JOSE M. GARCIA-BRAVO, Ph.D. **Curriculum Vitae**
U.S. Citizen

Associate Professor
School of Engineering Technology
Purdue Polytechnic Institute
Purdue University

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A. EDUCATION

Purdue University, Agricultural and Biological Engineering, West Lafayette, IN

Doctor of Philosophy, Engineering; **Fluid Power Specialization**, May 2011
Dissertation: "*Surface Effects on Start-up Friction and Their Application to Compact Gerotor Design*"
Advisors: Dr. Ashlie Martini and Dr. John Lumkes

Purdue University, Agricultural and Biological Engineering, West Lafayette, IN

Master of Science in Engineering, December 2006
Thesis: *"Self- propelled water hydraulic vehicle"*
Advisor: Dr. Gary W. Krutz

Purdue University, Foreign Languages and Literature, West Lafayette, IN
Master of Arts; Teaching of Spanish, December 2004

Universidad de los Andes, Bogotá, Colombia

Bachelor of Science, Mechanical Engineering, September 2002
Graduation Project: *"Design and construction of a compressed air engine"*
Advisor: Dr. Orlando Porras Rey

B. POSITIONS AND EMPLOYMENT

Associate Professor, *School of Engineering Technology, August 2021 to Present*

- Pursue funding and develop engagement activities related to fluid power education and STEM
- Conduct applied research related to the areas of fluid power, alternative energy and Industry 4.0.
- Prepare and deliver courses for the Mechanical and Manufacturing Engineering Technology programs.
- Mentor students in capstone courses sponsored by industry.

Assistant Professor*, School of Engineering Technology, January 2015 to July 2021*
PURDUE UNIVERSITY, Main Campus, West Lafayette, IN, USA

Assistant Professor*, School of Engineering Technology Statewide site Kokomo, September 2012 to December 2014*
PURDUE UNIVERSITY, Kokomo, IN, USA

- Prepared and deliver several courses for the Mechanical and Engineering and Engineering Technology programs.
- Engaged in activities conducing to improving student recruitment and external engagement.
- Conducted research on fluid power applications and pursued funding to support this research

***Research Assistant Professor**, Mechanical and Aerospace Engineering, May 2011 to August 2012*
ILLINOIS INSTITUTE OF TECHNOLOGY, Chicago, IL, USA

- Created a research and instructional laboratory for Fluid Power activities at IIT
- Developed and taught the course MMAE 415 - Aerospace Laboratory II
- Advised students participating in engineering competitions
- Obtained external and internal funding to support research activities in fluid power

***Graduate Research Assistant**, Agricultural and Biological Engineering, January 2005 - May 2011*
PURDUE UNIVERSITY, West Lafayette, IN, USA

C. ENTREPRENURIAL EXPERIENCE

FootRestore, LLC
Technical Lead and co-founder 2022 - 2023

- Subject matter expert (SME) in design of embedded actuators for treating patients with neuropathy and other nerve damage in lower peripheral limbs.
- Research hybrid therapy methods to alleviate work-related muscle strain induced by long work shifts in manufacture assembly plants or medical jobs.

D. INDUSTRY EXPERIENCE

***Engineering Intern**, Summer (2007)*
EATON Corporation, Eden Prairie, MN, USA

- Designed a SAPR brake for light duty track loaders
- Conducted performance tests of competitor's product
- Investigated interchangeability of bearing sub-assemblies for Geroler motors
- Completed EATON product training 1- Day course

***Co-Op Intern**, Fall Semester (2006)*
EATON Corporation, Eden Prairie, MN, USA

- Developed tests for qualification of GGP pumps for use with water-glycol
- Made dynamic analysis of pressure compensator response time in axial piston pumps
- Conducted FEA structural analysis of a retaining ring for a reversible pump

E. TEACHING EXPERIENCE

***Instructor,** Mechanical Engineering Technology, Fall 2012 to the present*
PURDUE UNIVERSITY, Statewide location Kokomo and West Lafayette, IN, USA

- MFET 351 Mixed Reality Smart Manufacturing Applications & Design (West Lafayette)
- MET 436 Pneumatic Motion Control (West Lafayette)
- MET 432 Hydraulic Motion Control Systems (West Lafayette)
- MET 230 Fluid Power (West Lafayette)
- MET 334 Advanced Fluid Power (West Lafayette)
- MET 311 Experimental Strength of Materials (West Lafayette)
- MET 581-4 Digital Fabrication (West Lafayette)
- MET 143 Materials and Processes I (Purdue Polytechnic Kokomo)
- MET 144 Materials and Processes II (Purdue Polytechnic Kokomo)
- MET 111 Applied Statics (Purdue Polytechnic Kokomo)
- MET 245 Manufacturing Processes (Purdue Polytechnic Kokomo)
- MET 162 Computational Analysis Tools for MET (Purdue Polytechnic Kokomo)

- MET 382 Controls and Instrumentation for Automation (Purdue Polytechnic Kokomo)
- MET 211 Applied Strength of Materials (Purdue Polytechnic Kokomo)
- MET 490 Design of Robotic Systems (Purdue Polytechnic Kokomo)
- TECH 496 Senior Design Proposal (Purdue Polytechnic Kokomo)
- TECH 497 Senior Design Project (Purdue Polytechnic Kokomo)

Visiting Professor, *UNIVERSIDAD DE LOS ANDES, Bogotá, COLOMBIA*

- IMEC 4219 *Modeling and analysis of fluid power systems,* **Graduate Course**, this course covered the main aspects of modeling and analysis of hydraulic and pneumatic systems and describes computational tools to model such systems. *Summer 2016*.
- IMEC 4520 *Modeling and analysis of fluid power systems,* **Graduate Course**, an introduction into modeling, design and electronic control of fluid power components and systems. Modeling techniques based on physical laws and measured performance characteristics. *Summer 2014*.

Visiting Professor, *UTEC, UNIVERSIDAD DE INGNIERIA Y TECNOLOGY, Lima, PERU*

- GE 4418 *Modeling and analysis of fluid power systems,* **Undergraduate Course**, this course is targeted to students interested in the basics of fluid power, and the actuation of mechanisms for robotic manipulators, automation and mechatronics, Summer 2022
- GE *Pneumatic Control Systems*, **Undergraduate Course.** The application of pneumatic motion control systems to industrial motion control and robotics is studied. Circuit design with control logic of both fluid and electronic types is stressed, as applied to pneumatic point-to-point and proportional controls. Spring 2023.

Instructor, *Aerospace Engineering, Spring 2012*
ILLINOIS INSTITUTE OF TECHNOLOGY, Chicago, IL, USA

- MMAE 415 Aerospace Laboratory II, Main topics in data acquisition and instrumentation for engineering systems. Developed syllabus for the course

F. PROPOSALS AND FUNDING (ONLY AWARDED OR PENDING PROPOSALS LISTED)

Funded:

1. Title: Portable Seawater Pulse Flow RO System with Feed Flow Reversal
   Agency: Office of Naval Research
   Duration: January 1, 2025 – December 31, 2026
   Total award: $487,693.01
   Candidate's role: (Co-PI) (35%)

2. Title: Proposal for development of Controls, Electronics, an DAQ curricular material
   Agency: **Industry,** National Fluid Power Association
   Duration: November 18, 2022 – February 1, 2025
   Total award: $20,000.00
   Candidate's role: (PI) (50%)

3. Title: Batch Counterflow Reverse Osmosis
   Agency: Bureau of Reclamation
   Duration: September 20, 2023 – September 20, 2025
   Total award: $249,999.54
   Candidate's role: (co-PI) (25%)

4. Title: Reciprocating Piston Batch Reverse Osmosis: Pushing the limits of efficiency and fouling resistance
   Agency: National Alliance for Water Innovation (NAWI), DOE
   Duration: April 4, 2023 – March 31, 2025
   Total award: $344,847.00
   Candidate's role: (co-PI) (25%)

