Rico A.R. Picone

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Olympia, Washington 98501   *(702) 287-4691*

Education

Doctor of Philosophy in Mechanical Engineering
   University of Washington, Seattle, Washington, 2014
   Advisor (engineering): Joseph L. Garbini, Department of Mechanical Engineering
   Advisor (physics): John A. Sidles, Department of Orthopædics
   Dissertation: *Separative magnetization transport: theory, model, and experiment*

Candidate Analyst
   The Lacanian School of Psychoanalysis, Berkeley, California (ongoing)
   Advisor: Stephanie Swales, PhD

Master of Science in Mechanical Engineering
   Robotics, Controls, and Mechatronics
   University of Washington, Seattle, Washington, 2010
   Thesis: *Investigating the Effects of Polarizing Diffusion in Magnetic Resonance Force Microscopy*

Bachelor of Science in Engineering, Mechanical Engineering
   University of Nevada, Las Vegas, Las Vegas, Nevada, May 2008
   Honors: Mechanical Engineering's Outstanding Graduate, Magna Cum Laude

Professional Appointments

Associate Professor   August 2014–present
Saint Martin's University, Department of Mechanical Engineering, Lacey, Washington.
   Teach, research, and serve in support of the university's mission to develop the whole person
   of each student. Research topics include magnetic resonance imaging technologies and artificial
   intelligence. Promoted to tenured Associate Professor in 2020.

Affiliate Associate Professor   November 2014–present
University of Washington, Department of Mechanical Engineering, Seattle, Washington.
   Research the enhancement of magnetic resonance technologies through separative magnetization
   transport.

Co-Founder & Chief Executive Officer   2014–2021
Dialectica, LLC, Olympia, Washington.
   Lead Dialectica, an artificial intelligence company focused on information architecture.

Co-Principle Investigator   January 2012–October 2017
Institute for Soldier Healing, Seattle, Washington.
   Lead development, design, and validation of magnetic resonance technologies. Author patent ap-
   plications. Research methods of enhancing magnetic resonance imaging (MRI), nuclear magnetic
   resonance (NMR) spectroscopy, and magnetic resonance force microscopy (MRFM).

Research Engineer/Research Assistant   March 2009–August 2014[†]
Quantum Systems Engineering group, University of Washington, Seattle, Washington.
   Investigate methods of enhancing magnetic resonance technologies. Design experimental methods
   (theory, protocols) and apparatus (instrumentation, RF system, etc.) for measuring magnetic
   resonance phenomena. Develop theoretical framework of separative magnetization transport.

[†]discontinuously

Academic Books (peer-reviewed)

Rico A.R. Picone, Joseph L. Garbini, Cameron N. Devine. In press (2024). *An Introduction to Real-Time Computing for Mechanical Engineers: A Lab-Based Approach.* MIT Press. ISBN 978-0-262-54876-2.

Publications (peer-reviewed)

Mathew Thomas, Frank Washko, Daniel Einstein, Rico Picone, Anna Thomas. 2021. *Knee Exoskeleton—Review of Knee Musculature and Exoskeleton Device Proposed Design.* 2021 IEEE 3rd Eurasia Conference on Biomedical Engineering, Healthcare and Sustainability (ECBIOS), Tainan, Taiwan, pp. 45–48. DOI 10.1109/ECBIOS51820.2021.9511031.

Rico A.R. Picone, Dane Webb, Finbarr Obierefu, Jotham Lentz. 2021. *New Methods for Metastimuli: Architecture, Embeddings, and Neural Network Optimization.* Springer International Publishing. HCII 2021. *Lecture Notes in Computer Science* (*Lecture Notes in Artificial Intelligence, Augmented Cognition*), vol 12776, pp. 288–304. DOI 10.1007/978-3-030-78114-9_21. Preprint available at arXiv:2102.07090 [cs.AI].

