

CURRICULUM VITAE

ALI RAZBAN, Ph.D., PE, MBA, CEM, CPE_nMS

NAME

Razban, Ali, Ph.D., PE, MBA, CEM, CPE_nMS

CONTACT INFORMATION

Department of Mechanical and Energy Engineering, SL 260P
Purdue School of Engineering and Technology
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EDUCATION

- Ph.D., Center for Robotics, Mechanical Engineering Department, Imperial College, University of London, London, UK, Area of Specialization: Control, Robotics and Automation, 1994
- M.S.E., Electrical Engineering and Computer Science Department, The University of Michigan, Ann Arbor, MI, Area of Specialization: Controls and Signal Processing, 1991
- M.S.E., Mechanical Engineering and Applied Mechanics Department, The University of Michigan, Ann Arbor, MI, Area of Specialization: Dynamic Systems and Controls, 1991

FURTHER EDUCATION:

- M.B.A., Krannert School of Management, Purdue University, West Lafayette, IN, Area of Specialization: Executive Management, 2005

ACADEMIC APPOINTMENTS

- Clinical Associate Professor, Department of Mechanical & Energy Engineering, Indiana University Purdue University (IUPUI), Indianapolis, IN, 2016-present
- Director of the Bachelor of Science in Energy Engineering (BSEEN) Program, Indiana University Purdue University (IUPUI), 2016 – Present
- Assistant Director of Industrial assessment Center, Indiana University Purdue University (IUPUI), 2011 – Present
- Senior Lecturer, Department of Mechanical Engineering, Indiana University Purdue University (IUPUI), Indianapolis, IN, 2010-2016
- Adjunct Professor, Department of Mechanical Engineering, Binghamton University, Binghamton, NY, Aug.1999- Dec.1999
- Research Associate, Department of Mechanical Engineering, Imperial College, London, UK. , 1989 – 1994

NON-ACADEMIC APPOINTMENTS

- Senior Project Engineer, Allison Transmission, Inc., Indianapolis, IN, 2008 –2009
- R & D Supplier Quality Engineer, Roche Diagnostics Operations, Indianapolis, IN, 2006 –2008
- Process Development Engineer, Roche Diagnostics Operations, Indianapolis, IN, 2002 –2006
- Senior Research & Development Engineer, Universal Instruments Corp., Binghamton, NY, 1998 –2001
- Senior Automation Engineer, Harman-Motive, OEM Group, Martinsville, IN, 1995–1998

LICENSURE AND PROFESSIONAL CERTIFICATIONS

- Professional Engineering License (PE), #5414880, 2002-present
- Certified Energy Manager (CEM), Association of Energy Engineers, # 20561, 2013-present
- Certified Practitioner in Industrial Energy Management (CPEnMS), Institute for Energy Management Professional, # 10283, 2014-present

PROFESSIONAL ORGANIZATIONS MEMBERSHIPS

- American Society of Mechanical Engineers (ASME), Member, 2002-present
- Association of Energy Engineers (AEE), Member, 2012- 2014
- Institute of Electrical and Electronics Engineers (IEEE), Senior Member, 1995-2008

PROFESSIONAL AWARDS

Teaching

- Certificate of Appreciation (IUPUI Favorite Professor Award), Department of Athletics, IUPUI, 2011
- “Energy Manager Today 75” Honorees, 2018

PROFESSIONAL DEVELOPMENT

- Superior Energy Performance, Performance Verification (SEP PV), Georgia Institute of Technology, 2015
- Superior Energy Performance (SEP), Qualified Instructor, Department of Energy (DOE), 2015
- Certified Practitioner in Industrial Energy Management (CPEnMS), Georgia Institute of Technology, 2014
- Certified Energy Management (CEM), Association of Energy Engineers, 2013
- Lead Auditor training, ISO50001 Energy Management Systems, Georgia Institute of Technology, 2012
- Quality System Requirements & Industrial Practice, Association for the Advancement of Medical Instrumentations, 2007
- Lead Auditor training, ISO 9001, Bureau Veritas, 2006
- FDA regulated computer systems, Bureau Veritas, 2006
- Developing and Managing a Successful Technology & Product Strategy, Massachusetts Institute of Technology (MIT), 2003