5. Title: Roadmapping Potential Future Collaboration with Hitachi America Ltd
   Agency: **Industry,** Hitachi America Ltd.
   Duration: February 27, 2023 – March 31, 2023
   Total award: $19,999.94
   Candidate's role: (co-PI) (25%)

6. Title: Research Initiation: Developing Spatial Visualization and Understanding of Complex Systems via Interactive Mixed Reality Modules
   Agency: National Science Foundation
   Duration: September 1, 2022 – August 31, 2024
   Total award: $199,996.04
   Candidate's role: (co-PI) (5%)

7. Title: NSF REU: Applied Energy Research for Commercialization
   Agency: National Science Foundation
   Duration: March 1, 2021 – April 30, 2025
   Total award: $523,750.21
   Candidate's role: (co-PI) (12.5%)

8. Title: Mixed Reality for Fluid Power Education.
   Agency: Internal, Maha Fluid Power Endowment
   Duration: August 15, 2020 - July 15, 2024
   Total award: $90,000.00
   Candidate's role: (PI) (33%)

9. Title: Engineer of The Future: Preparing the Next Generation Smart/ Intelligent Manufacturing Workforce
   Agency: Clean Energy Smart Mfg. Innov. Inst. (CESMII)
   Duration: September 2021 – August 2022
   Total award: $308,377.17
   Candidate's role: (Co-PI) (15%)

10. Title: EH^2 NSF National I-Corps
    Agency: National Science Foundation
    Duration: July 1, 2019 – November 30, 2019
    Total award: $50,000.00
    Candidate's role: (PI) (100%)

11. Title: Lateral Micro-drilling Autonomous Robotic System
    Agency: **Industry,** Indiana Economic Development Corporation
    Duration: August 1, 2019 – December 31, 2022
    Total award: $ 409,258.93
    Candidate's role: (PI) (34%)

12. Title: Lateral Micro-drilling Autonomous Robotic System
    Agency: **Industry,** Pioneer Oil Company
    Duration: August 1, 2019 – December 31, 2022
    Total award: $ 144,642.00
    Candidate's role: (PI) (34%)

13. Title: Embedded Sensors and Actuators for Structural Health Monitoring using Enhanced Materials in Additive Manufacturing
    Agency: Naval Surface Warfare Center, Indian Head Division
    Duration: April 1, 2019 – August 31, 2022
    Total award: $ 240,000.00
    Candidate's role: (PI) (34%)

14. Title: The Arequipa Nexus Institute for Food, Water, Energy, and the Environment
    Agency: Universidad Nacional de San Agustin
    Duration: January 1, 2018 - December 31, 2020.
    Total Award: $163,731.56
    Candidate's role: (Co-PI) (20%)

15. Title: Conveyor Belt Sensing System Proposal One
    Agency: **Industry**, Infosys Limited
    Duration: August 1, 2018 – July 31, 2019
    Total award: $ 186,621.91
    Candidate's role: (Co-PI) (50%)

16. Title: Energy Systems Technology Program of Study: A Platform for Transformation
    Agency: Purdue Polytechnic Institute
    Duration: May 2017 - April 2018.
    Total Award: $156,000.00
    Candidate's role: (Co-PI) (8.3%)

17. Title: Energy Certificates: Pathway for the Integration of the MET Curriculum
    Agency: Purdue Polytechnic Institute
    Duration: May 2018 - August 2018
    Total Award: $76,800.00
    Candidate's role: (PI) (50%)

18. Title: Learning in Context with Horz. & Vert. Int. Curriculum in a Learning Factory (LF)
    Agency: Purdue Polytechnic Institute
    Duration: January 2018 - December 2019.
    Total Award: $104,652.00
    Candidate's role: (Co-PI) (12.5%)

19. Title: Project based robotics learning for ECET, MET, ET and TLI majors
    Agency: Purdue Polytechnic Institute
    Duration: May 18, 2015 - December 12, 2019
    Total Award: $34,500.00
    Candidate's role: (Co-PI) (100%)

20. A Smart Learning Factory for Enhanced Instruction and Learning
    Agency: Purdue office of the Provost
    Duration: December 2017 - November 2018.
    Total Award: $103,230.00
    Candidate's role: (Co-PI) (16.7%)

21. Title: EH^2 Range and Battery Life Extender for Medium and Heavy Duty Electric Vehicles.
    Agency: Purdue Polytechnic Institute
    Duration: August 1, 2017 - August 1, 2018
    Total award: $26,500.00
    Candidate's role: (PI) (50%)

22. Title: Flexible 3-D Printed Sensors and Actuators
    Agency: The Vibration Institute
    Duration: June 2017 – December 2017
    Total award: $ 1,000.00
    Candidate's role: (PI) (50%)

23. Title: Premium Sail Grant.
    Agency: Purdue, Office of International programs
    Duration: August 15, 2017 - May 15, 2018
    Total award: $12,000.00
    Candidate's role: (PI) (50%)

24. Title: Premium Sail Grant.
    Agency: Purdue, Office of International programs
    Duration: August 15, 2016 - May 15, 2017
    Total award: $12,000.00
    Candidate's role: (PI) (50%)

25. Title: Portable and reconfigurable hydraulics and fluid mechanics demonstrator and curriculum for STEM education.
    Agency: Purdue Maha Fluid Power Endowment
    Duration: August 15, 2015 - May 15, 2017
    Total award: $85,489.00
    Candidate's role: (PI) (50%)

26. Title: Travel size fluid power demonstrator for engagement and outreach activities
    Agency: National Fluid Power Association
    Duration: August 2015 - May 2016
    Total award: $ 5,000
    Candidate's role: (PI) (100%)

27. Title: Fluid Power Challenge
    Agency: Center for Compact and Efficient Fluid Power
    Duration: July 2015 - May 2016
    Total award: $ 7,500
    Candidate's role: (PI) (100%)

28. Title: Project based robotics learning for ECET, MET, ET and TLI majors.
    Agency: Internal, Purdue Polytechnic Institute
    Duration: May 18, 2015- May 2018
    Total award: $34,500.00
    Candidate's role: (PI) (100%)

29. Title: Contamination test on digital valves
    Agency: **Industry**, Sun Hydraulics
    Duration: February, 2016 - May 2016
    Total award: $1,000.00
    Candidate's role: (PI) (100%)

30. Title: Application of Switching Valves to Improve Reliability of Fueldraulic Systems
    Agency: **Industry,** Dynsan, LLC – SBIR Phase II (NAVY)
    Duration: September, 2013 - September 21, 2015
    Total award: $100,000.00
    Candidate's role: (PI) (100%)

31. Title: Testing the Improvements in Contamination Control of Using a VVR Hydraulic System
    Agency: **Industry**, Smart Reservoir, Sobacor
    Duration: October, 2013 - April 30, 2014
    Total award: $1,500.00
    Candidate's role: (PI) (100%)

32. Title: Application of Switching Valves to Improve Reliability of Fueldraulic Systems
    Agency: **Industry**, Dynsan, LLC – SBIR Phase I Option (NAVY)
    Duration: April, 2012 - June 30, 2013
    Total award: $ 21,114
    Candidate's role: (PI) (100%)

33. Title: Continuously Variable Hydraulic Transmission for a Small Wind Power Drive Train Simulator
    Agency: National Fluid Power Association
    Duration: January, 2013 - May 31, 2014
    Total award: $ 5,000
    Candidate's role: (PI) (100%)

34. Title: Application of Switching Valves to Improve Reliability of Fueldraulic Systems
    Agency: **Industry,** Dynsan, LLC – SBIR Phase I (NAVY)
    Duration: September, 2012 - June 30, 2013
    Total award: $ 18,000
    Candidate's role: (PI) (100%)

