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مهدی حیدری

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Work Experience

تجربه کاری

Shahrood University of Technology دانشگاه صنعتی شاهرود Iran
 Assistant Professor
 Department of Manufacturing & Pro,
 Faculty of Mechanical Engineering, 2019-present

Sharif University of Technology دانشگاه صنعتی شریف Iran
 Visiting Assistant Professor
 School of Mechanical Engineering, 2018-2019

Education

تحصیلات

Keio University دانشگاه کی تو Tokyo, Japan
Ph.D. Department of Mechanical Engineering, March 2018
 Thesis: Material removal mechanism and surface integrity in ultraprecision cutting of porous materials.

Ferdowsi University of Mashhad دانشگاه فردوسی مشهد Iran
Master of Science, Department of Mechanical Engineering, June 2009
 Thesis: Determination of process parameters to optimize manufacturing process using intelligent algorithms: MIG/MAG welding case study

Iran University of Science and Technology دانشگاه علم و صنعت ایران Iran
Bachelor of Science, Department of Mechanical Engineering, July 2007
 Thesis: A review on recent advances in the machining process

Awards

افتخارات

Japan JSPE Young Researcher Award, 2017
 جایزه محقق جوان سال ژاپن ۱۳۹۶
Top Applied Researcher Award, "Ta Soraya" National Festival 2026
 پژوهشگر کاربردی برتر، جشنواره ملی تا سورا ۱۴۰۴
 Iran's National Elites Foundation Postdoctoral Fellowship, 2018-2019
 برنده حمایت مالی بنیاد نخبگان برای دوره پسا دکتری ۱۳۹۷
 Ph.D. Program Scholarship, 2014-2018
 دریافت اسکولارشیپ دوره دکتری ۱۳۹۴
 Keio University KLL Ph.D. Program Research Grant, 2015-2017
 برنده گرنت تحقیقاتی دانشگاه کی تو سه سال متوالی ۱۳۹۵
 Exemplary Teaching Professor (or Outstanding Educator) of the faculty (2023)

استاد نمونه آموزشی دانشکده در سال ۱۴۰۲
 Top Faculty Researcher in Industry Relations (2025).
 پژوهشگر برتر دانشگاه در حوزه صنعت ۱۴۰۴
 رتبه دوم در دوره کارشناسی ارشد M.Sc. Program

Teaching Courses تدریس

Machining, Tooling Systems and Machine Tool ماشینکاری، ابزارشناسی و ماشین ابزار
 Metal cutting Mechanics مکانیک برش فلزات
 Metallurgy & Material Science متالورژی و علم مواد
 Micro-Manufacturing Technology تکنولوژی ساخت در ابعاد میکرو
 Planning for Machining Processes طراحی فرآیندهای ماشینکاری
 Mechanics of Materials مکانیک مواد
 Additive Manufacturing technology تکنولوژی ساخت افزایشی

Research Interests علاقمندی های تحقیقاتی

Ultraprecision Machining ماشینکاری فوق دقیق
 Machining Difficult-to-Cut Materials ماشینکاری مواد سخت
 Micro/Nano Manufacturing میکرو نانو ساخت
 Analysis of Microstructure تحلیل ریزساختار
 Mechanics of Materials, Fatigue & Failure مکانیک مواد، خستگی و شکست
 Machine Tools and Wear ماشین ابزار و سایش
 Advanced Manufacturing Processes فرآیندهای پیشرفته ساخت
 Additive Manufacturing Technologies تکنولوژی ساخت افزایشی
 Composite and Special Material کامپوزیت ها و مواد خاص

Industrial Projects پروژه های صنعتی

- شرکت توسعه قوای محرکه دینا
 اصلاح و ارائه روش پیشنهادی جدید در فرآیند تولید طبق ورقی خودرو در جهت بهبود عمر خستگی
 Improving Fatigue Life in Sheet Suspension Knuckle Production Through Modified and Innovative & Novel Methods
 Dinamotor powertrain company
- معاونت فناوری ریاست جمهوری
 فعالیت های مرتبط با ماشینکاری فوق دقیق مواد پیشرفته (سیلیکون) برای ساخت دقیق
 Activities related to ultra-precision machining of advanced materials (Silicon) for precision manufacturing
 Vice Presidency for Science and Tech
- شرکت توسعه قوای محرکه دینا
 تحلیل خرابی و بهبود هندسه طبق مثلثی خودروی را در جهت افزایش استحکام خستگی در آزمون های صحنه گذاری
 Failure Analysis and Geometry Improvement of the Rira Vehicle's Suspension Knuckle to Enhance Fatigue Strength in Validation Tests
 Dinamotor powertrain company

- پارک علم و فناوری استان
سمنان

• طراحی ساخت دستگاه روانکار کمینه برای سیستم خنکاری و روانکاری فرآیند ماشینکاری

Semnan Science and Technology Park

Design and fabrication of a Minimum Quantity Lubrication (MQL) device for machining cooling and lubrication systems
- شرکت ویراتک برتر پارس
Viratech Barta Pars Company

• خدمات مهندسی و مشاوره در فرآیند تحقیق و توسعه شرکت ویراتک برتر پارس

Engineering consulting services and support for Research and Development (R&D) processes
- شرکت توسعه قوای محرکه
دینا

• تحلیل تنش، ارزیابی خستگی و شرایط مونتاژی میل لنگ فولادی چند پارچه

Dinamotor powertrain company

Stress analysis, fatigue evaluation, and assessment of assembly conditions for multi-piece steel crankshafts
- صنایع اپتیک
Optics