TEACHING

UNDERGRADUATE

1. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Fall 2016, 54 Students

2. ME 48200, Control System Analysis & Design, Classroom, Course Director and Lecturer, Fall 2016, 119 Students
3. ME 27400, Basic Mechanics II, Classroom, Lecturer, Summer 2016, 10 Students
4. ME 31000/EEN31000, Fluid Mechanics, Classroom, Lecturer, Summer 2016, 30 Students
5. EEN 26000 (EEN 29700), Sustainable Energy, Classroom, Course Director and Lecturer, Spring 2016, 19 Students
6. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Spring 2016, 85 Students
7. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Fall 2015, 49 Students
8. ME 48200, Control System Analysis & Design, Classroom, Course Director and Lecturer, Fall 2015, 99 Students
9. ME 27400, Basic Mechanics II, Classroom, Lecturer, Summer 2015, 24 Students
10. ME 31000, Fluid Mechanics, Classroom, Lecturer, Summer 2015, 17 Students
11. EEN 26000 (EEN 29700), Sustainable Energy, Classroom, Course Director and Lecturer, Spring 2015, 24 Students
12. EEN 34500 (EEN 39700), Renewable Energy System and Design, Classroom, Lecturer, Spring 2015, 10 Students
13. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Spring 2015, 54 Students
14. EEN 33000 (EEN 39700), Instrumentation, Measurement Systems and Dynamic Systems Modeling, (Dynamic Systems Modeling part), Classroom, Course Director and Lecturer, Fall 2014, 10 Students
15. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Fall 2014, 46 Students
16. ME 48200, Control System Analysis & Design, Classroom, Course Director and Lecturer, Fall 2014, 84 Students
17. ME 31000, Fluid Mechanics, Classroom, Lecturer, Summer 2014, 15 Students
18. EEN 34500 (EEN 39700), Renewable Energy System and Design, Classroom, Lecturer, Spring 2014, 7 Students
19. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Spring 2014, 50 Students
20. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Fall 2013, 42 Students
21. ME 48200, Control System Analysis & Design, Classroom, Course Director and Lecturer, Fall 2013, 57 Students
22. ME 27400, Basic Mechanics II, Classroom, Lecturer, Summer 2013, 16 Students
23. ME 31000, Fluid Mechanics, Classroom, Lecturer, Summer 2013, 13 Students
24. ME 34000 / ECE 34000, Instrumentation, Measurement Systems, Classroom, Lecturer, Spring 2013, 59
25. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Spring 2013, 58 Students
26. EEN 33000 (EEN 39700), Instrumentation, Measurement Systems and Dynamic Systems Modeling, Classroom, Course Director and Lecturer, Fall 2012, 4 Students
27. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Fall 2012, 38 Students
28. ME 31000, Fluid Mechanics, Classroom, Lecturer, Summer 2012, 14 Students
29. EEN 24000 (EEN 29700), Basic Engineering Mechanics, Classroom, Course Director and Lecturer, Spring 2012, 4 Students
30. EEN 26000 (EEN 29700), Sustainable Energy, Classroom, Course Director and Lecturer, Spring 2012, 8 Students

31. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Spring 2012, 46 Students
32. ME 29500, Engineering Mechanics & Heat, Classroom, Lecturer, Fall 2011, 20 Students
33. ME 31000, Fluid Mechanics, Classroom, Lecturer, Fall 2011, 61 Students
34. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Fall 2011, 31 Students
35. ME 48200, Control System Analysis & Design, Classroom, Course Director and Lecturer, Fall 2011, 60 Students
36. ME 27400, Basic Mechanics II, Classroom, Lecturer, Summer 2011, 11 Students
37. ME 27000, Basic Mechanics I, Classroom, Lecturer, Spring 2011, 28 Students
38. ME 31000, Fluid Mechanics, Classroom, Lecturer, Spring 2011, 36 Students
39. ME 40500, Seminar & Fundamentals of Engineering Review, Classroom, Course Director and Lecturer, Spring 2011, 34 Students
40. ME 27400, Basic Mechanics II, Classroom, Lecturer, Fall 2010, 35 Students
41. ME 31000, Fluid Mechanics, Classroom, Lecturer, Fall 2010, 47 Students
42. ME 48200, Control System Analysis & Design, Classroom, Course Director and Lecturer, Fall 2010, 35 Students

