

# Richard J. Povinelli, Ph.D., P.E. – Curriculum Vitae

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Marquette University  
Department of Electrical and Computer Engineering  
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## **Summary**

### **Research**

#### **Publications (97 refereed publications, 2870 citations, 29 h-index, 48 i10-index)**

- 27 refereed journals
- 70 refereed conference/workshop proceedings and abstracts published

#### **External Grants and Contracts**

- Total \$7,761,915; \$745,000 as PI; \$6,044,520 as co-PI (my allocation \$977,688); \$972,395 as faculty associate (my allocation \$101,000)
- 5 major National Science Foundation grants (1 as PI, 1 as co-PI, 3 as faculty associate)
- 2 Clinical & Translational Science Institute grant (as co-PI)
- 1 American Heart Association (AHA) Fellowship (sponsor for Ph.D. student)
- 6 NSF Research Experiences for Undergraduate (REU) supplements

#### **Research Student Advising**

- 5 Ph.D. graduates
- 8 M.S. graduates (3 M.S. current)
- 17 Undergraduate research assistants (1 current)
- 15 Ph.D., 36 M.S. committee memberships (6 current – 1 Ph.D., 1 M.S.)

### **Awards and Honors**

- PhysioNet/Computers in Cardiology Challenge 2007 – Winning Entry
- PhysioNet/Computers in Cardiology Challenge 2005 – Award Winning Paper
- Engineers and Scientists of Milwaukee – Young Engineer of the Year Award, 2003

### **Teaching**

- 15 different courses taught
- 9 new courses developed

### **Service**

#### **Service within Marquette**

- Director of Computer Engineering Laboratories for Department of Electrical and Computer Engineering
- Director of Computer Engineering Program
- Charter Faculty Sponsor for the Marquette University Student Chapter of Association of Computing Machinery (ACM)
- Charter Faculty Sponsor for the Marquette University Chapter of Upsilon Pi Epsilon (UPE)
- 26 committee memberships

#### **Service outside Marquette**

- Reviewer for 50 conferences, journals, agencies, and professional organizations
- 2 conference organizing committees
- 4 conference session chairs

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## **Education**

- 1997 - 1999      Ph.D. Electrical and Computer Engineering  
Marquette University, Milwaukee, WI
- 1987 - 1989      M.S. Computer and Systems Engineering  
Rensselaer Polytechnic Institute, Troy, NY
- 1983 - 1987      B.S. Electrical Engineering (Honors Graduate)  
B.A. Psychology (Magna Cum Laude)  
University of Illinois, Champaign-Urbana, IL
- 1984 - 1985      Junior Year Abroad  
University of Munich, Munich, West Germany

## **Academic, Scholarly, and Industrial Experience**

- 2006 – present    Associate Professor of Electrical and Computer Engineering and  
Director of Computer Engineering Laboratories  
Marquette University, Milwaukee, Wisconsin
- 1999 – 2006      Assistant Professor of Electrical and Computer Engineering and  
Director of Computer Engineering Laboratories  
Marquette University, Milwaukee, Wisconsin
- 1998 - 1999      Adjunct Assistant Professor of Electrical and Computer Engineering and  
Director of Computer Engineering Laboratories  
Marquette University, Milwaukee, WI
- 1995 - 1998      Lecturer, Electrical and Computer Engineering Department  
Marquette University, Milwaukee, WI
- 1995 - 1996      Lecturer, Management Department  
Marquette University, Milwaukee, WI
- 1995 - 1998      Instructor, Master of Arts in Teaching Program  
Aurora University, New Berlin, WI
- 1998              Instructor, Computer Information Systems  
Milwaukee Area Technical College, Milwaukee, WI
- 1992 - 1994      Global Project Leader  
GE Medical Systems, Milwaukee, WI
- 1990 - 1992      Program Manager  
GE Medical Systems, Milwaukee, WI
- 1987 - 1990      Software Engineer  
GE Corporate Research and Development, Schenectady, NY

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## Awards and Honors

PhysioNet/Computers in Cardiology Challenge 2007 – Winning Entry

PhysioNet/Computers in Cardiology Challenge 2005 – Award Winning Paper

Engineers and Scientists of Milwaukee – Young Engineer of the Year Award, 2003

Professional Engineer License (Wisconsin), 2003 – present

Recipient of the following General Electric Management Awards

6 Step Problem Solving Trainer, 1994

Field Laptop/CD-ROM Project Leader, 1992

Successful Service Communication Broadcast, 1992

## Honorary Societies

Tau Beta Pi, 1985 – present

Phi Beta Kappa, 1985 – present

Golden Key, 1985 – present

Eta Kappa Nu, 1985 – present

Sigma Xi, 1999 – present

Upsilon Pi Epsilon, 2001 – present

## Research

### Journal Publications (Refereed)

Student names are *italicized*. Povinelli's students *italized and underlined*.

- J27 *Michele R. B. Malinowski*, **Richard J. Povinelli**. (in press) "Using Smart Meters to Learn Water Customer Behavior," IEEE Transaction on Engineering Management.
- J26 *Masabho P. Milali*, Maggy T. Sikulu-Lord, Samson S. Kiware, Floyd E. Dowell, George F. Corliss, **Richard J. Povinelli**. (2019) "Age grading *An. gambiae* and *An. arabiensis* using near infrared spectra and artificial neural networks," PLOS ONE, vol. 14, no. 8, 1-17.
- J25 *Md Osman Gani*, *Taskina Fayezeen*, **Richard J. Povinelli**, Roger O. Smith, Muhammad Arif, Ahmed J. Kattan, Sheikh Iqbal Ahamed. (2019) "A light weight smartphone based human activity recognition system with high accuracy," Journal of Network and Computer Applications, no. 141, 59-72.
- J24 *Gregory D. Merkel*, **Richard J. Povinelli**, Ronald H. Brown. (2018) "Short-Term Load Forecasting of Natural Gas with Deep Neural Network Regression" Energies, vol. 11, no. 8, 1-12.
- J23 *Masabho P. Milali*, Maggy Sikulu-Lord, Samson S. Kiware, Floyd E. Dowell, **Richard J. Povinelli**, George F. Corliss. (2018) "Do NIR Spectra Collected from Lab-reared Mosquitoes Differ from those Collected from Wild Mosquitoes?" PLOS ONE, 1-16.
- J22 *Hermine N. Akouemo*, **Richard J. Povinelli**. (2017) "Data Improving in Time Series Using ARX and ANN Models," IEEE Transactions on Power Systems, vol. 32, no. 5, 3352-3359.
- J21 *Anthony Hoak*, Henry Medeiros, **Richard J. Povinelli**. (2017) "Image-Based Multi-Target Tracking Through Multi-Bernoulli Filtering with Interactive Likelihoods," Sensors, vol. 17, no. 3, 1-23.
- J20 *Prachi Pradeep*, **Richard J. Povinelli**, Shannon White, Stephen Merrill. (2016) "An Ensemble Model of QSAR Tools for Regulatory Risk Assessment," Journal of Cheminformatics, vol. 8, no. 48, 1-9.