35. Title: Water hydraulic transmission for wind power generator drive-trains
    Agency: Internal, IIT Wagner Institute for Sustainable Energy Research
    Duration: March 2012 - Sept 2013
    Total Award: $ 25,000
    Candidate's role: (Co-PI) (50%)

36. Title: Multiple configuration hybrid hydraulic transmission demonstrator
    Agency: National Fluid Power Association
    Duration: Dec 2011- August 2012
    Total Award: $ 5,000
    Candidate's Role: (PI) (100%)

37. Title: Tribological characterization of aerospace hydraulic pumps for use with water as fluid
    Agency: The Illinois ─ NASA space grant consortium.
    Duration: August 2011- May 2012
    Total Award: $ 10,000
    Candidate's Role: (PI) (100%)

G. PUBLICATIONS

Full articles in refereed journals

1. Beni, A. N., Alnajdi, S. M., **Garcia-Bravo, J**., & Warsinger, D. M. (2024). Semi-batch and batch low-salt-rejection reverse osmosis for brine concentration. *Desalination*, *583*, 117670. https://doi.org/10.1016/j.desal.2024.117670

2. Bosman, L., Soto, E., Ostanek, J., **Garcia-Bravo, J**., Lee, S., & Leon-Salas, W. (2024). NSF REU entrepreneurially minded applied energy program evaluation: traditional delivery versus alternative delivery (implemented during COVID-19). *Journal of Applied Research in Higher Education*, *16*(2), 483-496. https://doi.org/10.1108/JARHE-01-2023-0047

3. Esquivel-Puentes, H. A., Vacca, A., Pulletikurthi, V., Doosttalab, A., **Garcia-Bravo, J**., Warsinger, D. M., & Castillo, L. (2023). On the design and power output response of hydraulic wind turbines. *Energy Conversion and Management*, *293*, 117425. https://doi.org/10.1016/j.enconman.2023.117425

4. Fan, J., Deneke, N., Xu, S., Newell, B., **Garcia**, **J**., Davis, C., Wu, W., Voyles, R., Nawrocki, R., (2022). Electric poling-assisted additive manufacturing technique for piezoelectric active poly(vinylidene fluoride) films: Towards fully three-dimensional printed functional materials. Additive Manufacturing, Volume 60, Part A, https://doi.org/10.1016/j.addma.2022.103248.

5. Fan, J., Newell, B., **Garcia, J**., Voyles, R.M. and Nawrocki, R.A. (2022), Effect of Additive Manufacturing on β-Phase Poly(Vinylidene Fluoride)-Based Capacitive Temperature Sensors. Adv. Eng. Mater., 24: 2200485. https://doi.org/10.1002/adem.202200485.

6. Hernandez, J., Maynard, C., Gonzalez, D., Viz, M., O'Brien, C., **Garcia, J**., Newell, B., Tallman, T., (2022) The development and characterization of carbon nanofiber/polylactic acid filament for additively manufactured piezoresistive sensors, Additive Manufacturing, Volume 58, https://doi.org/10.1016/j.addma.2022.102948.

7. Chamorro J., Vallejo, L., Maynard, C., Guevara, S., Solorio, J., Soto, N., Vikas K., Bhate, U., Kumar R., **Garcia, J**., Newell, B., (2022). Health monitoring of a conveyor belt system using machine vision and real-time sensor data, CIRP Journal of Manufacturing Science and Technology, Volume 38, Pages 38-50, https://doi.org/10.1016/j.cirpj.2022.03.013.

8. Azzam, I., Pate, K., **Garcia-Bravo, J.**, & Breidi, F. (2022). Energy Savings in Hydraulic Hybrid Transmissions through Digital Hydraulics Technology. Energies, 15(4), 1348. https://doi.org/10.3390/en15041348

9. Brodersen, K. M., Bywater, E. A., Lanter, A. M., Schennum, H. H., Furia, K. N., Sheth, M. K., .**Garcia., Jose** & Warsinger, D. M. (2022). Direct-drive ocean wave-powered batch reverse osmosis. Desalination, 523, 115393. https://doi.org/10.1016/j.desal.2021.115393

10. Gonzalez, D., **Garcia, J**., Voyles, R. M., Nawrocki, R. A., & Newell, B. (2021). Characterization of 3D printed pneumatic soft actuator. Sensors and Actuators A: Physical, 113337. https://doi.org/10.1016/j.sna.2021.113337

11. Malm, M., Liceaga, A. M., Martin-Gonzalez, S., Jones, O. G., **Garcia-Bravo, J. M**., & Kaplan, I. (2021). Development of Chitosan Films from Edible Crickets and Their Performance as a Bio-Based Food Packaging Material. Polysaccharides, 2(4), 744-758. https://doi.org/10.3390/polysaccharides2040045

12. C. Maynard, **J. Garcia**, A. Lucietto, W. Hutzel, B. Newell. (2021). Experiential Learning in the Energy Based Classroom. International Journal of Engineering Pedagogy 11, (6). https://doi.org/10.3991/ijep.v11i6.16539

13. Bosman, L., & **Garcia-Bravo, J**. (2021). Lessons Learned: Research Benefits and Beyond Associated with Participating in the NSF I-Corps™ Customer Discovery Program. Technology & Innovation, 22(1), 41-54. https://doi.org/10.21300/21.4.2021.5

14. Cordoba, S., Das, A., Leon, J., **Garcia, J. M.**, & Warsinger, D. M. (2021). Double-acting batch reverse osmosis configuration for best-in-class efficiency and low downtime. Desalination, 506, 114959. https://doi.org/10.1016/j.desal.2021.114959

15. Liu, Y., Xiang, Z., **Garcia, J.**, Newell, B., Le, M., & Ducharne, B. (2021, April). JG-04 Low frequency Induction heating of a ferromagnetic catheter: feasibility. In INTERMAG 2021. https://doi.org/10.1109/INTERMAG42984.2021.9579639

16. J Zorro-Mendoza, Camilo., Leon-Quiroga, Jorge., Newell, Brittany and **Garcia, Jose** (2021) Electro-Hydraulic Excavator 2.2: Teaching Fundamental Concepts In Fluid Power., Technology and Engineering Teacher, 80, (5). https://www.iteea.org/Publications/Journals/TET/186170.aspx

17. Guevara, S., Singh, Y., Shores, A., Mercado, J., Postigo, M., **Garcia, J**., & Newell, B. (2020). Development of a Pilot Smart Irrigation System for Peruvian Highlands. Journal of Contemporary Water Research & Education, 171(1), 49-62. https://doi.org/10.1111/j.1936-704X.2020.3344.x

18. Urbizo-Reyes, U., San Martin-González, M. F., **Garcia-Bravo, J**., & Liceaga, A. M. (2020). Development of chia seed (Salvia hispanica) mucilage films plasticized with polyol mixtures: Mechanical and barrier properties. International Journal of Biological Macromolecules, 163, 854-864. https://doi.org/10.1016/j.ijbiomac.2020.07.023

19. French, R. M., Choudhuri, R., **Garcia-Bravo, J**., & Petty, J. (2020). Experimental investigation of fractional order behavior in an oscillating disk. Fractional Calculus and Applied Analysis, 23(5), 1532-1544. https://doi.org/10.1515/fca-2020-0076

20. Durango-Cogollo, M., **Garcia-Bravo, J**., Newell, B., & Gonzalez-Mancera, A. (2020). CFD modeling of hydrocyclones—A study of efficiency of hydrodynamic reservoirs. Fluids, 5(3), 118. https://doi.org/10.3390/fluids5030118