GRADUATE

1. ME 59700/ ECE 56900, Introduction to Robotics System, Classroom, Course Director and Lecturer, Fall 2016, 33 Students
2. ME 59700: Industrial Energy Audit, training & company visit, Course Director and Lecturer, Fall 2016, 3 Students
3. ME 50102: Energy Management Principles, Video streaming and live classroom, Course Director and Lecturer, Spring 2016, 13 Students
4. ME 59700: Industrial Energy Audit, training & company visit, Course Director and Lecturer, Spring 2016, 3 Students
5. ME 50101: Energy Assessment of Industrial Processes, Video streaming and live classroom, Course Director and Lecturer, Fall 2015, 12 Students
6. ME 59700: Industrial Energy Audit, training & company visit, Course Director and Lecturer, Fall 2015, 3 Students
7. ME 59700: Industrial Energy Audit, training & company visit, Course Director and Lecturer, Spring 2015, 4 Students
8. ME 59700/ ECE 56900, Introduction to Robotics System, Classroom, Course Director and Lecturer, Fall 2014, 31 Students
9. ME 59700: Industrial Energy Audit, training & company visit, Course Director and Lecturer, Fall 2014, 3 Students
10. ME 50102: Energy Management Principles, Video streaming and live classroom, Course Director and Lecturer, Spring 2014, 10 Students
11. ME 59700: Industrial Energy Audit, training & company visit, Course Director and Lecturer, Spring 2014, 5 Students
12. ME 50101: Energy Assessment of Industrial Processes, Video streaming and live classroom, Course Director and Lecturer, Fall 2013, 8 Students
13. ME 59700: Industrial Energy Audit, training & company visit, Course Director and Lecturer, Fall 2013, 6 Students

14. ME 50102: Energy Management Principles, Video streaming and live classroom, Course Director and Lecturer, Spring 2013, 6 Students
15. ME 59700: Industrial Energy Audit, training & company visit, Course Director and Lecturer, Spring 2013, 6 Students
16. ME 50101: Energy Assessment of Industrial Processes, Video streaming and live classroom, Course Director and Lecturer, Fall 2012, 7 Students
17. ME 59700: Industrial Energy Audit, training & company visit, Course Director and Lecturer, Fall 2012, 4 Students
18. ME 59700/ ECE 56900, Introduction to Robotics System, Classroom, Course Director and Lecturer, Spring 2011, 10 Students

MENTORING

- **Research Scholars**
 1. Abdullah Al Alhareth, Modelling and Optimization of Chillers Water Plant using Finned Tube and Shell Type Evaporator, May-Aug. 2017
 2. Mohammed Hassan, Heat recovery from Cooling tower, June-Aug. 2017
- **Ph.D. Students (Major thesis advisor)**
- **Current Students**
 1. Mahesh S. Shewale, Thesis: Design and development of actuator for Sensorless Flexural Mechanism, expected May 2021.
 2. John Warren, Thesis: TBD, expected May 2022.
- **Ph.D. Students (Thesis advisory committee member)**
- **Current Students**
 1. Allen (Da-Chun) Wu, Thesis: An Intelligent Remote Energy Management Platform, expected May 2020.
- **Ph.D. Students (External Examiner)**
 1. Shard S. Mulik, Thesis: Modeling and analysis of sensorless XY scanning mechanism for precision application, Sathyabama University Jeppiaar Nagar, Cheeai-119, India, Nov. 2018.
- **MS Students (Major thesis advisor)**
- **Current Students**
 1. Vaibhav Ahire, Thesis: Development and Validation of the Phenomenological Model Based Control System for NOx and Soots prediction in Diesel Engines, expected August 2020
 2. Neal L. Trautman, Thesis: Modeling, Simulation, optimization of Chiller System, expected May 2020
 3. Mohammad Mehdi Momeni, Thesis: Air handling unit energy efficiency improvement by control system implementation for campus sustainability, expected May 2020
- **Past Students**