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- J19 *Babatunde Ishola*, George F. Corliss, **Richard J. Povinelli**, Ronald H. Brown. (2016) "Identifying Extreme Cold Events Using Phase Space Reconstruction." *International Journal of Applied Pattern Recognition*, vol. 3, no. 3, 1-21.
- J18 *Hermine N. Akouemo*, **Richard J. Povinelli**. (2016) "Probabilistic Anomaly Detection in Natural Gas Time Series Data," *International Journal of Forecasting*, vol. 21, no. 3, 948-956.
- J17 *Prachi Pradeep*, **Richard J. Povinelli**, Stephen Merrill, Serdar Bozdog, Daniel Sem. (2015) "Novel Uses of In Vitro Data to Develop Quantitative Biological Activity Relationship Models for In Vivo Carcinogenicity Prediction," *Molecular Informatics*, vol. 34, no. 4, 236-245.
- J16 *Aderiano M. da Silva*, **Richard J. Povinelli**, Nabeel A. O. Demerdash. (2013) "Rotor Bar Fault Monitoring Method Based on Analysis of Air-gap Torques of Induction Motors," *IEEE Transactions on Industrial Informatics*, vol. 9, no. 4, 2274-2283.
- J15 *Kyle J. Persohn*, **Richard J. Povinelli**. (2012) "Analyzing logistic map pseudorandom number generators for periodicity induced by finite precision floating-point representation," *Chaos, Solitons and Fractals*, vol. 43, no. 3, 238-245.
- J14 *Chia-Chou Yeh*, *Gennadi Y. Sizov*, *Ahmed Sayed-Ahmed*, Nabeel A. O. Demerdash, **Richard J. Povinelli**, Edwin E. Yaz, Daniel M. Ionel. (2008) "A Reconfigurable Motor for Experimental Emulation of Stator Winding Interturn and Broken Bar Faults in Polyphase Induction Machines," *IEEE Transaction on Energy Conversion*, vol. 23, no. 4, 1005-1014.
- J13 *Kevin M. Indrebo*, **Richard J. Povinelli**, Michael T. Johnson. (2008) "Minimum Mean-Squared Error Estimation of Mel-Frequency Cepstral Coefficients Using a Novel Distortion Model," *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 16, no. 8, 1654-1661.
- J12 Larry Smith, Lorraine K Tanabe, Rie Johnson nee Ando, Cheng-Ju Kuo, I-Fang Chung, Chun-Nan Hsu, Yu-Shi Lin, Roman Klinger, Christoph M Friedrich, Kuzman Ganchev, Manabu Torii, Hongfang Liu, Barry Haddow, Craig A Struble, **Richard J Povinelli**, Andreas Vlachos, William A Baumgartner Jr, Lawrence Hunter, Bob Carpenter, Richard Tzong-Han Tsai, Hong-Jie Dai, Feng Liu, Yifei Chen, Chengjie Sun, Sophia Katrenko, Pieter Adriaans, Christian Blaschke, Rafael Torres, Mariana Neves, Preslav Nakov, Anna Divoli, Manuel Maña-López, Jacinto Mata and W John Wilbur. (2008) "Overview of BioCreative II Gene Mention Recognition," *Genome Biology*, vol 9, no. 2, 1-19.
- J11 *Aderiano M. da Silva*, **Richard J. Povinelli**, Nabeel A. O. Demerdash. (2008) "Induction Machine Broken Bar and Stator Short-Circuit Fault Diagnostics Based on Three Phase Stator Current Envelopes," *IEEE Transactions on Industrial Electronics*, vol. 55, no. 3, 1310-1318.
- J10 *Behrooz Mirafzal*, **Richard J. Povinelli**, and Nabeel A. O. Demerdash. (2006) "Inter-Turn Fault Diagnosis in Induction Motors Using the Pendulous Oscillation Phenomenon," *IEEE Transactions on Energy Conversion*, vol. 21, no. 4, 871-882.
- J9 *Peter S. Bazeley*, *Sridevi Prithivi*, Craig A. Struble, **Richard J. Povinelli**, and Daniel S. Sem. (2006) "Synergistic use of compound properties and docking scores in neural network modeling of CYP2D6 binding: Predicting affinity and conformational sampling," *Journal of Chemical Information and Modeling*, vol. 46, 2698-2708.
- J8 *Kevin M. Indrebo*, **Richard J. Povinelli**, Michael T. Johnson. (2006) "Sub-banded Reconstructed Phase Spaces for Speech Recognition," *Speech Communication*, vol. 48, 760-774.
- J7 **Richard J. Povinelli**, Michael T. Johnson, *Andrew C. Lindgren*, *Felice M. Roberts*, *Jinjin Ye*. (2006) "Statistical Models of Reconstructed Phase Spaces for Signal Classification," *IEEE Transactions on Signal Processing*, vol. 54, no. 6, 2178-2186.
- J6 Michael T. Johnson, **Richard J. Povinelli**, *Andrew C. Lindgren*, *Jinjin Ye*, *Xiaolin Liu*, *Kevin M. Indrebo*. (2005) "Time-Domain Isolated Phoneme Classification using Reconstructed Phase Spaces," *IEEE Transactions on Speech and Audio Processing*, vol. 13, no. 4, 458-466.
- J5 Michael T. Johnson, **Richard J. Povinelli**. (2005) "Generalized Phase Space Projection for Nonlinear Noise Reduction," *Physica D*, vol. 201, no. 3-4, 306-317.
- J4 **Richard J. Povinelli**, Michael T. Johnson, *Andrew C. Lindgren*, *Jinjin Ye*. (2004) "Time Series Classification using Gaussian Mixture Models of Reconstructed Phase Spaces," *IEEE Transactions on Knowledge and Data Engineering*, vol. 16, no. 6, 779-783.
- J3 *John F. Bangura*, **Richard J. Povinelli**, Nabeel A.O. Demerdash, Ronald H. Brown (2003) "Diagnostics of Eccentricities and Bar/End-Ring Connector Breakages in Polyphase Induction Motors through a Combination of Time-Series Data Mining and Time-Stepping Coupled FE-State Space Techniques," *IEEE Transactions On Industry Applications*, vol. 39, no. 4, 1005-1013.
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- J2 **Richard J. Povinelli**, Xin Feng (2003) "A New Temporal Pattern Identification Method For Characterization And Prediction Of Complex Time Series Events," IEEE Transactions on Knowledge and Data Engineering, vol. 15, no. 2, 339-352.
- J1 **Richard J. Povinelli**, *John F. Bangura*, Nabeel A.O. Demerdash, Ronald H. Brown (2002) "Diagnostics of Bar and End-Ring Connector Breakage Faults in Polyphase Induction Motors Through a Novel Dual Track of Time-Series Data Mining and Time-Stepping Coupled FE-State Space Modeling," IEEE Transactions on Energy Conversion, vol. 17, no. 1, 2002, 39-46.

## Prize Paper Awards

- P2 *Mohamed A. Mneimneh*, **Richard J. Povinelli**. (2007) "RPS/GMM Approach toward the Localization of Myocardial Infarction," PhysioNet/Computers in Cardiology Challenge Winning Entry, Computers in Cardiology, Durham, North Carolina. 185-188 (4 pages).
- P1 **Richard J. Povinelli**. (2005) "Towards the Prediction of Transient ST Changes," PhysioNet/Computers in Cardiology Challenge Winning Paper, Computers in Cardiology, Leon, France. 663-666 (4 pages).

## Conference Publications and In Press (Refereed)

- C55 *Heidi A. Richburg*, **Richard J. Povinelli**, David R. Friedland. (2018) "Direct-to-Patient Survey for Diagnosis of Benign Paroxysmal Positional Vertigo." International Conference on Machine Learning Applications, Orlando, Florida, 332-337 (6 pages).
- C54 *Andres Echeverri*, *Yevgeniy Reznichenko*, Henry Medeiros, **Richard J. Povinelli**, *Ryan Walsh*. (2018) "Real-time Hierarchical Bayesian Data Fusion for Vision-based Target Tracking with Unmanned Aerial Platforms," International Conference on Unmanned Aircraft Systems, Dallas, Texas, 1-9 (9 pages).
- C53 *Elise Russell*, **Richard J. Povinelli**, Andrew B. Williams. (2016) "Smart Topic Detection for Robot Conversation," IEEE/ACM Human-Robotic Interaction (HRI), New Zealand, 509-510 (2 pages).
- C52 *AKM Jahangir Alam Majumder*, Sheikh Iqbal Ahamed, **Richard J. Povinelli**, Chandana P. Tamma, Roger Smith. (2015) "A Novel Wireless System to Monitor Gait Using Smartshoe-Worn Sensors," IEEE Computer Software and Applications Conference (COMPSAC), Taichung, Taiwan, 733-741 (9 pages).
- C51 *Mohammad Adibuzzaman*, *Colin Ostberg*, Sheikh Iqbal Ahamed, **Richard J. Povinelli**, Bhagwant Sindhu, Richard Love, *Ferdous Kawsar*, *Tanimul Ahsan*. (2015) "Assessment of Pain Using Facial Pictures Taken with a Smartphone," IEEE Computer Software and Applications Conference (COMPSAC), Taichung, Taiwan. 726-731 (6 pages).
- C50 Ronald H. Brown, Steven R. Vitullo, George F. Corliss, Monica Adya, **Richard J. Povinelli**. (2015) "Detrending Daily Natural Gas Consumption Series to Improve Short-Term Forecasts," IEEE Power and Energy Society General Meeting (PESGM), Denver, Colorado. 1-5 (5 pages).
- C49 *Sanzad Siddique*, **Richard J. Povinelli**. (2014) "Learning Energy Demand Domain Knowledge via Feature Transformation," IEEE Power and Energy Society General Meeting (PESGM), National Harbor, Maryland, 1-5 (5 pages).
- C48 *Hermine N. Akouemo*, **Richard J. Povinelli**. (2014) "Time Series Outlier Detection and Imputation," IEEE Power and Energy Society General Meeting (PESGM) National Harbor, Maryland, 1-5 (5 pages).
- C47 *Mohamed A. Mneimneh*, **Richard J. Povinelli**. (2008) "An Electrophysiological Cardiac Model Approach to Measuring T-Wave Alternans," Computers in Cardiology, Bologna, Italy, 613-616 (4 pages).
- C46 *Mohamed A. Mneimneh*, Michael T. Johnson, **Richard J. Povinelli**. (2008) "A Heart-Cell Model for the Identification of Myocardial Infarction," HEALTHINF 2008 International Conference on Health Informatics, Funchal, Madeira-Portugal, 51-58 (8 pages).
- C45 Craig A. Struble, **Richard J. Povinelli**, Michael T. Johnson, *Dina Berchanskiy*, *Jidong Tao*, *Marek Trawicki*. (2007) "Combined Conditional Random Fields and n-Gram Language Models for Gene Mention Recognition," BioCreative II, Madrid, Spain, 81-83 (3 pages).