• شناسایی مکانیزم سایش ابزار الماس در تراشکاری فوق دقیق سیلیکون

Investigation of diamond tool wear mechanisms in the ultra-precision turning of silicon
- شرکت توسعه قوای محرکه
دینا

• بررسی، ارزیابی و امکان سنجی استفاده از روش تولید و جنس (داخلی) جدید برای تولید طبقی مثلثی خودرو دنا

Dinamotor powertrain company

Investigation, evaluation and feasibility of using new material (domestic) and manufacturing method to produce DENA Vehicle's Suspension Knuckle

Publications

مقالات



Diamond tool life and surface integrity during ultra-precision machining of single-crystal silicon, *Engineering Research Express*, 7 (4), 2025

Molecular dynamics investigation into the effect of nano-void size on cutting parameters in copper single crystal, *SADHANA*, 47 (1), 2022.

Analysis of the effect of indenter deformation and presence of voids on silicon nanoindentation using molecular dynamics simulation, *AUT Journal of Mechanical Engineering*, 2021.

Effect of nano clay, nano-graphene oxide and carbon nanotubes on the mechanical and tribological properties of crosslinked epoxy nanocomposite, *PLOS ONE*, 16(11), 2021

Improvement of Fatigue Life and Dynamic Strength of an Engine Mounting Bracket Using Experimental and Numerical Approaches, *Iranian Journal of Science and Technology, Transactions of Mechanical Engineering*, 2021.

Analysis of the Effects of Machining Loads on Online Values of Reaction Forces in Fixture Locating System, *Modares Mechanical Engineering*, 21 (9), 2021.

Modelling and Optimization of Surface Roughness and Specific Tool Wear in Milling Process, *Tehnički vjesnik*, 28 (5), 2021.

An investigation of the effect of bolt tightening stress on ultrasonic velocity in cylinder head and main bearing cap bolts of diesel engine, *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 43(8), 2021.

Design and fabrication of an online inductive sensor for identification of ferrous wear particles in engine oil, *Industrial Lubrication and Tribology*, 73(4), 2021.

Modeling of jamming phenomenon in fixture design application: an analytical, numerical, and experimental study, *Multibody System Dynamics*, 52, pp. 229–253, 2020.

Effects of tool rake angle and tool nose radius on surface integrity of ultraprecision diamond turned porous silicon, *Journal of Manufacturing Processes*, 37, 2019.

Analysis and Modeling of Damage and Crack Growth in Composite Workpieces under Machining Process using the Bond-Based Peridynamic Theory, *Modares Mechanical Engineering*, 2023.

An investigation on the effect of interference clearance of bushing on fatigue strength in triangle suspension, *The Journal of Engine Research*, 2022

An experimental and numerical study of tool geometry effect on microfracture characteristics in micro/nano machining of brittle porous structure, *Iranian Journal of Manufacturing Engineering*, 6 (5), pp. 47-52, 2019.

Material removal mechanism and surface integrity in ultraprecision cutting of porous titanium. *Precision Engineering*, 52, pp.356-369, 2018.

Nanometric-scale chip formation behavior of pure titanium in diamond turning. *The International Journal of Advanced Manufacturing Technology*, 95(1–4), pp.479–492, 2017.

Ultraprecision surface flattening of porous silicon by diamond turning. *Precision Engineering*, 49, pp.262–277, 2017.

Fundamental characteristics of material removal and surface formation in diamond turning of porous carbon. *International Journal of Additive and Subtractive Materials Manufacturing*, 1(1), p.23, 2017.

A New Approach for Predicting and Optimizing Weld Bead Geometry in GMAW. *International Journal of Mechanical Systems Science and Engineering*, 5(2), pp.138–142, 2011.

Loading Path Optimization of T-shape Tube Hydroforming Process. *Steel research international*, 81(9), pp.524–527, 2010.

Modeling and optimization of MAG welding for gas pipelines using regression analysis and simulated annealing algorithm. *Journal of Scientific & Industrial Research*, 69(4), pp.259–265, 2010.

Effects of pore size and cutting scale on machining of porous titanium, Proceedings of 5th Annual of International Conference on Materials Science, Metal and Manufacturing, Singapore, 2018.

Chip formation and surface integrity in diamond turning of porous titanium, Japan Society for Precision Engineering Spring Meeting, Tokyo, Japan, 2018.

Ultraprecision surface flattening of porous single-crystal silicon by diamond turning. In International Symposium on Micro-Nano Science and Technology. Tokyo, Japan, 2016.

Investigation on surface formation mechanism of porous carbon in diamond turning. In Proceedings of the 8th International Conference on Leading Edge Manufacturing in 21st Century, LEM 2015. Kyoto, Japan: Japan Society of Mechanical Engineers, pp. 4–9, 2015.

An Investigation into the Optimization of Loading Path in T-shape of Tube Hydroforming. In Proceeding of the 10th International Conference, NUMIFORM. Pohang, Korea pp. 1101–1108, 2010.

Activities

فعالیت ها

Member, The Japan Society for Precision Engineering
 Member, Iran's National Elites Foundation
 Member, The Academic Society of Iranians in Japan
 Member, The Society of Manufacturing Engineering of Iran
 Reviewer, International Journal of Machine Tools and Manufacture, Elsevier
 Reviewer, Journal of Manufacturing Processes, Elsevier
 Reviewer, International Journal of Mechanical Sciences, Elsevier
 Reviewer, Advances in Manufacturing, Springer
 Reviewer, Optics & Laser Technology Journal, Elsevier
 Reviewer, International Journal of Advanced Manufacturing Technology, Springer