1. Bin Wang, Thesis: Systematic energy and exergy efficiency study for direct and indirect fired heaters, Aug. 2019
2. David Vance, Thesis: Development of energy management model for an isolated location using multiple energy resources, Aug. 2019
3. Harsha Naga Teja Nimmala, Thesis: Smart manufacturing with supervisory MPC controller, May 2019
4. Babak Bahrami, Thesis: Peak Shaving with Day-Ahead Load Diagram Prediction for Industrial Plants and Their Subsystems, Dec. 2018
5. AbdulHadi Ayoub, Thesis: Development of energy management strategy for improving compressor energy efficiency, Dec. 2018
6. Hrishikesh Zambare, Thesis: Active suspension design using model predictive controller, expected Dec. 2017
7. Amin Amini, Thesis: A novel approach to forecast and manage electrical Maximum demand, May 2017
8. Tangirala Deepak Kumar, Thesis: Accurate location of tumor in head and neck cancer radiotherapy treatment with respect to machine isocenter, April 2017
9. Arash Edalatnoor, Thesis: Energy optimization of air handling unit using CO₂ data and coil performance, March 2016
10. Lukas R Bearden, Thesis: An automated grid-based robotic alignment system for pick and place applications, May 2013

- **MS Students (Thesis advisory committee member)**

- **Current Students**

1. N/A

- **Past Students**

1. Zahra Khakpour, Thesis: Multibody dynamics and control of a full human body for simulating walking, April 2017
2. Jing Li, Thesis: Modeling and analysis of air handling unit to improve energy efficiency, 2015
3. Garrett Scot Yesmunt, Thesis: Design, analysis, and simulation of a humanoid robotic arm applied to catching, 2014
4. Akram Ghassan Khatib, Thesis: Using wireless monitoring systems to evaluate performance of an air handling unit in a commercial building and validating the mechanical model, 2014

- **MS Students (External Examiner)**

1. Mai Hamad Fetais, Design of hybrid renewable energy system for near zero energy building in Qatar, Qatar University, May 2017

- **MS Students (Project Advisor)**

- **Current Students**

1. Karina Gonzalez de Graaf, Renewable greenhouse Capacitors, Jan.- May 2020

- **Past Students**

1. Thomas Tom, Micro positioning without sensor system, Jan.-Aug. 2019
2. Snehal Purandare, Simulation, optimization and experimental validation of Damper force of Magneto-Rheological damper, Sept. 18-May 2019

3. Khunsa Hisham, optimization of a controller for an Air Handling Unit (AHU) using CO2 data and coil performance, Fall 2017-Spring 2018
4. Paul Wever, survey of potential energy recovery in the industry, Fall 2017
5. Surendra Patil, Development of an Optimal Control Strategy for a MR damper with Adaptive Control Methods, Fall 2016-Spring 2017
6. Abhishek Khoje, Modeling and design of Magnetorheological suspension, Fall 2016
7. John Flowers, Development of the tool kit for DOE e-Guide implementation for small & medium size companies, Fall 2016
8. Nicholas Peed, Conceptual Engine Modeling of a Six Cylinder Internal Combustion Engine, Fall 2015
9. Manish Khandelwal, HVAC system design of existing building, Fall 2015
10. Da-Chun Wu, A novel approach for peak shaving demand, Fall 2015
11. Kiat Leng Ong, Storage Compressor Tank, Fall 2015
12. Michael Malguarnera, Utility ownership of Combined Heat and Power: an Economic Model Based Approach, Fall 2014
13. Abdul Ayoub, Leadership in Energy and Engineering Design (LEED) Review and Application to the City-County building of Indianapolis, IN, Fall 2014