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- C44 *Chia-Chou Yeh, Gennadi Y. Sizov, Ahmed Sayed-Ahmed, Nabeel A. O. Demerdash, Richard J. Povinelli, Edwin E. Yaz, Dan M. Ionel.* (2007) "A Reconfigurable Motor for Experimental Emulation of Stator Winding Inter-Turn and Broken Bar Faults in Polyphase Induction Machines," IEEE International Electric Machines and Drives Conference (IEMDC2007), Antalya, Turkey, 1413 – 1419 (7 pages).
- C43 *Mohamed A. Mneimneh, George F. Corliss, Richard J. Povinelli.* (2007) "A Cardiac Electrophysiological Model Based Approach for Filtering High Frequency ECG Noise," Computers in Cardiology, Durham, North Carolina, 253-256 (4 pages).
- C42 *Mohamed A. Mneimneh, Richard J. Povinelli.* (2006) "Integrative Approach for the Measurement of the QT Interval," Computers in Cardiology, Valencia, Spain, 329-332 (4 pages).
- C41 **Richard J. Povinelli, Mohamed A. Mneimneh, Michael T. Johnson.** (2006) "Cardiac Model Based Approach to QT Estimation," Computers in Cardiology, Valencia, Spain, 333-336 (4 pages).
- C40 *Mohamed A. Mneimneh, Edwin E. Yaz, Michael T. Johnson, Richard J. Povinelli.* (2006) "An Adaptive Kalman Filter for Removing Baseline Wandering," Computers in Cardiology, Valencia, Spain, 253-256 (4 pages).
- C39 *Anthony D. Ricke, Richard J. Povinelli.* (2005) "Segmenting Heart Sound Signals," Computers in Cardiology, Leon, France, 953-956 (4 pages).
- C38 *Chia Chou Yeh, Behrooz Mirafzal, Richard J. Povinelli, Nabeel A. O. Demerdash.* (2005) "A Condition Monitoring Vector Database Approach for Broken Bar Fault Diagnostics of Induction Machines," IEEE International Electric Machines and Drives Conference (IEMDC2005), San Antonio, Texas, 29-34 (6 pages).
- C37 *Kevin M. Indrebo, Richard J. Povinelli, Michael T. Johnson.* (2005) "Third-Order Moments of Filtered Speech Signals For Robust Speech Recognition," International Conference on Non-Linear Speech Processing (NOLISP), Barcelona, Spain, 151-157 (7 pages).
- C36 *Michael T. Johnson, Andrew C. Lindgren, Richard J. Povinelli.* (2004) "Joint Frequency Domain and Reconstructed Phase Space Features for Speech Recognition," International Conference on Acoustics, Speech and Signal Processing, Montreal, Canada, vol. I, 533-536 (4 pages).
- C35 *Chia Chou Yeh, Richard J. Povinelli, Nabeel A. O. Demerdash.* (2004) "Diagnostics of Stator Winding Inter-Turn and Power Conditioner Faults in Induction Machine Inverter-Fed Drive Systems Using Time-Series Data Mining Technique," IEEE International Conference on Power System Technology (Powercon2004), Singapore, 891 – 896 (6 pages).
- C34 *Behrooz Mirafzal, Fariba Fateh, Chia Chou Yeh, Richard J. Povinelli, and Nabeel A. O. Demerdash.* (2004) "Condition Monitoring of Squirrel-Cage Induction Motors Fed by PWM-Based Drives Using a Parameter Estimation Approach," IEEE International Conference on Power System Technology (Powercon2004), Singapore, 1579 – 1584 (6 pages).
- C33 *Felice M. Roberts, Richard J. Povinelli.* (2004) "A Statistical Feature Based Approach to Predicting Termination of Atrial Fibrillation," Computers in Cardiology, Chicago, Illinois, 673 – 676 (4 pages).
- C32 *Michael W. Zimmerman, Richard J. Povinelli.* (2004) "On Improving the Classification of Myocardial Ischemia Using Holter ECG Data," Computers in Cardiology, Chicago, Illinois, 377- 380 (4 pages).
- C31 *Kevin M. Indrebo, Richard J. Povinelli, and Michael T. Johnson.* (2004) "A Comparison of Reconstructed Phase Spaces and Cepstral Coefficients for Multi-Band Phoneme Classification," International Conference on Signal Processing (ICSP2004), Beijing, China, 630-633 (4 pages).
- C30 *David H. Diggs, Richard J. Povinelli.* (2003) "A Temporal Pattern Approach for Predicting Weekly Financial Time Series," Artificial Neural Networks in Engineering, St. Louis, Missouri, 707-712 (6 pages).
- C29 *Michele R. B. Malinowski, Richard J. Povinelli.* (2003) "Searching for Non-Sense: Identification of Pacemaker Non-Sense and Non-Capture Failures using Machine Learning Techniques" Computers in Cardiology, Thessaloniki, Greece, 53-56 (4 pages).
- C28 *Felice M. Roberts, Richard J. Povinelli, Kristina M. Ropella.* (2003) "Rhythm Classification Using Reconstructed Phase Space Of Signal Frequency Subbands," Computers in Cardiology, Thessaloniki, Greece, 61-64 (4 pages).
- C27 *Michael W. Zimmerman, Richard J. Povinelli, Michael T. Johnson, Kristina M. Ropella.* (2003) "A Reconstructed Phase Space Approach for Distinguishing Ischemic from Non-Ischemic ST Changes using Holter ECG Data," Computers in Cardiology, Thessaloniki, Greece, 243-246 (4 pages).
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- C26 *Kevin M. Indrebo*, **Richard J. Povinelli**, Michael T. Johnson. (2003) "A Combined Sub-band and Reconstructed Phase Space Approach to Phoneme Classification," ISCA Tutorial and Research Workshop on Non-linear Speech Processing (NOLISP), Le Croisic, France, 107-110 (4 pages).
- C25 *Xiaolin Liu*, **Richard J. Povinelli**, Michael T. Johnson. (2003) "Vowel Classification by Global Dynamic Modeling," ISCA Tutorial and Research Workshop on Non-linear Speech Processing (NOLISP), Le Croisic, France, 111-114 (4 pages).
- C24 *Jinjin Ye*, Michael T. Johnson, **Richard J. Povinelli**. (2003) "Study of Attractor Variation in the Reconstructed Phase Space of Speech Signals," ISCA Tutorial and Research Workshop on Non-linear Speech Processing (NOLISP), Le Croisic, France, 5-10 (6 pages).
- C23 *Jinjin Ye*, Michael T. Johnson, **Richard J. Povinelli**. (2003) "Phoneme Classification over Reconstructed Phase Space using Principal Component Analysis," ISCA Tutorial and Research Workshop on Non-linear Speech Processing (NOLISP), Le Croisic, France, 11-16 (6 pages).
- C22 Michael T. Johnson, *Andrew C. Lindgren*, **Richard J. Povinelli**, *Xiaolong Yuan*. (2003) "Performance of Nonlinear Speech Enhancement using Phase Space Reconstruction," International Conference on Acoustics, Speech and Signal Processing 2003, Hong Kong, China, vol. I, 872-875 (4 pages).
- C21 *Andrew C. Lindgren*, Michael T. Johnson, **Richard J. Povinelli**. (2003) "Speech Recognition using Reconstructed Phase Space Features," International Conference on Acoustics, Speech and Signal Processing 2003, Hong Kong, China, vol. I, 61-63 (3 pages).
- C20 **Richard J. Povinelli**, Michael T. Johnson, *John F. Bangura*, Nabeel A.O. Demerdash. (2002) "A Comparison of Phase Space Reconstruction and Spectral Coherence Approaches for Diagnostics of Bar and End-Ring Connector Breakage and Eccentricity Faults in Polyphase Induction Motors using Current Waveforms," Conference Record of the 2002 IEEE Industry Applications Conference/ 37th IAS Annual Meeting, Pittsburgh, Pennsylvania, 1541-1547 (7 pages).
- C19 *Xiaolin Liu*, **Richard J. Povinelli**, Michael T. Johnson. (2002) "Detecting Determinism in Speech Phonemes," IEEE Digital Signal Processing Workshop 2002, Pine Mountain, Georgia, 41-46 (6 pages).
- C18 *Jinjin Ye*, **Richard J. Povinelli**, Michael T. Johnson. (2002) "Phoneme Classification Using Naïve Bayes Classifier in Reconstructed Phase Space," IEEE Digital Signal Processing Workshop 2002, Pine Mountain, Georgia, 37-40 (4 pages).
- C17 **Richard J. Povinelli**, *Felice M. Roberts*, Kristina M. Ropella, Michael T. Johnson. (2002) "Are Nonlinear Ventricular Arrhythmia Characteristics Lost, As Signal Duration Decreases?" Computers in Cardiology, Memphis, Tennessee, 221-224 (4 pages).
- C16 *James B. Vitrano*, **Richard J. Povinelli**. (2001) "Selecting Dimensions and Delay Values for a Time-Delay Embedding Using a Genetic Algorithm," Genetic and Evolutionary Computation Conference (GECCO2001), San Francisco, California, 1423-1430 (8 pages).
- C15 *Felice M. Roberts*, **Richard J. Povinelli**, Kristina M. Ropella. (2001) "Identification of ECG Arrhythmias using Phase Space Reconstruction," 5th European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD'01), Freiburg, Germany, 411-423 (13 pages).
- C14 *Minglei Duan*, **Richard J. Povinelli**. (2001) "Nonlinear modeling: Genetic Programming vs. Fast Evolutionary Programming," Artificial Neural Networks in Engineering, St. Louis, Missouri, 171-176 (6 pages).
- C13 *Minglei Duan*, **Richard J. Povinelli**. (2001) "Predictability of Stock Price Time Series," Artificial Neural Networks in Engineering, St. Louis, Missouri, 215-220 (6 pages).
- C12 *Patrick Clemins*, **Richard J. Povinelli**. (2001) "Detecting Regimes in Temperature Time Series," Artificial Neural Networks in Engineering, St. Louis, Missouri, 727-732 (6 pages).
- C11 *John F. Bangura*, **Richard J. Povinelli**, Nabeel A.O. Demerdash, Ronald H. Brown. (2001) "Diagnostics of Eccentricities and Bar/End-Ring Connector Breakages in Polyphase Induction Motors through a Combination of Time-Series Data Mining and Time-Stepping Coupled FE-State Space Techniques," Conference Record of the 2001 IEEE Industry Applications Conference/ 36th IAS Annual Meeting, Chicago, Illinois, 1579-1586 (8 pages).
- C10 *Minglei Duan*, **Richard J. Povinelli**. (2001) "Estimating Stock Price Predictability Using Genetic Programming," Genetic and Evolutionary Computation Conference (GECCO2001), San Francisco, California, 174 (1 page).