21. Kouakeuo, S. N., Deffo, Y. T., Ducharne, B., Morel, L., Raulet, M. A., Tsafack, P., **Garcia-Bravo, J.,** & Newell, B. (2020). Embedded printed magnetic needle probes sensor for the real-time control of the local induction state through a laminated magnetic core. Journal of Magnetism and Magnetic Materials, 505, 166767. https://doi.org/10.1016/j.jmmm.2020.166767

22. Roggenburg, M., Esquivel-Puentes, H. A., Vacca, A., Evans, H. B., **Garcia-Bravo, J. M**., Warsinger, D. M., & Castillo, L. (2020). Techno-economic analysis of a hydraulic transmission for floating offshore wind turbines. Renewable Energy, 153, 1194-1204. https://doi.org/10.1016/j.renene.2020.02.060

23. Gutierrez, D. A., **Garcia-Bravo, J. M**., Reid, A. L., Newell, B. A., McPherson, P., & French, M. (2020). Design and Modelling of a 90-Degree Ball Valve with a Linear Pressure Drop. International Journal of Fluid Power, 1-26. https://doi.org/10.13052/ijfp1439-9776.2111

24. Leon-Quiroga, J., Newell, B., Krishnamurthy, M., Gonzalez-Mancera, A., & **Garcia-Bravo, J**. (2020). Energy efficiency comparison of hydraulic accumulators and ultracapacitors. Energies, 13(7), 1632. https://doi.org/10.3390/en13071632

25. Vallejo-Melgarejo, L. D., Reifenberger, R. G., Newell, B. A., Narváez-Tovar, C. A., & **Garcia-Bravo, J. M.** (2019). Characterization of 3D-printed lenses and diffraction gratings made by DLP additive manufacturing. Rapid Prototyping Journal. https://doi/10.1108/RPJ-03-2019-0074

26. Gonzalez, D., **Garcia, J**., & Newell, B. (2019). Electromechanical characterization of a 3D printed dielectric material for dielectric electroactive polymer actuators. Sensors and Actuators A: Physical, 297, 111565. https://doi.org/10.1016/j.sna.2019.111565

27. Jo, W., Hoashi, Y., Aguilar, L. L. P., Postigo-Malaga, M., **Garcia-Bravo, J. M**., & Min, B. C. (2019). A low-cost and small USV platform for water quality monitoring. HardwareX, 6, e00076. https://doi.org/10.1016/j.ohx.2019.e00076

28. Urbizo-Reyes, U., San Martin-González, M. F., **Garcia-Bravo, J**., Malo, A. L., & Liceaga, A. M. (2019). Physicochemical characteristics of chia seed (Salvia hispanica) protein hydrolysates produced using ultrasonication followed by microwave-assisted hydrolysis. Food Hydrocolloids, 105187. https://doi.org/10.1016/j.foodhyd.2019.105187

29. Athinarayanan, R., Newell, B., **Garcia, J**., Ostanek, J., Diao, X., Sundararajan, R., Richards, G. (2019). Learning in Context with Horizontally & Vertically Integrated Curriculum in a Smart Learning Factory. Procedia Manufacturing, 31, 91-96. https://doi.org/10.1016/j.promfg.2019.03.015

30. Gomez, I., Gonzalez-Mancera, A., Newell, B., & **Garcia-Bravo, J**., (2019). Analysis of the Design of a Poppet Valve by Transitory Simulation. Energies 2019, 12(5), 889. https://doi.org/10.3390/en12050889

31. Toet, G., Johnson, J., Montague, J., Torres, K., & **Garcia-Bravo, J.** (2019). The Determination of the Theoretical Stroke Volume of Hydrostatic Positive Displacement Pumps and Motors from Volumetric Measurements. Energies, 12(3), 415. https://doi.org/10.3390/en12030415

32. Solorio, J. A., **Garcia Bravo, J. M**., & Newell, B. A. (2018). Voice Activated Semi-Autonomous Vehicle Using off the Shelf Home Automation Hardware. IEEE Internet of Things Journal, 5(6), 5046–5054. https://doi.org/10.1109/JIOT.2018.2854591

33. Newell, B. A., **Garcia Bravo, J. M**., & Krutz, G. W. (2018). Dielectric Electroactive Polymers with Chemical Pre-Strain: An Experimentally Validated Model. MDPI Actuators, 7(3), 50. https://doi.org/10.3390/act7030050

34. **Garcia-Bravo, J**., Ayala-Garcia, I., & Cepeda-Aguilar‡, J., (2017). "Variable Ratio Hydrostatic Transmission Simulator for Optimal Wind Power Drivetrains," International Journal of Rotating Machinery, vol. 2017, Article ID 5651736, 9 pages. http://doi:10.1155/2017/5651736

35. Niu, G., Shang, F., Krishnamurthy, M., **Garcia-Bravo, J.** (2017). Design and Analysis of an Electric Hydraulic Hybrid Powertrain in Electric Vehicles. IEEE Transactions on Transportation Electrification, 3(1), 48-57. https://doi.org/10.1109/TTE.2016.2628792

36. **Garcia, J.,** & Martini, A. (2012). Measured and Predicted Static Friction for Real Rough Surfaces in Point Contact. Journal of Tribology, 134(3), 031501. http://doi.org/10.1115/1.4006917

37. Michael, P. W., **Garcia, J,** Bair, S. S., Devlin, M. T., & Martini, A. (2012). Lubricant Chemistry and Rheology Effects on Hydraulic Motor Starting Efficiency. Tribology Transactions, 55(5), 549–557. http://doi.org/10.1080/10402004.2012.680208

38. **Garcia, J.,** Lumkes, J., Heckaman, B., & Martini, A. (2011). Viscosity Dependence of Static Friction in Lubricated Metallic Line Contacts. Tribology Transactions, 54(3), 333–340. http://doi.org/10.1080/10402004.2010.542278

International Standards

1. International Organization for Standardization, (2016). **Garcia, J., (Chair of Sub-Committee and editor)** "ISO 4409 Hydraulic fluid power — Positive- displacement pumps, motors and integral transmissions — Methods of testing and presenting basic steady state performance" 2015 Revision (CD Ballot 4409-2 Approved for FDIS July, 2018).

Conference or symposium proceedings

Peer Revised

1. Jabbour, H., Azzam, I., Lago, I. E., Breidi, F., & **Garcia, J. M**. (2024, June). Development of Design, Control, and Data Acquisition Modules for Fluid Power Education. In *2024 ASEE Annual Conference & Exposition*.

2. Azzam, I., Breidi, F., Aqlan, F., **Garcia, J**., & Asunda, P. (2024, June). Mixed Reality as a Teaching Tool for Improving Spatial Visualization in Engineering Students. ASEE Conferences.

3. Durango, M, & **Garcia-Bravo, J**. "Smooth Particle Hydrodynamic As a Computational Model for the Design and Analysis of Hydraulic Components." *Proceedings of the ASME/BATH 2023 Symposium on Fluid Power and Motion Control*. *ASME/BATH 2023 Symposium on Fluid Power and Motion Control*. Sarasota, Florida, USA. October 16–18, 2023. V001T01A057. ASME. https://doi.org/10.1115/FPMC2023-111887

4. Solorio, JA, & **Garcia-Bravo, JM**. "Machine Learning for Fault Diagnosis and Operation Mode Detection in Hydraulic Cylinders." *Proceedings of the ASME/BATH 2023 Symposium on Fluid Power and Motion Control*. *ASME/BATH 2023 Symposium on Fluid Power and Motion Control*. Sarasota, Florida, USA. October 16–18, 2023. V001T01A059. ASME. https://doi.org/10.1115/FPMC2023-111893

5. Esquivel-Puentes, A., Vacca, A., Chamorro, L., Siguenza, D., Van Zante, Z., **Garcia-Bravo, J.**, Warsinger, D., Castillo, L., (2022). On the power fluctuations of wind turbines fitted with a hydrostatic transmission. Bulletin of The American Physical Society.