- **Students Service (Faculty Advisor)**

- IUPUI ASHRAE Student Chapter, Faculty Advisor, 2016-present
- IUPUI Energy Club, Faculty Advisor, 2015-present
- IUPUI American Society of Mechanical Engineers (ASME), Faculty Advisor, 2014-present

TEACHING ADMINISTRATION AND CURRICULUM DEVELOPMENT

Course & Curriculum Development

- **Undergraduate Courses**

1. Developed EEN 44500: Compressible Flow & Renewable Kinetic Energy, Energy Engineering Curriculum, Fall 2016
2. Developed EEN 33000: Instrumentation, Measurement Systems and Dynamic Systems Modeling, Energy Engineering Curriculum, Fall 2012
3. Developed EEN 24000: Basic Engineering Mechanics, Energy Engineering Curriculum, Spring 2012
4. Developed EEN 26000: Sustainable Energy, Energy Engineering Curriculum, Spring 2012

- **Graduate Courses**

1. Developed ME 50102: Energy Management Principles, ME graduate course and Energy management certificate, Spring 2013
2. Developed ME 50101: Energy Assessment of Industrial Processes, ME graduate course and Energy management certificate, Fall 2012
3. Developed ME 59700: Industrial Energy Audit, ME graduate course and Energy management certificate, Fall 2012

Course Enhancement

1. ME 48200, Control System Analysis & Design, Created a Lab. for hands on experience for better understanding of the course material, the prototype version with three experiments started in Fall 2015, the full Lab. is planned for Fall 2017
2. EEN 34500, Created additional Labs. for better understanding of the course material, Spring 2014
3. ME 40500, Seminar & Fundamentals of Engineering Review, improved students' performance by adding weekly quizzes and making exams in-line with Fundamental Engineering Exam (FE), Fall 2012

GRANTS/FELLOWSHIPS IN TEACHING

External Teaching Grants and Fellowships

- Chen, J (PI, 40% effort), **Razban, A.** (Co-PI, 25% effort), Goodman, D. (Co-PI, 25% effort), Justice, C. (Co-PI, 5% effort), Chien, S (Co-PI, 5% effort), DE-FOA-0000490, Industrial Assessment Center – integration of education and practice, \$1,574,000. 2016-2021.

COMPLETED GRANTS/FELLOWSHIPS IN TEACHING

External Teaching Grants and Fellowships

- Chen, J (PI, 40% effort), **Razban, A.** (Co-PI, 25% effort), Goodman, D. (Co-PI, 25% effort), Anwar, S (Co-PI, 5% effort), Xie, J (Co-PI, 5% effort), DE-FOA-0000490, Establishing an Industrial Assessment Center, \$1,320,000. 2011-2016.

RESEARCH/CREATIVE ACTIVITY

ACTIVE RESEARCH GRANTS/FELLOWSHIP

- **Razban, A.** (PI, 100% effort), CLEAResult Corp., “Energy audit, energy consumption evaluation and recommendation implementation of industrial sectors”, \$72,000, 2018-2020.
- El-Mounayri, H. J (PI, 60% effort), **Razban, A.** (Co-PI, 40% effort), Innovative MBSE Model of System of Systems for Management and Control Optimization of a Multi-plant District Cooling Grid, Qatar National Priorities Research Program (NPRP), \$105,691, 2017-2020.

COMPLETED RESEARCH GRANTS/FELLOWSHIP

- **Razban, A.** (PI, 100% effort), “Investigation of using hydrogen gas as an additive fuel in diesel engines for on road diesel engines”, CAE-NET.com, Inc., \$19,500.00, June –Sept. 2019.
- **Razban, A.** (PI, 100% effort), "Effective system thermal efficiency of HTHV direct fired heater", Thermo-Cycler Industries, Inc., \$37,455.00, Aug. 2018-Sept. 2019.
- **Razban, A.** (PI, 100% effort), CLEAResult Corp., “Energy audit, energy consumption evaluation and recommendation implementation of industrial sectors”, \$75,000, 2015-2017
- **Razban, A.** (PI, 100% effort), EPA (U.S. Environmental Protection Agency), “Modeling of Air handling unit for wireless monitoring”, \$14,500, 2014-2015
- **Razban, A.** (PI, 100% effort), Ryobi Die Casting USA Inc., “Comparison of energy consumption between Lid resistive heating and immersion rod heating furnaces in aluminum die casting industry”, \$2000, 2014