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- C9 **Richard J. Povinelli**, *John F. Bangura*, Nabeel A.O. Demerdash, Ronald H. Brown. (2001) "Diagnostics of Bar and End-Ring Connector Breakage Faults in Polyphase Induction Motors Through a Novel Dual Track of Time-Series Data Mining and Time-Stepping Coupled FE-State Space Modeling," IEEE International Electric Machines and Drives Conference (IEMDC2001), Boston, Massachusetts, 809-813 (5 pages).
- C8 **Richard J. Povinelli**, *John F. Bangura*, Nabeel A.O. Demerdash, Ronald H. Brown. (2000) "Diagnostics of Faults in Induction Motor ASDs Using Time-Stepping Coupled Finite Element State-Space and Time Series Data Mining Techniques," Third Naval Symposium on Electric Machines (EM2000), Philadelphia, Pennsylvania, 1-8 (8 pages).
- C7 **Richard J. Povinelli**. (2000) "Comparing Genetic Algorithms Computational Performance Improvement Techniques," Artificial Neural Networks in Engineering, St. Louis, Missouri, 305-310.
- C6 **Richard J. Povinelli**, Xin Feng. (2000) "Characterization And Prediction Of Welding Droplet Release Using Time Series Data Mining," Artificial Neural Networks in Engineering, St. Louis, Missouri, 857-862 (6 pages).
- C5 **Richard J. Povinelli**. (2000) "Identifying Temporal Patterns for Characterization and Prediction of Financial Time Series Events," Temporal, Spatial, and Spatio-Temporal Data Mining: First International Workshop; revised papers (TSDM2000), Leon, France, 46-61 (16 pages).
- C4 **Richard J. Povinelli**. (2000) "Using Genetic Algorithms to Find Temporal Patterns Indicative of Time Series Events," GECCO 2000 Workshop: Data Mining with Evolutionary Algorithms, Las Vegas, Nevada, 80-84 (5 pages).
- C3 **Richard J. Povinelli**, Xin Feng. (1999) "Improving Genetic Algorithms Performance By Hashing Fitness Values" Artificial Neural Networks in Engineering, St. Louis, Missouri, 399-404 (6 pages).
- C2 **Richard J. Povinelli**, Xin Feng. (1999) "Data Mining of Multiple Nonstationary Time Series," Artificial Neural Networks in Engineering, St. Louis, Missouri, 511-516 (6 pages).
- C1 **Richard J. Povinelli**, Xin Feng. (1998) "Temporal Pattern Identification of Time Series Data using Pattern Wavelets and Genetic Algorithms," Artificial Neural Networks in Engineering, St. Louis, Missouri, 691-696 (6 pages).

## Abstracts (Refereed)

- A13 David R. Friedland, *Taiwo Fasae*, *Heidi A. Richburg*, **Richard J. Povinelli**. (in press) "Influence of Age on Patient-Reported Symptoms in BPPV," American Otological Society Annual Meeting, Atlanta, Georgia.
- A12 *Masabho P. Milali*, *Benjamin Durette*, *Greg Merkel*, Maggy Sikulu-Lord, Samson S. Kiware, Floyd Dowell, George F. Corliss, and **Richard J. Povinelli**. (2019) "Autoencoder and Artificial Neural Networks Applied to Near-infrared Spectra to Estimate Parity Status of Wild An. gambiae s.s and An. Arabiensis," American Society of Tropical Medicine & Hygiene Annual Meeting, National Harbor, Maryland
- A11 *Colin O. Quinn*, **Richard J. Povinelli**, *Jaired R. Collins*, and Jake Norment. (2019) "Predicting Natural Gas Pipeline Alarms," International Symposium on Forecasting, Thessaloniki, Greece.
- A10 *Masabho P. Milali*, *Benjamin Durette*, *Greg D. Merkel*, Maggy Sikulu-Lord, Samson S. Kiware, Floyd Dowell, George F. Corliss, **Richard J. Povinelli**. (2018) "Age Grading Malaria Transmitting Mosquitoes Using Feed Forward Artificial Neural Networks," American Society of Tropical Medicine & Hygiene Annual Meeting, New Orleans, Louisiana.
- A9 *Jarrett Smalley*, *David Kaftan*, Ronald H. Brown, George F. Corliss, **Richard J. Povinelli**. (2018) "Forecasting Design Day Demand Using Extremal Quantile Regression," International Symposium on Forecasting, Denver, Colorado.
- A8 *Gregory D. Merkel*, **Richard J. Povinelli**. (2018) "To retrain or not to retrain – data cleaning vs. online learning in energy forecasting," International Symposium on Forecasting, Denver, Colorado.
- A7 **Richard J. Povinelli**, *Gregory D. Merkel*, Ronald H. Brown. (2017) "Deep Neural Network Regression as a Component of a Forecast Ensemble," International Symposium on Forecasting, Cairns, Australia.
- A6 *Gregory D. Merkel*, **Richard J. Povinelli**, Ronald H. Brown. (2017) "Deep Neural Network Regression for Short-Term Load Forecasting of Natural Gas," International Symposium on Forecasting, Cairns, Australia.



# Richard J. Povinelli, Ph.D., P.E. – Curriculum Vitae

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- A5 *David Kaftan, Sarah Graupman, Maral Fakoor, Jarrett Smalley, Ronald H. Brown, George F. Corliss, Richard J. Povinelli.* (2017) "Dynamically Ensembling Forecasting Models," International Symposium on Forecasting, Cairns, Australia.
- A4 *Masabho P. Milali, Samson S. Kiware, Richard J. Povinelli, George F. Corliss, Maggie Sikulu-Lord.* (2017) "Comparison Between Age Estimates of Wild Anopheles Arabiensis using NIRS Classification Model and Ovary Dissection (Detinova's Method)," American Society of Tropical Medicine & Hygiene Annual Meeting, Boston, Massachusetts.
- A3 *Md O. Gani, Taskina Fayezeen, Sheikh I. Ahamed, Richard J. Povinelli.* (2016) "Computationally Efficient Human Activity Modeling and Its Application as a Service in Android Application Framework". ACM International Workshop on Mobile Computing Systems and Applications (HotMobile), St. Augustine, Florida.
- A2 *Masabho P. Milali, Maggy Sikulu-Lord, Samson S. Kiware, Richard J. Povinelli, George F. Corliss.* (2016) "Do NIR Spectra Collected from Lab-reared Mosquitoes Differ from those Collected from Wild Mosquitoes?" American Society of Tropical Medicine & Hygiene Annual Meeting, Atlanta, Georgia.
- A1 *Prachi Pradeep, Richard J. Povinelli, Stephen J. Merrill, Serdar Bozdog, Daniel S. Sem.* (2014) "Novel Metabolic Descriptor Based on Xenobiotic Induced Cytochrome P450 Transcription for Carcinogenicity Prediction," FutureTox II: In Vitro Data and In Silico Models for Predictive Toxicology". Winner of FutureTox II CCT Student/Postdoctoral Recognition, Chapel Hill, North Carolina.

## Invited Book Review

- R1 **Richard J. Povinelli.** (2004) "A Review of 'Foundations of Genetic Programming' by William Langdon and Ricardo Poli, Springer Verlag", Genetic Programming and Evolvable Machines, vol. 5, no. 3, 319-320.