Rico A.R. Picone, Dane Webb, Bryan Powell. 2020. *Metastimuli: an introduction to PIMS filtering.* In: Schmorrow D., Fidopiastis C. (eds) Augmented Cognition. Human Cognition and Behavior. HCII 2020. Lecture Notes in Computer Science, vol 12197. Springer, Cham. 10 July 2020. DOI 10.1007/978-3-030-50439-7_8.

Cameron Devine, Joseph L. Garbini, Rico A.R. Picone. *StateMint: A Set of Tools for Determining Symbolic Dynamic System Models Using Linear Graph Methods.* The Journal of Open Source Education, 2(14), 44, April 2019. DOI 10.21105/jose.00044.

Rico A.R. Picone, Solomon Davis, Cameron Devine, Joseph L. Garbini, John A. Sidles. 2017. *Instrumentation and control of harmonic oscillators via a single-board microprocessor-FPGA device.* Review of Scientific Instruments, Volume 88, April 2017, Pages 045108. DOI 10.1063/1.4979971.

Rico A.R. Picone, Jotham Lentz, and Bryan Powell. 2017. *The fuzzification of an information architecture for information integration.* In: Yamamoto S. (eds) Human Interface and the Management of Information: Information, Knowledge and Interaction Design. HIMI 2017. Lecture Notes in Computer Science, vol 10273. Springer, Cham. DOI 10.1007/978-3-319-58521-5_11.

Paul E. Slaboch, Floraliza B. Bornasal, Rico A.R. Picone. 2016. *A Pilot Study of a Novel Set of Three Courses for Teaching Electrical System Analysis to Mechanical Engineering Students.* American Society for Engineering Education Conference Proceedings, June 2016. DOI 10.18260/p.26394.

Rico A.R. Picone & Bryan Powell. 2015. *A New Information Architecture: A Synthesis of Structure, Flow, and Dialectic.* Human Interface and the Management of Information: Information and Knowledge Design, Lecture Notes in Computer Science, Springer, Volume 9172, 2015, Pages 320-331. DOI 10.1007/978-3-319-20612-7_31.

Rico A.R. Picone & Paul E. Slaboch. 2015. *A Novel Set of Courses for Teaching Electrical System Analysis to Mechanical Engineering Students.* American Society for Engineering Education Rocky Mountain Section 2015 Conference, April 2015.

Rico A.R. Picone, Joseph L. Garbini, John A. Sidles. 2015. *Modeling spin magnetization transport in a spatially varying magnetic field.* Journal of Magnetism and Magnetic Materials, Volume 374, 15 January 2015, pp. 440–450. (Open-access preprint: arXiv:1310.7540 [cond-mat.mes-hall].)

Publications (other)

Rico A.R. Picone. 2014. *Separative magnetization transport: theory, model, and experiment.* PhD thesis, University of Washington.

Rico A.R. Picone. 2010. *Investigating the effects of polarizing diffusion in magnetic resonance force microscopy.* Master's thesis, University of Washington.

John A. Sidles, Joseph L. Garbini, Jonathan P. Jacky, Rico A.R. Picone, Scott A. Harsila. 2010. *Elements of naturality in dynamical simulation frameworks for Hamiltonian, thermostatic, and Lindbladian flows on classical and quantum state-spaces.* Preprint: arXiv:1007.1958v1 [quant-ph].

Patents

Rico A.R. Picone, Bryan Powell, Jotham Lentz. 2017. *A Dialectical Information Architecture.* United States Patent (pending) No. 15672259. Filed 8 August 2017.

John A. Sidles, Joseph L. Garbini, Rico A.R. Picone, Jonathan P. Jacky. 2017. *Separative Magnetic Transport in a Magnetic Field Gradient.* US Patent US9810758B2. Granted 11 November 2017.

Conferences & Presentations

Rico A.R. Picone, Dane Webb, Finbarr Obierefu, Jotham Lentz. *New methods for metastimuli: architecture, embeddings, and neural network optimization* (see paper above). Human-Computer Interaction Conference, July 2021 (virtual). Invited speaker.

Rico A.R. Picone, Dane Webb, Bryan Powell. *Metastimuli: an introduction to PIMS filtering* (see paper above). Human-Computer Interaction Conference, July 2020 (virtual). Invited speaker.