6. Azzam, I., Dhar, S., Patil, V., Maiti, D., Asunda, P., **Garcia Bravo, J**, Breidi, F. (2022) Gerotor Pump Simulation Modules for Enhancing Fluid Power Education. BATH/ASME 2022 Symposium on Fluid Power and Motion Control. Bath, UK. September 14–16, 2022. V001T01A004. ASME. https://doi.org/10.1115/FPMC2022-88469

7. Rodriguez, D, Maynard, C, Hernandez, J, O'Brien, C, Tallman, TN, Newell, B, & **Garcia, J**. (2022) 3D Printed Flexible Dielectric Electroactive Polymer Sensors. Proceedings of the ASME 2022 Conference on Smart Materials, Adaptive Structures and Intelligent Systems. ASME 2022 Conference on Smart Materials, Adaptive Structures and Intelligent Systems. Dearborn, Michigan, USA. September 12–14, 2022. V001T01A010. ASME. https://doi.org/10.1115/SMASIS2022-91072

8. Bosman, L., Jarr, K., Kotla, B., Ostanek, J., **Garcia, J**., Leon-Salas, W., & Lee, S. (2022, August). Growing Entrepreneurially Minded Undergraduate Researchers with New Product Development in Applied Energy. In 2022 ASEE Annual Conference & Exposition.

9. Durango, M., **Garcia, J**., Borders, E., Newell, B., & Breidi, F. (2022, August). Mixed Reality for fluid power instruction. In 2022 ASEE Annual Conference & Exposition.

10. Johnson, J., Montague, J., & **Garcia-Bravo, J**. (2021, October). Exhaustive Regressor Search (XRS) for Creating Models of Hydraulic Pumps and Motors. In Fluid Power Systems Technology (Vol. 85239, p. V001T01A059). American Society of Mechanical Engineers.

11. Gonzalez Rodriguez, D., **Garcia, J**., & Newell, B. (2021, September). Fully 3D Printed Soft Actuator With Embedded Sensing. In Smart Materials, Adaptive Structures and Intelligent Systems (Vol. 85499, p. V001T07A017). American Society of Mechanical Engineers.

12. Fan, J., Newell, B., **Garcia, J.**, Voyles, R. M., & Nawrocki, R. A. (2021, September). Contact-Poling Enhanced, Fully 3D Printed PVdF Pressure Sensors: Towards 3D Printed Functional Materials. In Smart Materials, Adaptive Structures and Intelligent Systems (Vol. 85499, p. V001T02A007). American Society of Mechanical Engineers.

13. Soto, N., **Garcia, J**., & Newell, B. (2021, September). Development of Torque Sensors Using Additive Manufacturing. In Smart Materials, Adaptive Structures and Intelligent Systems (Vol. 85499, p. V001T06A009). American Society of Mechanical Engineers.

14. Maynard, C., Hernandez, J., Gonzalez, D., Viz, M., O'Brien, C., Tallman, T. N., **Garcia, J.**, & Newell, B. (2021, September). Functionalized Thermoplastic Polyurethane for FDM Printing of Piezoresistive Sensors. In Smart Materials, Adaptive Structures and Intelligent Systems (Vol. 85499, p. V001T08A008). American Society of Mechanical Engineers.

15. Pate, K. S., **Garcia, J. M**., & Breidi, F. (2021, July). Enhancing the Learning Experience of Engineering Students Through Digitized Interactive Tools. In 2021 ASEE Virtual Annual Conference Content Access.

16. Johnson, J. L., **Garcia-Bravo, J**., Panwar, P., & Michael, P. (2021, June). Strategies to Minimize Data Sample Size for Regression-Based Pump/Motor Models. In Scandinavian International Conference on Fluid Power (pp. 134-149).

17. Michael, P., & **Garcia-Bravo, J**. (2021, June). The Determination of Hydraulic Motor Displacement. In Scandinavian International Conference on Fluid Power (pp. 188-205).

18. Hernandez, J. A., Maynard, C. M., Gonzalez, D., Viz, M., **Garcia, J**., Newell, B., & Tallman, T. N. (2021, March). On the performance of additively manufactured CNF/PLA piezoresistive strain sensors. In Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2021 (Vol. 11591, p. 115910B). International Society for Optics and Photonics.

19. Esquivel-Puentes, H. A., Vacca, A., Chamorro, L. P., **Garcia-Bravo, J**., Bocanegra-Evans, H., Doosttalab, A., & Castillo, L. (2020). Energy harvesting using horizontal axis wind turbines with hydrostatic transmission. In APS Division of Fluid Dynamics Meeting Abstracts (pp. G03-012).

20. Lucietto, A. M., Moss, J. D., **Garcia, J. M**., & Lumkes, J. H. (2021). Exploring Young Women's Interest in Fluid Power with Workshop Experiences. In Exploring Young Women's Interest in Fluid Power with Workshop Experiences.

21. Ducharne, B., Kouakeuo, H., Deffo, Y., Morel, L., Raulet, M., Tsafack, P., **Garcia, J.,** & Newell, B. (2020, November). Printed magnetic needle probe sensor (N5-13). In The 2020 Magnetism and Magnetic Materials Conference-MMM 2020 Virtual conference.

22. Mamer, T., **Garcia, J**., Leon-Salas, W. D., Voyles, R., Nawrocki, R. A., Yokota, T., & Newell, B. (2020, September). Production of 3D Printed Flexible Strain Sensors. In Smart Materials, Adaptive Structures and Intelligent Systems (Vol. 84027, p. V001T01A003). American Society of Mechanical Engineers.

23. Maynard, C. M., Hernandez, J. A., Doak, A., Mardikis, B., Viz, M., Newell, B., **Garcia, J.,** & Tallman, T. N. (2020, September). A Computational Study of Strain Sensing via 3D-Printed CNF-Modified PLA Strain Gauges. In Smart Materials, Adaptive Structures and Intelligent Systems (Vol. 84027, p. V001T05A002). American Society of Mechanical Engineers.

24. Torres, S., San Martin, J., Newell, B., & **Garcia, J**. (2020, September). Simulation and Validation of Fully 3D Printed Soft Actuators. In Smart Materials, Adaptive Structures and Intelligent Systems (Vol. 84027, p. V001T03A004). American Society of Mechanical Engineers.

25. Gonzalez Rodriguez, D., **Garcia, J**., Ducharne, B., Voyles, R., Nawrocki, R. A., & Newell, B. (2020, September). 3D Printing of Flexible Sensing Actuators. In Smart Materials, Adaptive Structures and Intelligent Systems (Vol. 84027, p. V001T01A004). American Society of Mechanical Engineers.

26. Maynard, C. M., Hernandez, J. A., Gonzalez, D., Tallman, T. N., **Garcia, J**., & Newell, B. (2020, April). The effect of extrusion temperature and cycles on electrical resistivity in carbon nanofiber-modified PLA filament for multi-functional additive manufacturing. In Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2020 (Vol. 11379, p. 113791O). International Society for Optics and Photonics.

27. Fan, J., Gonzalez, D., **Garcia, J**., Newell, B., & Nawrocki, R. A. (2020, September). The Effects of Additive Manufacturing and Electric Poling Techniques on PVdF Thin Films: Towards 3D Printed Functional Materials. In Smart Materials, Adaptive Structures and Intelligent Systems (Vol. 84027, p. V001T04A010). American Society of Mechanical Engineers.

28. Esquivel-Puentes, H. A., Vacca, A., Chamorro, L. P., **Garcia-Bravo, J**., Bocanegra-Evans, H., Warsinger, D., & Castillo, L. (2019). Experimental comparison of HAWTs with hydrostatic and regular transmissions. Bulletin of the American Physical Society.