## Conference Publications (Non-Refereed)

- N6 *Colin O. Quinn, Richard J. Povinelli, Jaired R. Collins, and Jake Norment.* (2019) "Predicting Natural Gas Pipeline Alarms," International Symposium on Forecasting, Thessaloniki, Greece.
- N5 *Jarrett Smalley, David Kaftan, Ronald H. Brown, George F. Corliss, Richard J. Povinelli.* (2018) "Forecasting Design Day Demand Using Extremal Quantile Regression, " International Symposium on Forecasting, Denver, Colorado, 1-7 (7 pages).
- N4 **Richard J. Povinelli, Gregory D. Merkel,** Ronald H. Brown. (2017) "Deep Neural Network Regression as a Component of a Forecast Ensemble," International Symposium on Forecasting, Cairns, Australia, 1-4 (4 pages).
- N3 *Gregory D. Merkel, Richard J. Povinelli, Ronald H. Brown.* (2017) "Deep Neural Network Regression for Short-Term Load Forecasting of Natural Gas," International Symposium on Forecasting, Cairns, Australia, 1-5 (5 pages).
- N2 Ronald H. Brown, *David J. Kaftan, Jarrett L. Smalley, Maral Fakoor, Sarah J. Graupman, Richard J. Povinelli,* George F. Corliss. (2017) "Improving Daily Natural Gas Forecasting by Tracking and Combining Models," International Symposium on Forecasting, Cairns, Australia, 1-4 (4 pages).
- N1 **Richard J. Povinelli.** (2000) "Improving Computational Performance of Genetic Algorithms: A Comparison of Techniques" Genetic and Evolutionary Computation Conference Late Breaking Papers (GECCO2000), Las Vegas, Nevada, 297-302 (6 pages).

## Patents

- P1 US Patent 7,308,301 -- Method and apparatus for detecting a cardiac arrhythmia. Inventors: **Richard J. Povinelli, Felice M. Roberts,** Jack E. Lohman.

## Student Ph.D. Dissertations

- *Michele R. B. Malinowski.* (2018) "An Unsupervised Cluster: Learning Water Customer Behavior using Variation of Information on a Reconstructed Phase Space," Ph.D. Dissertation, Marquette University.
- *Mohammad Saber.* (2017) "Quantifying Forecast Uncertainty in the Energy Domains," Ph.D. Dissertation, Marquette University.
- *Hermine N. Akouemo Kengmo Kenfack.* (2015) "Data Cleaning in the Energy Domain," Ph.D. Dissertation, Marquette University.

# Richard J. Povinelli, Ph.D., P.E. – Curriculum Vitae

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- *Kevin M. Indrebo.* (2008) "Estimation of Cepstral Coefficients for Robust Speech Recognition," Ph.D. Dissertation, Marquette University.
- *Mohamed A. Mneimneh.* (2008) "An Electrophysiological Cardiac Model with Applications to Ischemia Detection and Infarction Localization," Ph.D. Dissertation, Marquette University.

## **Student M.S. Theses**

- *Gregory D. Merkel.* (2017) "Deep Neural Networks as Time Series Forecasters of Energy Demand," M.S. Thesis, Marquette University.
- *Sanzad Siddique.* (2013) "Automation of Energy Demand Forecasting," M.S. Thesis, Marquette University.
- *Aderiano M. da Silva.* (2006) "Induction Motor Fault Diagnostic and Monitoring Methods," M.S. Thesis, Marquette University.
- *David H. Diggs.* (2004) "Multiple Step Financial Time Series Prediction with Portfolio Optimization," M.S. Thesis, Marquette University.
- *Michael W. Zimmerman.* (2004) "Classification of ECG ST Events as Ischemic or Non-Ischemic Using Reconstructed Phase Spaces," M.S. Thesis, Marquette University.
- *Kevin M. Indrebo.* (2004) "Sub-banded Reconstructed Phase Spaces for Speech Recognition," M.S. Thesis, Marquette University.
- *Michele R. B. Malinowski.* (2003) "Searching for Non-Sense: Identification of Pacemaker Non-Sense and Non-Capture Failures Using Machine Learning Techniques," M.S. Thesis, Marquette University.
- *Minglei Duan.* (2002) "Time Series Predictability," M.S. Thesis, Marquette University.

## **External Research Grants and Contracts Funded**

- \$303,000 "Energy Forecasting," Sponsored by Marquette Energy Analytics, **PI: Richard J. Povinelli** (July 2019 - June 2021)
- \$36,000 "Forecasting Natural Gas Pipeline Gas Quality Alarms," Sponsored by Apache Corporation, **PI: Richard J. Povinelli** (January 2019 - June 2019)
- \$19,694 "Development of a Clinical Decision Support System for the Diagnosis of Benign Paroxysmal Positional Vertigo (BPPV)," National Institutes of Health (NIH) CTSA, **co-PI: Richard J. Povinelli** (allocation: \$19,694) with PI: David R. Friedland (July 2018 – March 2019)
- \$48,000 "Forecasting Natural Gas Pipeline Gas Pressure Alarms," Sponsored by Apache Corporation, **PI: Richard J. Povinelli** (July 2018 - December 2018)
- \$467,768 "GasDay – Forecasting Natural Gas Demand," Sponsored by a Consortium of Natural Gas Local Distribution Companies, **co-PI: Richard J. Povinelli** (allocation: \$150,000) with PI: Ronald H. Brown and co-PI: George Corliss (July 2018 - December 2018)
- \$50,000 "Development of a Clinical Decision Support System for the Diagnosis of Benign Paroxysmal Positional Vertigo (BPPV)," National Institutes of Health (NIH) CTSA, **co-PI: Richard J. Povinelli** (allocation: \$28,494) with PI: David R. Friedland (April 2017 – March 2018)
- \$985,000 "GasDay – Forecasting Natural Gas Demand," Sponsored by a Consortium of Natural Gas Local Distribution Companies, **co-PI: Richard J. Povinelli** (allocation: \$121,000) with PI: Ronald H. Brown and co-PI: George Corliss (July 2017 - June 2018)
- \$998,182 "GasDay – Forecasting Natural Gas Demand," Sponsored by a Consortium of Natural Gas Local Distribution Companies, **co-PI: Richard J. Povinelli** (allocation: \$116,000) with PI: Ronald H. Brown and co-PI: George Corliss (July 2016 - June 2017)
- \$831,903 "GasDay – Forecasting Natural Gas Demand," Sponsored by a Consortium of Natural Gas Local Distribution Companies, **co-PI: Richard J. Povinelli** (allocation: \$111,000) with PI: Ronald H. Brown and co-PI: George Corliss (July 2015 - June 2016)

# Richard J. Povinelli, Ph.D., P.E. – Curriculum Vitae

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- \$822,861 "GasDay – Forecasting Natural Gas Demand," Sponsored by a Consortium of Natural Gas Local Distribution Companies, **co-PI: Richard J. Povinelli** (allocation: \$83,000) with PI: Ronald H. Brown and co-PI: George Corliss (July 2014 - June 2015)
- \$743,639 "GasDay – Forecasting Natural Gas Demand," Sponsored by a Consortium of Natural Gas Local Distribution Companies, **co-PI: Richard J. Povinelli** (allocation: \$55,000) with PI: Ronald H. Brown and co-PI: George Corliss (July 2013 - June 2014)
- \$679,473 "GasDay – Forecasting Natural Gas Demand," Sponsored by a Consortium of Natural Gas Local Distribution Companies, **co-PI: Richard J. Povinelli** (allocation: \$50,000) with PI: Ronald H. Brown and co-PI: George Corliss (July 2012 - June 2013)
- \$560,000 "MRI: Acquisition of a Parallel Computing Cluster and Storage for the Marquette University Grid (MUGrid)," National Science Foundation, **Faculty associate: Richard J. Povinelli** (allocation: \$56,000) with PI: Craig A. Struble and co-PIs: S. Scott Goldsborough, Kathy Lang, Lars E. Olson, Daniel S. Sem. (September 2009 - August 2010).
- \$154,395 "Acquisition of Linux Cluster to Support College-Wide Research and Teaching Activities," National Science Foundation, **Faculty associate: Richard J. Povinelli** (allocation: \$25,000) with PI: S. Scott Goldsborough and co-PI: John Borg. (September 2005 – August 2006)
- \$258,000 "Acoustic waves in thin piezoelectric plates: theory and applications," National Science Foundation, **Faculty Associate: Richard J. Povinelli** (allocation: \$20,000) with PI: Shrinivas G. Joshi and co-PI: Dennis L. Polla (September 2004 – August 2008)
- \$358,000 "A Novel Approach to Fault Modeling, Diagnostics, and Prediction in Motor Drive Systems," National Science Foundation, **PI: Richard J. Povinelli** with co-PI: Nabeel A. O. Demerdash, (September 2003 – August 2006) Includes two Research Experiences for Undergraduates (REU) supplements - \$18,000.
- \$41,000 "Classifying and Predicting Atrial Arrhythmias Using Nonlinear Dynamical and Time Series Data Mining Techniques," American Heart Association, **Sponsor: Richard J. Povinelli** (allocation: \$41,000) with PI: Felice M. Roberts and co-sponsor Kristina M. Ropella. (January 2003 – December 2004)
- \$405,000 "Integration of Stochastic and Dynamical Methods for Speech Technology," National Science Foundation, **co-PI: Richard J. Povinelli** (allocation: \$202,500) with PI: Michael T. Johnson, (September 2001 – August 2004) Includes three Research Experiences for Undergraduates (REU) supplements - \$45,000.

