the stability of periodic delay systems,” Open Scientific Discussions in Bristol Center for Applied Nonlinear Mathematics (OSD), Bristol, United Kingdom, June 2, 2010.
- “A State-space temporal finite element approach for stability investigations of delay equations,” SMASIS 2009, Oxnard, California, September 23, 2009.
- “Application of a distributed delay model to the stability of low speed machining,” Workshop on Delay Differential Equations: Theory and Applications 2009, Bristol, United Kingdom, September 9, 2009.
- “Self-excited vibrations in a delay oscillator: Application to milling with simultaneously engaged helical flutes,” DETC 2009, San Diego, California, September 1, 2009.
- “Explanation for low-speed stability increases in machining: Application of a continuous delay model,” Duke MEMS Retreat, Washington Duke Inn, Durham, North Carolina, November, 7, 2008.
- “Explanation for low-speed stability increases in machining: Application of a continuous delay model,” invited session on “Time-Delay Systems, from Theory to Applications,” DSCC 2008, Ann Arbor, Michigan, October 20, 2008.
- “Stability of a continuous delay model for the distributed forces in turning,” 12th Conference on Nonlinear Vibrations, Dynamics, and Multibody Systems, Blacksburg, Virginia, June 3, 2008.
- “Explanation for low-speed stability increases in machining: Application of a continuous delay model,” Nonlinear Dynamics Group seminar series at Duke University, Durham, North Carolina, April 26, 2008.

tropy": https://github.com/Khasawneh-Lab/PE_parameter_selection/tree/V1.0.0

Companion code for the paper "On transfer learning for chatter detection in turning using wavelet packet transform and ensemble empirical mode decomposition":

https://github.com/mcanyesilli/WPT_EEMD_ML_Machining

Khasawneh, F.A., Otto, A., and Yesilli, M.C. (2019), "Turning Dataset for Chatter Diagnosis Using Machine Learning," Mendeley Data, v1. DOI: 10.17632/hvm4wh3jzx.1.

Tempelman, J., Khasawneh, F.A. (2019), "Chaos Detection with Persistent Homology," Mendeley Data, v2. DOI: 10.17632/4kszknf6vj.2

Khasawneh, F.A., Segalman, D.J. (2019), "Code for: Exact and Numerically Stable Expressions for Euler-Bernoulli and Timoshenko Beam Modes," Mendeley Data, v3. DOI: 10.17632/r275tx2yp8.3.