29. Costas, A., Newell, B., & **Garcia, J**. Production and Characterization of a Fully 3D Printed Flexible Bellows Actuator. In ASME 2019 Conference on Smart Materials, Adaptive Structures and Intelligent Systems. American Society of Mechanical Engineers Digital Collection.

30. Gonzalez, D., **Garcia, J**., & Newell, B. (2019, September). 3D Printed Segmented Flexible Pneumatic Actuator. In ASME 2019 Conference on Smart Materials, Adaptive Structures and Intelligent Systems. American Society of Mechanical Engineers Digital Collection.

31. **Garcia, J. M**., & Newell, B. Making Connections Between Applications and Theory Through Energy in Fluid Power. In 2019 ASEE Annual Conference and Exposition Proceedings. ASEE Conferences

32. Gonzalez, D., Noble, L., Newell, B. A., Mamer, T., & **Garcia Bravo, J. M**. (2018). 3-D printing of dielectric electroactive polymer actuators and characterization of dielectric flexible materials. In ASME 2018 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2018 (Vol. 2, p. V002T02A006). New York, USA: ASME. https://doi.org/10.1115/SMASIS2018-8011

33. Mamer, T., Gonzales, D., Newell, B. A., **Garcia Bravo, J. M**., Leon-Salas, D., Vindrola, A., & Zigon, T. (2018). Flexible 3-D printed circuits and sensors. In ASME 2018 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2018 (Vol. 2, p. V002T02A001). New York, USA: ASME. https://doi.org/10.1115/SMASIS2018-7952

34. Melgarejo, L. D., Reifenberger, R. G., **Garcia Bravo, J. M**., & Newell, B. A. (2018). Manufacture of lenses and diffraction gratings using DLP as an additive manufacturing technology. In ASME 2018 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2018 (Vol. 2). New York, USA: ASME. https://doi.org/10.1115/SMASIS2018-7963

35. Romo-Estrada, J. A., Newell, B. A., & **Garcia Bravo, J. M**. (2018). Mechanical iris stretcher for electroactive polymers. In ASME 2018 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2018 (Vol. 2, p. V002T02A002). New York, USA: ASME. https://doi.org/10.1115/SMASIS2018-7964

36. Newell, B. A., **Garcia Bravo, J. M**., & Vindrola, A. (2018). Prediction of dielectric electroactive polymer material functionality. In ASME 2018 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2018 (Vol. 2, p. V002T02A011). New York, USA: ASME. https://doi.org/10.1115/SMASIS2018-8166

37. Costas, A., Davis, D. E., Niu, Y., Dabiri, S., **Garcia Bravo, J. M**., & Newell, B. A. (2018). Design, development and characterization of linear, soft actuators via additive manufacturing. In ASME 2018 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2018 (Vol. 1, p. V001T01A018). New York, USA: ASME. https://doi.org/10.1115/SMASIS2018-8097

38. Maynard, C., Newell, B. A., Lucietto, A., Hutzel, W. J., & **Garcia Bravo, J. M**. (2018). Applied Learning within Thermodynamics: A Perspective on Energy Concepts. In IEEE Frontiers in Education Conference. New Jersey, USA: IEEE.

39. Leon, J., **Garcia, J**., Gonzalez, A. (2017)., A Fuzzy Logic Controller for a Hydrostatic Transmission for an Electric Hybrid Bus in Bogotá, Colombia, Accepted June 30, 2017, Transactions of The Symposium of Fluid Power and Motion Control, October 2017.

40. Leon, J., **Garcia, J**., Acero, M., Gonzalez, A. (2016)., "Case Study of an Electric-Hydraulic Hybrid Propulsion System for a Heavy Duty Electric Vehicle," SAE Technical Paper 2016-01-8112, 2016, http://doi:10.4271/2016-01-8112

41. Newell, B., **Garcia, J**., Krutz G., Harmayer, K., (2016)., "Industrial Capacitance Sensors and Actuators," IEEE FTC 2016 - Future Technologies Conference 2016 6-7 December 2016, San Francisco, United States.

42. **Garcia, J.,** Homkes, R., Carnes, M., & Taylor, K. (2015). Lessons Learned from Team-Teaching a PBL Robotics Course with Multi-Disciplinary Instructors and Students. In 2015 ASEE Annual Conference and Exposition Proceedings (pp. 26.1086.1–26.1086.9). ASEE Conferences. http://doi.org/10.18260/p.24423

43. **Garcia, J.,** Kuleshov, Y., & Lumkes, J. (2014). Using Fluid Power Workshops to Increase STEM Interest in K-12 Students. In A. Conferences (Ed.), 2014 ASEE Annual Conference and Exposition Proceedings (pp. 24.1330.1 – 24.1330.12). Indianapolis, IN. http://doi.org/10.18260/p.23263

44. Yang, Z., Krishnamurthy, M., & **Garcia, J.,** (2013). Modeling and Control of a Continuously Variable Planetary Transmission for a Small Wind Turbine Drivetrain. In Volume 2: Mechanics and Behavior of Active Materials; Structural Health Monitoring; Bioinspired Smart Materials and Systems; Energy Harvesting (p. V002T07A006). ASME. http://doi.org/10.1115/SMASIS2013-3067

45. Pindera, M. Z., Sun, Y., Malosse, J.J., & **Garcia, J.,** (2013). Co-Simulation Based Design and Experimental Validation of Control Strategies for Digital Fluid Power Systems. In ASME/BATH 2013 Symposium on Fluid Power and Motion Control (p. V001T01A053). ASME. http://doi.org/10.1115/FPMC2013-4489

46. **Garcia, J.,** Lumkes, J., & Martini, A. (2011). Static friction characterization of metallic contacts with hydraulic fluids Normal load. In Proceedings of the 52nd National Conference on Fluid Power (pp. 987–994). Las Vegas, NV: National Fluid Power Association.

47. **Garcia, J.,** Krutz, G., & Lumkes, J. (2007). Self Propelled Water Hydraulic Vehicle. In J. Vilenius & K. Koskinen (Eds.), The Tenth Scandinavian International Conference on Fluid Power, SICFP'07, (pp. 103–115). Tampere, Finland: Tampere University of Technology. http://doi.org/978-952-15-1758-7

Peer reviewed

1. Bentz, B. Z., Costas, A., Gaind, V., **Garcia Bravo, J**. M., Webb, K. J. (2017). 3D Printed Optical Phantoms and Deep Tissue Imaging for In Vivo Applications Including Oral Surgery. *SPIE Photonics West* (vol. 10056-3).

2. Niu, G., Arribas, A. P., Salameh, M., Krishnamurthy, M., & **Garcia, J.,** (2015). Hybrid energy storage systems in electric vehicle. In 2015 IEEE Transportation Electrification Conference and Expo (ITEC) (pp. 1–6). IEEE. http://doi.org/10.1109/ITEC.2015.7165771

3. Alvarez, M., Cease, H., Flaugher, B., Flores, R., **Garcia, J**., Lathrop, A., & Ruiz, F. (2014). The development of a cryogenic over-pressure pump. In AIP Conference Proceedings (pp. 1222–1229). http://doi.org/10.1063/1.4860845

4. Sun, Y., **Garcia, J**., & Krishnamurthy, M. (2013). A novel fixed displacement Electric-Hydraulic Hybrid (EH2) drivetrain for city vehicles. In 2013 IEEE Transportation Electrification Conference and Expo (ITEC) (pp. 1–6). IEEE. http://doi.org/10.1109/ITEC.2013.6574499

5. Mishler. L., **Garcia, J.,** & John H Lumkes. (2011). Engaging Pre-College Students in Engineering Using Hands-on Micro-Processor Controlled Portable Fluid Power Demonstrators. In 2011 Louisville, Kentucky, August 7 - August 10, 2011 (Vol. 7004, p. 11). St. Joseph, MI: American Society of Agricultural and Biological Engineers. http://doi.org/10.13031/2013.38120

6. **Garcia, J.,** Martini, A., & Lumkes, J. (2010). Experimental measurements of static friction for line contacts at high speed step inputs. In 6th Fluid Power Net International PhD Symposium (pp. 207–216). West Lafayette, IN. USA.