## ***Internal Research Grants Funded***

- \$5,000 "Deep Neural Networks for Prediction of 2-week Mortality and 30-day Hospital Readmission," Marquette University Opus College of Engineering Summer Undergraduate Research Fellowship Program (SURF), **PI: Richard J. Povinelli** (May 2019 - August 2019)
- \$ 20,000 "GPU Cluster for Speeding-up Computational Methods in Electronic Design Automation, Power Systems, Voice and Speech Recognition, Machine Learning, and Data Mining," Marquette University College of Engineering Legacy Research Grant, **co-PI: Richard J. Povinelli** (allocation: \$5,000) with PI: Cristinel Ababei and co-PIs: Michael T. Johnson, Ronald H. Brown (February – December 2014)
- \$ 22,265 "College of Engineering Tracking Laboratory," Marquette University College of Engineering Legacy Research Grant, **PI: Richard J. Povinelli** with co-PI: Robert H. Bishop (February – December 2014)
- \$10,000 "Electricity Demand Forecasting," Marquette University College of Engineering

# Richard J. Povinelli, Ph.D., P.E. – Curriculum Vitae

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Undergraduate Research Grant, **PI: Richard J. Povinelli** (January – December 2014)

- \$3,000 “Knowledge Discovery for Electricity Demand Forecasting,” Marquette University College of Engineering Undergraduate Research Grant, **PI: Richard J. Povinelli** (May – August 2013)
- \$9,640 “An Examination of Phoneme Confusability in Spoken English,” Marquette University Regular Research Grant, **PI: Richard J. Povinelli** with co-PI: Michael T. Johnson. (January – June 2011)
- \$5,000 Way Klingler Summer Salary Award, Marquette University, **PI: Richard J. Povinelli** (May – August 2005)
- \$3,000 “Constructing a Massive Heart Arrhythmia Database,” Marquette University Regular Research Grant **PI: Richard J. Povinelli** (January – June 2003)
- \$2,500 “Preliminary Study of Motor Fault Diagnostic Methods,” Marquette University Regular Research Grant, **PI: Richard J. Povinelli** (January – December 2001)

## ***In-kind Grants Funded***

- \$12,000 Symantec Educational Software Grant of a site license for Visual Café 4.0, **PI: Richard J. Povinelli** (1999)
- \$37,300 "Single License VHDL Software - Evaluation of VHDL in Computer Engineering Curriculum", VeriBest, Inc., **PI: Richard J. Povinelli** (October, 1998)
- \$12,000 Symantec Educational Software Grant of a site license for Visual Café 3.0., **PI: Richard J. Povinelli** (1998)

## ***Graduate and Undergraduate Research Student Advising (Current)***

Student publication are identified by a J, C, A, and N respectively for refereed journal, refereed conference, refereed abstract, and non-refereed conference.

### **Chair of Thesis Committee (M.S.)**

Colin O. Quinn, M.S. (Apache Corp. Research Assistant, publications: [A11,N6])

Taiwo Masae, M.S. (Department Teaching Assistant), publications: [A13]

Zach Nordgren, M.S. (College Research Assistant)

### **Research Advisor – Undergraduate students (B.S.)**

Jimmy Carpenter (NSF REU Research Assistant)

### **Member of Dissertation Committee (Ph.D.)**

Masabho Milali – Ph.D. (advisor: Dr. George Corliss)

Douglas Gobeski – Ph.D. (advisor: Brian Schmit)

Kaleb Vinehout – Ph.D. (advisor: Brian Schmit)

Rezoan Shuvro – Ph.D. (advisor: Majeed Hayat)

Wenkai Guan – Ph.D. (advisor: Cristinel Ababei)

Yuqin Weng – Ph.D. (advisor: Cristinel Ababei)

### **Member of Thesis Committee (M.S.)**

Jinhua Zhang – M.S. (advisor: Cristineal Ababei)

## ***Graduate and Undergraduate Research Student Advising (Graduated)***

Student publication are identified by a J, C, A, and N respectively for refereed journal, refereed conference, refereed abstract, and non-refereed conference.

### **Chair of Dissertation Committee (Ph.D.)**

Michele Malinowski, Ph.D. 2018 (sponsored by Badger Meter, publication: [C29])

Mohammad Saber, Ph.D. 2017 (Research Assistant)

Hermine N. Akouemo, Ph.D. 2014 (Research Assistant, publications: [J18,J22,C48])

# Richard J. Povinelli, Ph.D., P.E. – Curriculum Vitae

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Kevin M. Indrebo, Ph.D. 2008 (NSF Research Assistant/GAANN Fellow, publications: [J16,J8,J13,C26,C31,C37])

Mohamed A. Mneimneh, Ph.D. 2008 (NSF Research Assistant, publications: [P2, C40-43,C46-47])

## **Chair of Thesis Committee (M.S.)**

Greg D. Merkel, M.S. 2017 (Research Assistant, publications: [J24,A6-8,A12,N3-4])

Sanzad Siddique, M.S. 2013 (Teaching Assistant, publications: [C49])

Aderiano M. da Silva, M.S. 2006 (NSF Research Assistant, publications: [J11,J16])

David H. Diggs, M.S. 2004 (Teaching Assistant, publications: [C30])

Michael W. Zimmerman, M.S. 2004 (5 year B.S./M.S, publications: [C27,C32])

Kevin M. Indrebo, M.S. 2004 (NSF Research Assistant, publications: [see Ph.D.])

Michele R. B. Malinowski, M.S. 2003 (sponsored by GE Healthcare, publications: [see Ph.D.])

Minglei Duan, M.S. 2002 (Department Research Assistant, publications: [C10,C13,C14])

## **Non-thesis (M.S.)**

Hong Ding, M.S. 2018 (NIH Research Assistant)

## **Undergraduate Research Advisor (B.S.)**

Mitchell Schreiner, B.S. 2019 (Research Assistant)

Jared Collins, B.S. 2018 (NSF REU Research Assistant, publications: [A11,N6])

Nikil Pancha, B.S. 2018 (NSF REU Research Assistant)

Shivani Kohli, B.S. 2018 (NSF REU Research Assistant)

Abby Martin, B.S. 2017 (NSF REU Research Assistant)

Gregory D. Merkel, B.S. 2014 (Research Assistant)

Josh Peterson, B.S. 2009 (Research Assistant)

Joseph G. Harman, B.S. 2006 (NSF REU Research Assistant)

Daniel P. Ahern, B.S. 2005 (NSF REU Research Assistant)

Lilia A. Brown, B.S. 2005 (NSF REU Research Assistant)

F. Justin Evert, B.S. 2005 (NSF REU Research Assistant)

Mark W. Schletty, B.S. 2005 (NSF REU Research Assistant)

Timothy E. Stollendorf, B.S. 2005 (NSF REU Research Assistant)

Sarah Schmit, B.S. 2004 (NSF REU Research Assistant)

Paul Hoffmann, B.S. 2003 (NSF REU Research Assistant)

Kevin M. Indrebo, B.S. 2002 (NSF REU Research Assistant)

## **Member of Dissertation Committee (Ph.D.)**

Maral Fakoor – Ph.D. 2019 (Advisor: Dr. Ronald H. Brown)

Milad Ghorbani Moghaddam – Ph.D. 2018 (advisor: Dr. Cris Ababei).

Osmani Gani – Ph.D. 2017 (advisor: Dr. Sheikh Iqbal Ahamed)

Juan Bernal – Ph.D. 2016 (advisor: Dr. Robert H. Bishop)

Jahangir Majumder – Ph.D. 2016 (advisor: Dr. Sheikh Iqbal Ahamed)

An Ji – Ph.D. 2014 (advisor: Dr. Michael T. Johnson)

Prachi Pradeep – Ph.D. 2014 (advisor: Dr. Stephen Merrill)

Jianglin Wang – Ph.D. 2013 (advisor: Dr. Michael T. Johnson)

Wenjing Zhang – Ph.D. 2013 (advisor: Dr. Xin Feng)

Marik Trawiki – Ph.D. 2009 (advisor: Dr. Michael T. Johnson)

Kuntoro Audi – Ph.D. 2008 (advisor: Dr. Michael T. Johnson)

Behrooz Mirfzal – Ph.D. 2005 (advisor: Dr. Nabeel A. O. Demerdash)

Patrick Clemins – Ph.D. 2005 (advisor: Dr. Michael T. Johnson)

Zhonghui Li - Ph.D. 2005 (advisor: Dr. Fabien J. Josse)

Hong Yan – Ph.D. 2004 (advisor: Dr. Martin A. Seitz)

## **Member of Thesis Committee (M.S.)**

Samuel Amoako-Frimpong – M.S. 2018 (Advisor: Dr. Henry Medeiros)

Wenkai Guan – M.S. 2018 (Advisor: Dr. Cris Ababei)

Yevgeniy Reznichenko – M.S. 2018 (Advisor: Henry Medeiros)

Russell Marineau – M.S. 2018 (Advisor: Cris Ababei)

David Kaftan – M.S. 2018 (advisor: Dr. Ronald H. Brown)

Wenkai Gau – M.S. 2018 (advisor: Dr. Cristinel Ababei)

Deriq Jones – M.S. 2017 (advisor: Michael T. Johnson)