Invited Lectures

- Keynote Speaker, “The Current and Future State of World Energy and Energy Management”, World Congress 2019, Pune, Maharashtra, India, Feb. 2019

- The Lugar Energy Center's 10th annual Spring Forum, "Forecast and Management Electrical Maximum Demand", May 2017
- Electric League of Indiana Exposition, "Lowering Energy Bills by Managing Energy Consumption", Indianapolis, IN, Mar. 2016
- Association of National Association of Power Engineers (NAPE), "Industrial Assessment Center (IAC)", Indianapolis, IN, March 2015
- Central Indiana Section-IEEE Conference, "Fundamentals-of-Engineering Examination (FE)", Indianapolis, IN, Nov. 2013

PROFESSIONAL SERVICE

Service to Professional Societies

- Editor, Journal of International Journal of Robotics and Automation Technology.
- Guest Editor, World Congress 2019, Pune, Maharashtra, India, Feb. 2019
- Editor, Journal of Robotics and Automation, Kosmos Publishers, 2018-Present
- Associate editor of Lawrence Press, 2016- present
- Co-Chair of Policy Session, ECOS 2017, The 30th International Conference on Efficiency, Cost, Optimization, Simulation and environmental impact of Energy Systems, San Diego, CA, July 2017
- Chairman of IEEE, Professional Development, Central Indiana Section, 2002-2008
- Chairman of IEEE, Robotics and Automation Society, Binghamton Section, NY, 2000-2001
- Chairman of Computer Integrated Manufacturing; Process Control Session, IEEE Int. Conf. On Industrial Electronics, Control and Instrumentation, San Diego, CA. November 1992

Grant Reviewed

- Maryland Industrial Partnerships Program, 2016

Manuscripts Reviewed

- Peer reviewer, Journal of Energies, Elsevier Publication, 2019-present
- Peer reviewer, Journal of Applied Energy, Elsevier Publication, 2018-present
- Peer reviewer, ECOS 2018, The 31th International Conference on Efficiency, Cost, Optimization, Simulation and environmental impact of Energy Systems
- Peer reviewer, 2018 ACEEE Summer Study on Energy Efficiency in Buildings
- Peer reviewer, Journal of Energy, Elsevier Publication, 2016-present
- Peer reviewer, technical paper, ASME's International Mechanical Engineering Congress and Exposition (IMECE), 2017
- Peer reviewer, ECOS 2017, The 30th International Conference on Efficiency, Cost, Optimization, Simulation and environmental impact of Energy Systems
- Peer reviewer, technical paper, ASME's International Conference of Power Engineering (ICOPE), 2017
- Peer reviewer, technical paper, ASME's International Mechanical Engineering Congress and Exposition (IMECE), 2016
- Peer reviewer, technical paper, IEEE International Conference on Automation and Engineering, 2015
- Peer reviewer, technical paper, Sustainable Energy Technologies and Assessments Journal, 2014
- Peer reviewer, IEEE Journal of Electronics Packaging Manufacturing, 1999-2001

UNIVERSITY SERVICE

Department Committees

- Member, Department of Mechanical and Energy Engineering Scholarship Committee, 2017-present
- Member, Department of Mechanical and Energy Engineering Undergraduate Education Committee, 2010- present
- Member, Department of Mechanical and Energy Engineering Assessment Committee, 2017-present