7. Michael, P., Martini, A., Bair, S., Burgess, K., & **Garcia, J.** (2010). Lubricant Effects in Hydraulic Motor Starting Efficiency. In STLE/ASME 2010 International Joint Tribology Conference (pp. 259–261). ASME. http://doi.org/10.1115/IJTC2010-41262

H. OTHER PUBLICATIONS

1. **Garcia, J.,** (2017). *Select the Right Hydraulic Component Using Hydraulic Pump & Motor ISO Standards* (pp. 14-15). Palmer, PA. Innovative Designs & Publishing, INC: Fluid Power Journal. www.FLUIDPOWERJOURNAL.com

2. **Garcia, J.,** Michael, P., & Johnson, J. (2015). Toward the Development of a Pump Energy Rating System based upon Performance Indexes. In 2015 Fluid Power Innovation & Research Conference (FPIRC15) (pp. 1–5). Chicago, IL.

3. **Garcia, J.**, Johnson, J., Michael, P., (2015). "Determination of energy ratings for hydraulic components and systems through histogrammic analysis of standard machine duty cycles" Working paper, for consideration by ISO Technical Committee 131, Sub-Committee 8. Presented in Frankfurt, Germany, October 20, 2015

4. **Garcia. J**., Krishnamurthy. M., (2014). "Electric-Hydraulic Drivetrain for City Vehicle: A novel Approach to On-Board Energy Storage", IEEE Transportation Electrification Initiative, January 20, 2014.

5. NFPA News, Lynn Beyer, (2015). "Purdue University Introduces NFPA Fluid Power Challenge to 4-H In Indiana" Online News update. Published Online October 8, 2015. http://news.nfpahub.com/purdue-university-introduces-fluid-power-challenge-to-4-h- in-indiana/

6. NFPA News, Eric Lanke, (2015). "New Faces in Academic Fluid Power – Jose Garcia" June 10, 2015

7. **Garcia, J**., Mishler, L., Lumkes, J., (2010). "Dig this Hydraulic/Pneumatic robot backhoe", Robot Magazine, Dec. 3, 2010, No. 28.

8. **Garcia, J**., Martini, A., and Lumkes, J., (2010). "Experimental Measurement of Surface and Fluid Effects on Static Friction for Metal Contacts" Tribology & Lubrication Technology (TLT) Magazine. March 2010, Vol. 66, No. 3.

9. Bettag B., **Garcia. J**., Pham. P., Schrank. N., Lumkes, J., (2013). TEACH Engineering – Resources for K-12. "Fluid power basics", March 19, 2013

U.S. AND INTERNATIONAL PATENTS SUBMITTED

1. Vallejo-Melgarejo, L.D., **Garcia-Bravo, J.M**., Newell, B.A. and Reifenberger, R.G., Purdue Research Foundation, 2024. Smooth surface diffraction grating lens and method for manufacturing the same. U.S. Patent 11,953,707.

2. Maynard, C.M., Hernandez, J.A., Newell, B.A., Tallman, T.N. and **Garcia-Bravo, J.M**., Purdue Research Foundation, 2024. Three-dimensional printing processes, fused deposition modeling (FDM) materials, filaments, and inks, and associated methods. U.S. Patent Application 18/313,841.

3. Nawrocki, R.A., Fan, J., Newell, B. and **Garcia-Bravo, J.M**., Purdue Research Foundation, 2023. Capacitive sensors and methods and apparatuses for producing capacitive sensors. U.S. Patent Application 18/336,191.

4. Nawrocki, R.A., Fan, J., Newell, B. and **Garcia-Bravo, J.M**., Purdue Research Foundation, 2023. Piezoelectric sensors and methods and apparatuses for producing piezoelectric sensors. U.S. Patent Application 18/336,567.

I. INDUSTRY CONTRIBUTIONS / DONATIONS

1.	Bosh-Rexroth	$500 Cash donation for fluid power challenge activities
2.	Proportion Air	$1,000 worth in proportional valve control at Purdue
3.	Sun Hydraulics	$2,280 worth in hydraulic valves and manifolds at Purdue
4.	INTEL Americas.	$261 worth in electronic controller boards at Purdue
5.	SMC USA	$1,000 worth in pneumatic components at Purdue
6.	Fitzsimmons Hydraulics, Inc.	$1,000 worth in hydraulic oil and hydraulic components at Purdue
7.	SMC USA	$1,000 worth in pneumatic components at IIT
8.	Parker-Hannifin Corporation	$4,600 for student competition at IIT
9.	Hydraforce	$1,000 worth in hydraulic valves at IIT
10.	Parker-Hannifin Corporation	$2,500 worth in electronic components at IIT
11.	Visual Edge Inc.	$1,000 worth in VEX robotics components at Purdue ABE

J. HONORS / AWARDS / ACHIEVEMENTS

Purdue Polytechnic Outstanding Faculty in Engagement	2023
Purdue Polytechnic Outstanding Faculty in Learning	2019
Intercultural Pedagogy Grant	2016
Scholarship of Engagement Fellow	2015
Impact Faculty Fellow	2014
Second place, NFPA Vehicle Challenge (Faculty advisor)	2023

Third place, NFPA Vehicle Challenge (Faculty advisor)	2021
Second place, Parker Chainless Challenge, Ingenuity Award (Faculty advisor)	2012
Fourth place, Parker Chainless Challenge, Manufacturability Award (Faculty advisor)	2012
First place, Sigma Xi Student research competition, Purdue University	2010
NSF CMMI Research and Innovation Conference Travel Grant	2009
Otto Maha Fluid Power Education Foundation Scholarship	2009
Excellence in Teaching Award, Purdue University	2004
Graduate Student Mentor of the Summer, Purdue university	2009

K. CONSULTING

1. Technical Assistance program (TAP), Improvement of leak detection processes for Chrysler, Fall 2013
2. Development of proportional pneumatic control modules for education for Proportion Air, Fall 2016

L. ADVISING AND OUTREACH ACTIVITIES

Engineering Technology, Fall 2012 - Present
PURDUE UNIVERSITY AND STATEWIDE LOCATIONS IN INDIANA, USA

- Co-developer and advisor of the invention of a variable volume centrifugal reservoir, 2016
- Co-development on the invention of a variable flow divider, 2016
- Advising one industry sponsored capstone senior design project for KANGA, 2016
- NFPA Fluid Power Challenge, West Lafayette, IN. 2015 and 2016
  Program for 6th - 8th grades 100+ students to increase STEM interest and fluid power awareness
- 4H Round up "Introduction to Hydraulics and Pneumatics". West Lafayette, IN. June 2015
- Change the world: NSF STEM Careers Workshop, *Dulles, WV*. September 2013
- PLTW conference *South Bend, IN. October 2014*

Mechanical, Materials and Aerospace Engineering, Fall 2011 - Spring 2012
ILLINOIS INSTITUTE OF TECHNOLOGY, Chicago, IL, USA

- Parker Chainless Challenge: Advised a team of six students to design and build a human powered vehicle that used a hydrostatic drive-train for a student competition.