# Richard J. Povinelli, Ph.D., P.E. – Curriculum Vitae

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Babatunde Ishola – M.S. 2016 (advisor, Dr. Ronald H. Brown)  
Kelly Vonderhaar – M.S. 2016 (advisor, Dr. Michael T. Johnson)  
Andrew Kirkham – M.S. 2016 (advisor, Dr. George Corliss)  
Elise Russell – M.S. 2015 (advisor: Dr. Andrew Williams)  
Xiangyu Zhou – M.S. 2015 (advisor, Dr. Michael T. Johnson)  
Paul Kaefer – M.S. 2014 (advisor: Dr. Ronald H. Brown)  
Kyle Persohn – M.S. 2012 (Advisor: Dr. Dennis Brylow)  
Bo Pang – M.S. 2011 (advisor: Dr. Ronald Brown)  
Tsuginosuke Sakauchi – M.S. 2011 (advisor: Dr. Ronald H. Brown)  
Li Xi – M.S. 2007 (advisor: Dr. Michael T. Johnson)  
Peter Szeto – M.S. 2007 (advisor: Dr. Xin Feng)  
Rohan Kennedy – M.S. 2006 (advisor: Dr. Ronald H. Brown)  
Anthony D. Ricke – M.S. 2006 (advisor: Dr. Michael T. Johnson)  
Sridevi Prithivi – M.S. 2006 (advisor: Dr. Daniel S. Sem)  
Abiman Pasachhe – M.S. 2006 (advisor: Dr. Shrinivas G. Joshi)  
Peter Bazeley – M.S. 2005 (advisor: Dr. Daniel S. Sem)  
Jill Gilbert – M.S. 2005 (advisor : Dr. George F. Corliss)  
Ahmed Sesay – M.S. 2004 (advisor: Dr. Nabeel A. O. Demerdash)  
Susanto Halim – M.S. 2004 (advisor: Dr. Ronald H. Brown)  
Hao Jiang – M.S. 2004 (advisor: Dr. Xin Feng)  
Mark Solverson – M.S. 2004 (advisor: Nabeel A. O. Demerdash)  
Jinjin Ye – M.S. 2004 (advisor: Dr. Michael T. Johnson)  
Franck Hounkpevi – M.S. 2003 (advisor: Dr. Michael T. Johnson)  
Andrew C. Lindgren – M.S. 2003 (advisor: Dr. Michael T. Johnson)  
Ester Lim – M.S. 2002 (advisor: Dr. Ronald H. Brown)  
ChiaChou Ye – M.S. 2002 (advisor: Nabeel A. O. Demerdash)  
Xiang Fu – M.S. 2001 (advisor: Dr. Xin Feng)  
Hai Huang – M.S. 2001 (advisor: Dr. Xin Feng)  
Felice M. Roberts – M.S. 2000 (advisor: Dr. James Heinen)

## **Graduate Advisors**

Ph.D. Advisor: Xin Feng, Marquette University

M.S. Advisor: Piero Bonnisonne, GE CRD/ Rensselaer Polytechnic Institute

## **Teaching**

### **Teaching Philosophy**

Four core ideas form my teaching philosophy: excellence, compassion, interaction, and application.

#### Excellence

- One of the core values of Marquette University is *magis*, meaning to always strive for more; to strive for excellence. It embodies the ideas of high expectations, integrity, and continuous improvement. For me, *magis* means always learning, improving, and searching for new ways to help students learn. It means always considering the ethical and moral dimension of any action. For my students it means an expectation of success. They will be expected to work hard. They will be expected to hold themselves to the highest ethical standards. It also means that I will strive to give my students the tools that they need to succeed including the support necessary to meet these high standards.

#### Compassion

- Another core Marquette value is *cura personalis* or care for the whole person; the embodiment of compassion. This concept balances the striving for excellence by remembering that a student is first and foremost a human being. For me, compassion means taking the time to really know my students, to be willing to explain concepts as many times and in as many different ways as it takes, and understanding that my students have many conflicting demands on their time.

#### Interaction

# Richard J. Povinelli, Ph.D., P.E. – Curriculum Vitae

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- I have always enjoyed teaching classes where the students actively participate. A conversation is more fun than a monologue. I strive to make my teaching motivating, exciting, and interactive. I view learning as an interactive and participatory process. Students learn best when self-motivated, and I try to tap into that self-motivation.

## Application

- The fourth core idea comes from my industrial experience as an engineer and manager. Learning should be practical, real world focused, and life-long. I know what is expected of an engineer working in industry. I want my students to succeed beyond my classroom and Marquette University as they apply what they have learned in my courses in their future studies and careers.
- Artificial Intelligence (EECE 6820)
  - Taught Fall 2001, 2003, 2005, 2009
  - Course website: <http://povinelli.eece.mu.edu/teaching/eece6820/>
  - Designed a graduate level introduction to the field of artificial intelligence as the initial course for a graduate curriculum in this area.
- Chaos and Nonlinear Signal Processing (EECE 6530)
  - Taught Fall 2000, Spring 2002, 2004, Fall 2010, Spring 2012, 2014, 2016, 2018, 2020
  - Course website: <http://povinelli.eece.mu.edu/teaching/eece6530/>
  - Designed a research oriented graduate course with a focus on building the skills to complete an independent original research project in the area of nonlinear signal processing. The pedagogical tools used included article reviews (including summaries and critiques), anonymous peer reviews of others student's work, and a mini-conference at the end of the course. Students have published 11 conference papers out of 18 written for this course.
- Computer Hardware Laboratory (COEN 140)
  - Taught Fall 1999, 2000, 2001, 2002, 2003
  - Course website: <http://povinelli.eece.mu.edu/teaching/coen140old/>
  - Designed a senior level laboratory course for computer engineering students. Developed a three-stage course design. The first stage introduces the students to the necessary technical content: VHDL, Xilinx, FPGAs. The second stage begins a team based project of their choosing that is based on computer hardware technology introduced during the first phase. The last phase is used to complete the project. To help motivate and to avoid overwhelming the students with the potential complexity of the technological content of the course, the project is split into two stages to give students a chance to re-estimate and re-scale the complexity of their projects.
- Embedded Systems Design (COEN 4720)
  - Taught Fall 2004, 2005, 2006, 2008, 2009, 2010, 2011, 2012, 2013
  - Course website: <http://povinelli.eece.mu.edu/teaching/coen4720/>
  - Designed a senior level embedded systems course, which shows embedded systems development at the hardware level using FPGA technology and at the portable device level using a PDA platform.
- Evolutionary Computation (COEN 133)
  - Taught Spring 2001, 2002, 2009, Fall 2017, 2019
  - Course website: <http://povinelli.eece.mu.edu/teaching/coen133/>
  - Designed an upper level undergraduate / graduate course to introduce students to a sub-field of artificial intelligence, namely evolutionary computation. This course is part of an overall effort to develop a comprehensive graduate artificial intelligence curriculum.
- Global Project Management (BUAD 279)
  - Taught Spring 1995, 1996
  - Designed a project management course based on my experience as a global project manager. The pedagogical tools used included learning contracts, real world case studies, industrial projects with global characteristics, and guest lecturers with international experience.
- Introduction to Computer Programming (EECE 1610)
  - Taught Spring 2000, 2001, 2010, 2011, 2012, 2013, 2014
  - Course website: <http://povinelli.eece.mu.edu/teaching/eece1610/>

# Richard J. Povinelli, Ph.D., P.E. – Curriculum Vitae

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- Designed a freshman engineering introduction to computer programming course that introduces the use of object orient programming. The pedagogical focus was on learning by doing supplemented with a discussion session laboratory conducted by upper classmen.
- Introduction to Intelligent Systems (COEN 4850/EECE 5850)
  - Taught Fall 2006, 2008, 2010, 2016, 2018
  - Course website: <http://povinelli.eece.mu.edu/teaching/eece4850/>
  - Designed an undergraduate level introduction to the field of artificial intelligence.
- Machine Learning (EECE 6822)
  - Taught Spring 2003, 2005, 2007, 2011, 2013, 2015, 2017, 2019
  - Course website: <http://povinelli.eece.mu.edu/teaching/eece6822/>
  - Designed a graduate level machine learning course to continue the development of the graduate artificial intelligence curriculum.

## **Other Major Courses Taught**

- Algorithms (EECE 6810)
  - Taught Fall 2011, 2012, 2013, 2015, 2016, 2017, 2018, 2019
  - Course website: <http://povinelli.eece.mu.edu/teaching/eece6810/>
- Computer Hardware (EECE 194 / COEN 171)
  - Taught Fall 1996, Spring 1997, Spring 2002, Spring 2003, Spring 2009
  - Course website: <http://povinelli.eece.mu.edu/teaching/coen171/>
- Digital Electronics Laboratory (EECE 143)
  - Taught Fall 1996, Spring 1997
  - Course website: <http://povinelli.eece.mu.edu/teaching/eece143/>
- Introduction to Computer Hardware and Software (EECE 190 / COEN 030)
  - Taught Fall 1997, Spring 1997, Summer 1998, Fall 1998, Spring 1999
  - Course website: <http://povinelli.eece.mu.edu/teaching/coen030/>
- Introduction to Software Engineering (Graduate level, EECE 211)
  - Taught Fall 1995
- Software Engineering (COEN 181)
  - Formerly Software Methodologies (EECE 194)
  - Taught Fall 1995, Spring 2004
  - Course website: <http://povinelli.eece.mu.edu/teaching/coen181/>
- Software Methodologies (COEN 2610)
  - Taught Fall 2015, Spring 2016, 2017, 2018, 2019, 2020
  - Course website: [http://povinelli.eece.mu.edu/teaching/coen2610](http://povinelli.eece.mu.edu/teaching/coen2610/)
  - Implemented flipped classroom.