Rico A.R. Picone. *Hyperpolarization via spin transport for nanoMRI.* North China Institute of Aerospace Engineering. 30 May 2018. Invited speaker.

Rico A.R. Picone, Jotham Lentz, Bryan Powell. *The fuzzification of an information architecture for information integration* (see paper above). Human-Computer Interaction International 2017 Conference. Vancouver, Canada, July 2017. Invited speaker and session chair.

Rico A.R. Picone. *Introduction to Magnetic Resonance Force Microscopy.* Olympia Science Café. 13 June 2017. Invited speaker.

Paul E. Slaboch, Floraliza B. Bornasal, Rico A.R. Picone. *A Pilot Study of a Novel Set of Three Courses for Teaching Electrical System Analysis to Mechanical Engineering Students* (see paper above). Conference: American Society for Engineering Education. Presentation June 2016 by Bornasal.

Rico A.R. Picone & Bryan Powell. *A New Information Architecture: A Synthesis of Structure, Flow, and Dialectic* (see paper above). Human-Computer Interaction International 2015 Conference. Los Angeles, USA, 23 January 2015. Invited speaker.

Rico A.R. Picone, Joseph L. Garbini, Solomon L. Davis, J.A. Sidles, Jonathan P. Jacky. *Separatory magnetic transport (SMT) in magnetic resonance force microscopy: macroscopic theory & experiment.* NanoMRI Conference 2012, Ascona, Switzerland, 26 July 2012. Invited speaker.

Rico A.R. Picone. *Dynamic nuclear polarization, separative transport in magnetic resonance force microscopy: theory & experiment.* IBM Almaden Research, San Jose, CA, USA, September 2011. Invited speaker.

John A. Sidles, Joseph L. Garbini, Jonathan P. Jacky, Rico A.R. Picone, and Scott A. Harsila. *Transport mechanisms for inducing dynamic nuclear hyperpolarization in magnetic resonance microsystems: dynamical theory, design rules, and experimental protocols.* The Freiberg Institute for Advanced Studies (FRIAS), Conference: Magnetic Resonance at the Microscale, Freiberg, Germany, July 2011. Invited speaker and poster. Presented by Sidles.

Rico A.R. Picone. *Investigating the effects of polarizing diffusion in MRFM.* Kavli Institute at Cornell University for Nanoscale Science Conference, Ithaca, NY, USA, August 2009. Poster.

Grants Recieved

PI: John Marohn, Cornell University. co-PI: Rico A.R. Picone.   2017–2019
Nanoscale spin hyperpolarization and imaging.
U.S. Army Research Office. Total funded: $485,000. SMU awarded: $20,829.

PI: Rico A.R. Picone   2017–2018
UAV harvesting of strobili from Coniferae.
Washington State Department of Natural Resources. $24,133.89.

PI: Rico A.R. Picone.   2015
Energy Efficiency and Conservation
Independent Colleges of Washington, $10,000

Chairships, Memberships, and Honors

Faculty Chair   2020–2021, 2022–2023, 2023–present
    Hal & Inge Marcus School of Engineering, Saint Martin's University

Director   2016–present
    Master of Mechanical Engineering program, Saint Martin's University

Director   2018–present
    Techne Design Institute, Saint Martin's University

Committee Member   2017–present
    South Sound Robotics Advisory Committee

Member and Faculty Advisor for student chapter   2018–present
    American Society of Mechanical Engineers (ASME)

Chair of "Information Architectures and Infrastructures" Session   14 July 2017
    Human-Computer Interaction International 2017 conference, Vancouver, Canada

Teaching Assistant of the Year   2013–2014
    University of Washington, Department of Mechanical Engineering

Steve and Lynn Pratt Mechanical Engineering Fellow   2013–2014
    University of Washington

Ford Motor Company Fellow   2012–2013
    Ford Motor Company

Gray Fellowship Endowment Fellow   2008–2009
    University of Washington