Graduate students and visiting scholars and postdoctoral researchers advised and co-advised

- Dr. Benjamin Ducharne, Visiting Professor, 2018-2019
- Dr. Yogang Signh, Postdoctoral Researcher, 2019
- Marvin Durango (advisor) Ph.D. Engineering Technology, presently advising
- Jarrod Robins (advisor) M.Sc. Engineering Technology, presently advising
- John Murray (advisor) M.Sc. Engineering Technology, presently advising
- Zachary Didat (advisor) M.Sc. Engineering Technology, presently advising
- Santiago Guevara. (co-advisor) Ph.D Engineering Technology, December 2023
- Alejandro Solorio. (co-advisor) Ph.D. Engineering Technology, December 2023
- Jorge Leon (advisor) Ph.D. Engineering Technology, December 2022
- Narciso Soto, Undergraduate research assistant, May 2022
- Xiofan Guo (co-advisor) Mechanical Engineering. Ph.D. Agricultural Engineering, August 2023
- David Gonzalez. (co-advisor) Ph.D. Engineering Technology, May 2022
- Cole Maynard. (co-advisor) Ph.D. Engineering Technology, August 2023
- Trevor Mamer. M.Sc. Engineering Technology, May 2019
- Erika Bonnett (advisor) Ph.D. Engineering Technology at Purdue, December 2018
- Alfonso Costas (advisor) M.Sc. in Mechanical Engineering at Purdue, May 2018
- Geng Niu, (co-advisor) Ph.D. ECE department at IIT, August 2017
- Jairo Sanchez (co-advisor) M.Sc. in Mechanical Eng. at Purdue and Los Andes (Colombia), May 2016
- Luis Cepeda (co-advisor) M.Sc. in Mechanical Eng. at Purdue and Los Andes (Colombia), May 2016
- Dr. Ivo Ayala, Visiting Professor, Summer 2015.

- Mario Acero (co-advisor) M.Sc. in Mechanical Eng. at Los Andes (Colombia), December 2015
- Yingguang Sun, (co-advisor) M.Sc. in ECE department at IIT, Graduated July 2013
- Matthew Alvarez, (External advisor) M.Sc. in MMAE department at IIT, Graduated May 2012

Undergraduate Research students advised at Purdue

- Lisbeth Hernandez, Undergraduate research assistant, Fall 2014, Visiting Undergraduate student from Mexico
- Diego Aguillón, Undergraduate research assistant, Summer 2014, Visiting Undergraduate student from Mexico
- Andrea Quintana, Undergraduate research assistant, Spring 2015, Visiting Undergraduate student from Mexico
- Felipe Estrella, Undergraduate research assistant, Spring 2015, Visiting Undergraduate student from Mexico
- Erik Rodriguez, Undergraduate research assistant, Summer 2015, Visiting Undergraduate student from Mexico
- Marcos Nuñez, Undergraduate research assistant, Summer 2015, Visiting Undergraduate student from Mexico
- Juan Gomez, Undergraduate research assistant, Fall 2016, Visiting undergraduate student from Colombia
- Alejandro Solorio, Undergraduate research assistant, Spring 2017, Visiting undergraduate student from Mexico
- Emanuel Grella, Undergraduate research assistant, Summer 2017, REU student from U Texas, Dallas
- Laura Vallejo, Undergraduate research assistant, Fall 2017, Visiting undergraduate student from Colombia
- Angello Vindrola, 2017, Visiting undergraduate student from Peru
- Jose Chamorro. Undergraduate research assistant, 2018-2019, Visiting undergraduate student from Colombia
- Lucas Noble. Undergraduate research assistant, 2018, Visiting undergraduate student from Peru
- Julio San Martin. Undergraduate research assistant, 2019, Visiting undergraduate student from Peru
- Sharonluz Torres. Undergraduate research assistant, 2019, Visiting undergraduate student from Peru
- Camilo Zorro. Undergraduate research assistant, 2019, Visiting undergraduate student from Colombia
- Austin Shores, Undergraduate research assistant, 2021 Purdue University
- Catalina Baquero, Undegraduate research assistant, 2023, Visiting undergraduate student from Colombia
- Andres Rincon, Undergraduate research assistant, 2023, Visiting undergraduate student from Colombia
- Isaac Lago, Undergraduate research assistant, 2023, Visiting undergraduate student from Mexico
- Yovanni Garcia, Undergraduate research assistant, 2024, Visiting undergraduate student from Colombia
- Samuel Duncan, Undergraduate research assistant, 2024, Visiting undergraduate student from Colombia
- Emerson Zubb, Undergraduate research assistant, 2024, Purdue University
- Allen Lizarazo, Undergraduate research assistant, 2024, Visiting undergraduate student from Colombia

High School students advised at Purdue

- Teng Lee, Laboratory research assistant, Summer 2014 now at Purdue in MET program at Kokomo

M. RELEVANT COURSEWORK AND COMPUTER SKILLS

- Machine Design/Theory of elasticity
- Design of off highway vehicles
- Control Systems
- Applied finite element analysis
- Reliability based design
- Statistical Methods
- Linear regression
- Vehicle Dynamics modeling
- Hydraulic control systems
- Hydraulic power transmissions
- Design and modeling of fluid power systems
- Instrumentation and data acquisition
- Mechanics of materials
- Fluid mechanics
- Machining fundamentals
- Product and process design
- ANSYS/ANSYS Workbench
- Matlab/Simulink
- Microsoft Office
- EASY5
- Maple
- HTML
- Pro Engineer
- Working Models
- Solid Works/Comsol

N. CURRENT PROFESSIONAL SERVICE CONTRIBUTIONS

- NFPA U.S. Technical Advisory Group to ISO TAG 131, Sub Committee 8 (Chair) 2014-2022
- SAE Commercial Vehicle Exposition and Technology Conference, Fluid power chair (2016) 2011-2016
- International Fluid Power Society, Director at Large until 2016 2012-2016
- Fluid Power Education Foundation, Board of Directors 2013-2016

O. INVITED LECTURES

1. Tecnólogico de Monterey, Queretaro, Mexico. Virtual presentation “Fluid power actuators, hydraulic and pneumatic control systems and future directions in soft robotic actuators”. September 30, 2021

2. Society of Automotive Engineers, Commercial Vehicle explosion. Delivered a presentation titled: “Digital Hydraulics and potential applications in industry” October 5, 2016.

3. Invited Web Seminar: “Measured and Predicted Static Friction for Real Rough Surfaces in Point Contact” John Deere Tribology Community of Practice. February 6, 2014.

4. Guest Lecture: “Regenerative Breaking, Diverse approaches to energy recovery in transportation” Purdue University, College of Engineering Technology, South Bend, IN, February 22, 2013.

5. Seminar: “Opportunities for the fluid power industry in renewable energy applications” Purdue University, College of Engineering Technology, Kokomo, IN, May 16, 2012

6. Guest Lecture: “Surface Effects on Static Friction and Their Application to compact gerotor motor design” Purdue University Calumet, Department of Mechanical Engineering, February 17, 2012

7. Seminar: “Time dependence of Analog Signals” Mechanical Engineering Department, Milwaukee School of Engineering, January 20, 2012

8. Seminar: “Surface Effects on Static Friction and Their Application to Fluid Power Components” Illinois Institute of Technology, Mechanical, Materials and Aerospace Engineering, September 27, 2010

9. Guest Lecture: “Water Hydraulic Technology” Agricultural and Biological Department, Purdue University Hydraulic Control systems ABE 435, November 9, 2007 and November 7, 2008

P. DIVERSITY AND GLOBALIZATION

1. International collaborators:
   - Andres Gonzalez., Ph.D Universidad de los Andes, Bogota, Colombia.
   - Ivo Ayala, Ph.D., Universidad Tecnologica de Queretaro, Queretaro, Mexico
   - Benjamin Ducharne, Ph.D., Institut National des Sciences Appliquées, INSA, Lyon, France.

2. Study abroad program in Colombia:
   - The technology of the guitar from the U.S. to Colombia, Universidad Nacional de Colombia, Medellin.

Q. PROFFESIONAL MEMBERSHIPS

1. Former ISO TAG 131 Committee member and SC chair.
2. ASME Member
3. International Fluid Power Society Member