## **Senior Design Advising**

- Cluster Computing Environment, 2000 – 2001
- Cluster Computing Environment (Top EECE Senior Design Team), 2001 – 2002
- Cluster Computing Environment, 2002 – 2003
- Computer Game (Top EECE Senior Design Team), 2003 – 2004
- Reconfigurable Electric Motor, 2004 – 2005
- Financial Engineering - Hedge Fund Trading System, 2006 – 2007
- Customizable Action Figures, 2008-2009
- Internet of Connected Things, 2017-2018
- System for Stress Testing SD Cards, 2018-2019
- Darwinian Stock Trading Algorithm, 2019-2020

## **Service**

- Reviewer for:
  - Biocybernetics and Biomedical Engineering, 2018 - 2019
  - Chaos, Solitons, and Fractals, 2019



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- Energies, 2019
- Expert Systems with Applications, 2019
- Food and Chemical Toxicology, 2019
- IEEE Transactions on Emerging Topics in Computing, 2019
- IEEE Transactions on Knowledge and Data Engineering, 2000, 2001, 2012, 2013, 2019
- Physiological Measurements, 2010, 2016 - 2019
- Sensors 2018, 2019
- Digital Signal Processing 2012, 2013, 2018
- IEEE Power and Energy Society General Meeting, 2018
- IEEE Systems Journal, 2018
- IEEE Transactions on Industrial Electronics, 2018
- IEEE Transactions on Instrumentation and Measurement, 2012, 2018
- IEEE Transactions on Pattern Analysis and Machine Intelligence, 2004, 2018
- IEEE Transactions on Smart Grid, 2017 - 2018
- International Journal of Electrical Power and Energy Systems, 2017 - 2018
- International Conference on Electronics, Communications and Networks, 2017
- Nonlinear Dynamics, 2017
- International Journal of Bifurcation and Chaos, 2015-2017
- International Symposium on Nonlinear Theory and Applications, 2016
- Complexity, 2016
- International Joint Conference on Artificial Intelligence, 2016
- Signal Processing, 2008, 2016
- IEEE Transaction on Intelligent Systems, 2015-2016
- IEEE Transaction on Industrial Informatics, 2015
- Medical Engineering and Physics, 2010, 2014
- Informatica, 2013, 2014
- Neurocomputing, 2007, 2014
- IEEE Transactions on Systems, Man and Cybernetics - Part B, 2012
- Journal of Adaptive Control and Signal Processing, 2012
- Midwestern Association of Graduate Schools' Masters Thesis Competition, 2010
- IEEE Transactions on Biomedical Engineering, 2005, 2010
- IEEE Transactions on Signal Processing, 2008
- IEEE Transactions on Evolutionary Computation, 2002, 2003, 2007
- Data Mining and Knowledge Discovery Journal, 2005, 2006
- IEEE International Midwest Symposium on Circuits and Systems, 2005
- IEEE Transactions on Speech and Audio Processing, 2004, 2005
- IEEE Transactions on Industrial Applications, 2003, 2005
- International Journal of General Systems – Intelligent System Design, 2003, 2004
- International Journal of Systems Science, 2004
- Data & Knowledge Engineering (DKE) Journal, 2004
- National Science Foundation, 2003, 2004
- IEEE Sensors Journal, 2002, 2004
- IEEE International Electric Machines and Drives Conference, 2003, 2004
- Artificial Neural Networks in Engineering (ANNIE) Conference, 2000 – 2003
- International Conference on Machine Learning, 2003
- IEEE Admission and Advancement Committee, 2003
- SIAM International Conference on Data Mining (SDM2004), 2003
- American Control Conference, 2002
- Conference Organizing and Program Committees
  - Vice Chair, International Institute of Forecasters Section on Water, Energy, and Environment, 2018 - present.
  - Organizing Committee Artificial Neural Networks in Engineering Conference, 2000 – 2003
  - Program Committee International Conference on Machine Learning, 2003
- Conference Session Chairs
  - Session chair at International Conference on Machine Learning and Application, 2018.

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- Session chair at Artificial Neural Networks in Engineering, 2001, 2003.
- Session chair at International Workshop on Temporal, Spatial and Spatio-Temporal Data Mining, 2000.
- Editor
  - Special Issue Editor on "Application of Machine Learning and Data Mining in Electrical Engineering", Energies, 2018 - 2019.

## **University Activities**

- Northwestern Mutual Data Science Institute - Academic Advisory Committee, 2019 – present
- Academic Integrity Council, 2015 – present
- Undergraduate Board of Studies, 2010
- Subcommittee on Faculty Welfare, 2006 – 2007, 2010 – 2013
- Charter Faculty Sponsor for the Marquette University Student Chapter of Association of Computing Machinery (ACM), 2001 – 2011
- Charter Faculty Sponsor for the Marquette University Student Chapter of Upsilon Pi Epsilon (UPE – Computing Science Honor Society), 2001 – 2003

## **College Activities**

- Masters Across Boundaries, Machine Learning Certificate Academic Advisor, 2019 – present
- Academic Honesty Panel, 2010 – 2013
- Technology Committee, 2006 – 2009
- Building Committee, 2007 – 2008
- Biomedical Engineering Advisory Board, 2003 – 2009
- Greenheck Chair Search Committee, 2007
- Lead Electronic Technician Search Committee, 2006
- Engineering Core Curriculum Task Force, 2003 – 2004
- Computer System Engineer Search Committee, 2004
- Electrical and Computer Engineering Chair Search Committee, 2000 – 2001

## **Department Activities**

- Leadership Committee, 2018 – present
- Faculty Search Committee, Committee Chair, 2019 – present
- Undergraduate Committee, 2010 – 2011, 2013 – present
- Laboratory Committee, 1998 – present
- Graduate Committee, 1999 – 2011, 2020 – present
- Committee Member, EECE Department Chair Search Committee, 2017 - 2018
- Faculty Search Committee, Committee Chair, 2017 - 2018
- Director of Computer Engineering Laboratories for Department of Electrical and Computer Engineering, 1998 – 2018
  - Designed, implemented, and maintain Computer Engineering Laboratory
- Director of Computer Engineering Program, 2010 – 2012
- Electrical and Computer Engineering Faculty Search Committee, 2005
- Electrical and Computer Engineering Faculty Search Committee, 2005
- Awards Committee, 1999 – 2000, 2002 – 2004
- Goals Committee, 2001 – 2002
- Computer Software Coordination Committee, 1998 – 2000
- Webmaster for Department of Electrical and Computer Engineering 1999 – 2002
- Taught Hands on Mini Course for High School Seniors, 1999 - 2000

## **Other Service**

- Facilitator, NAMI Connections, 2014 – present
- Judge, First Lego League, Milwaukee, Wisconsin, 2014, 2016, 2017, 2018, 2019
- Mentor, First Robotics, Marquette University High School, Milwaukee, Wisconsin, 2014 - 2015
- Cub Master, St. Robert Cub Scout Pack 15, Shorewood, Wisconsin, 2005, 2006

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- Assistant Soccer Coach, Shorewood Kickers Soccer Club, Shorewood, Wisconsin, 2005, 2006
- Science Fair Judge for St. Robert's Elementary School, 2005, 2006
- Guest Science Teacher for St. Robert's 1<sup>st</sup> Grade Science Fair Project, 2005
- Presenter at St. Robert's Elementary School High Interest Day , 2003 – 2005
- Presenter at National Association of Engineering Student Councils Conference, 2004
- Participated in IEEE Senior Member Promotion Review Panel, 2003
- Parish Council member, Saints Peter and Paul Church, Milwaukee, Wisconsin, 1997 – 2001
- Participated in Nathan Hale High School Career Day presenter, 1999
- Choir member, Saints Peter and Paul Church, Milwaukee, Wisconsin, 1996 – 1998
- Gentle-Man Program, Waukesha Women's Center, Waukesha, Wisconsin. Volunteered at shelter for abused woman and children. This volunteer program was honored with a JC Penny Golden Rule Award, 1990 – 1996
- Confirmation teacher, Saint John Neumann, Waukesha, Wisconsin, 1990 – 1992.
- 8th grade CCD teacher, Saint John the Evangelist, Schenectady, New York, 1987 – 1989

### ***Consulting Activities***

- Expert Witness for Quarles & Brady, Milwaukee, Wisconsin, 2004
- Expert Witness for Piaskoski & Associates, Milwaukee, Wisconsin, 2000 – 2001
- Patent Consultant for Barlitt, Beck, Herman, Palenchar & Scott, Chicago, IL., 1998.
- Technical Trainer for East Troy School District, East Troy, WI., 1997.