University Committees

- Member of IUPUI Sustainability Education Committee, 2014-present

GRANTS/FELLOWSHIPS IN SERVICE

- **Razban, A.** (PI, 100% effort), “Equipment Tax Abatement Study for electricity”, Novipax, LLC, (\$10,156), 2019-2020
- **Razban, A.** (PI, 100% effort), “Equipment Tax Abatement Study for electricity, gas and water”, Nice-Pak Products, Inc., (\$9,864), 2016-2017
- **Razban, A.** (PI, 100% effort), “Equipment Tax Abatement Study”, Horton Corp., (\$7,507), 2015
- **Razban, A.** (PI, 100% effort), “Equipment Tax Abatement Study”, Georg Utz, Inc., (\$5,085), 2014

RESEARCH PUBLICATIONS

Patents

- **Razban, A.**, Wu, D., Amini, A., Chen, J., “Forecasting and Managing Daily Electrical Maximum Demands”, US Provisional Patent Application No. US2019/0251484 A1, pub. Date, Aug. 15, 2019.
- Zambare, H. and **Razban, A.**, “Position Determining System”, US Provisional Patent Application No. 62/609,325; filed December 21, 2017.
- Chen, J., **Razban, A.**, Yung-Ping Chien, S. and Amini, A., Abdulwahhab Karmoona, M., A. and Piroozi, H., “System and Method for Electrical Component Management”, U.S. Pat. No. 10,303,139 May 28, 2019.
- Buller, R. and **Razban, A.**, “Biosensor with laser-sealed capillary space and method of making”, Patent # US 8,679,853 B2, Mar 25, 2014.

Refereed Journals

- Ahire, V., Shewale, M., **Razban, A.**, Review of Engine Out Emission Control Architectures for Diesel Engines, submitted to International Journal of Engine Research, under review, 2019.
- Wu, D., Bahrami, B., **Razban, A.** and Chen, J., Air Compressor Load Forecasting using Artificial Neural Network, has been submitted to J. of applied Energy, under review, 2019.
- **Razban, A.**, Zambare, H. and Patil, S. and., PID Controller Design for Magnetorheological Active Suspension including Hysteresis Modeling, submitted to IFAC Journal of Systems and Control, under review, 2019.
- Ligade, J. and **Razban, A.**, “Investigation of Energy Efficient Retrofit HVAC Systems for a University: Case Study”, Sustainability 2019, 11(20), 5593; <https://doi.org/10.3390/su11205593>
- Shewale, M., **Razban, A.**, Deshmukh, D., Mulik, S., Patange, Characterization and System Identification of XY Flexural Mechanism using Double Parallelogram Manipulator for High Precision Scanning, Chapter book, Lecture Notes in Electrical Engineering 570, edited by A.

Kumer and S. Mozar, ISBN 978-981-13-8714-2, Springer Nature Singapore Pte Ltd. 2020, pp. 387-404, <https://doi.org/10.1007/978-981-13-8715-9>.

- Purandare, S., Zambare, H. and **Razban, A.**, Analysis of magnetic flux in magneto-rheological damper, *J. Phys. Commun.* 3 (2019) 075012, <https://dx.doi.org/10.1088/2399-6528/ab33d7>.
- **Razban, A.**, Khatib, A., Goodman, D., Chen, J., Mechanical modeling of air handling unit subsystem in a commercial building, *Thermal Science and Engineering Progress* 11 (2019) 231-238, <https://doi.org/10.1016/j.tsep.2019.03.019>.
- Wu, D. Amini, A., **Razban, A.** and Chen, J., ARC algorithm: a novel approach to forecast and manage daily electrical maximum demand, *J. of Energy*, Volume 154, 2018, Pages 383-389, <https://doi.org/10.1016/j.energy.2018.04.117> (invited paper).
- Deshpande R., Nair A., **Razban A.**, Color based Object Tracking Robot. *Robotics & Automation Engineering Journal* 2018; 2(3), March 2018, pp 1-5: 555588, DOI: [10.19080/RAEJ.2018.02.555588](https://doi.org/10.19080/RAEJ.2018.02.555588)
- Bearden, L., **Razban, A.**, An Automated Grid-Based Robotic Alignment System for Pick and Place Applications, *Journal of Intelligent and Robotics Systems*, 84 (1), 815-828, 2016, DOI 10.1007/s10846-016-0363-y.
- Malguarnera, M., **Razban, A.**, Utility ownership of combined heat and power: an economic model based approach, *International Journal of Research in Engineering and Technology*, Vol 4, issue 11, pp 131-139, Nov. 2015
- Davies, B.L., Harris, S., **Razban, A.** and Efstathiou, J., Application Experience of Robotic Cell for Automated Adhesive Dispensing Cell, *Mathematics and Computers in Simulation*, 41, pp. 419-27, 1996.
- **Razban, A.**, Davies, B.L., Harris, S., and Efstathiou, J., Control of an Automated Dispensing Cell with Vision Controlled Feedback, *IFAC Journal of Engineering Practice, Control Engineering Practice*, vol.3, No. 9, pp.1217-23, 1995.
- **Razban, A.**, Davies, B.L., Analytical Modeling of the Automated Dispensing of Adhesive Materials, *Int. Journal of Adhesion Science and Technology*, Vol. 9, 11, pp. 1435-50, 1995.
- Davies, B.L., Harris, S., **Razban, A.** and Efstathiou, J., A Robotic manufacturing Cell for Automated Adhesive Dispensing, *Robotics Today*, Vol. 8. No. 4, pp.1-5, 1995.
- **Razban, A.**, Davies, B.L., An Automated System for Dispensing Adhesives, *Int. Journal of Adhesion and Adhesives*, Vol. 11. No. 3, pp. 187-91, 1991.
- **Razban, A.**, Davies, B.L., On-line Control of Manufacturing Cell using Visual Inspection, *Int. Journal Computer Integrated Manufacturing*, Vol. 4, No.5, pp. 315-20,1991.

Refereed Conference Proceedings

- Wang, B. and **Razban, A.**, “Systematic energy and exergy efficiency study and comparison between direct fired and indirect fired heating systems”, *Proceeding of ECOS 2019, the 32 International Conference on efficiency, optimization, simulation and environmental impact of energy systems*, pp. 645-656, June 23-28, 2019, Wroclaw, Poland.
- Bahrami, B., Trautman, N., and **Razban, A.**, “Compressed air energy storage for demand management in industrial manufacturers”, *Proceeding of ECOS 2019, the 32 International Conference on efficiency, optimization, simulation and environmental impact of energy systems*, pp. 677-690, June 23-28, 2019, Wroclaw, Poland.
- Vance, D., A., **Razban, A.**, Schubert, P., Weissbach, R., “Developing a PV and Energy Storage Sizing Methodology for Off-Grid Transactive Microgrids”, *Proceedings of Applied Energy Symposium: MIT A+B May 22-24, 2019 • Boston, MA*.
- Shewale, M., **Razban, A.**, Deshmukh, D., Mulik, S, Patange, A. “Characterization and System Identification of XY Flexural Mechanism using Double Parallelogram Manipulator for High Precision

- Scanning”, ICCCE 2019: Proceedings of the 2nd International Conference on Communications and Cyber Physical Engineering, Pune, India.
- Ligade, J., Sebastian, D. and **Razban, A.**, “Challenges of Creating a Verifiable Building Energy Model”, 2019 ASHRAE Winter Conference & AHR Expo, Atlanta, GA, January 12–16, 2019.
 - Ayoub, A., **Razban, A.** and Chen, J., “Modeling of Industrial Air Compressor System Energy Consumption and Effectiveness of Various Energy Saving on the System”, Proceedings of ECOS 2018, the 31 International Conference on efficiency, optimization, simulation and environmental impact of energy systems, June 17-21, 2018 Guimaraes, Portugal.
 - Wu, D., A., **Razban, A.** and Chen, J., “Energy Audit Quick Estimator: A User-friendly Mobile Estimator for Energy Auditors”, Proceedings of ECOS 2018, the 31 International Conference on efficiency, optimization, simulation and environmental impact of energy systems, June 17-21, 2018 Guimaraes, Portugal.
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