2021 Publications of Faculty in the Department of Electrical & Computer Engineering Portland State University

Compiled by Nate Rose

REFERENCES

- Saad Al-Askaar and Marek Perkowski. A new approach to machine learning based on functional decomposition of multi-valued functions. In 2021 IEEE 51st International Symposium on Multiple-Valued Logic (ISMVL), pages 128–135, 2021. Student.
- [2] Muayad J. Aljafar and John M. Acken. A 3-D crossbar architecture for both pipeline and parallel computations. *IEEE Transactions on Circuits and Systems I: Regular Papers*, 68(11):4456–4469, November 2021. Student.
- [3] Muayad J. Aljafar and John M. Acken. Survey on the benefits of using memristors for PUFs. *International Journal of Parallel, Emergent and Distributed Systems*, 37(1):40–67, September 2021. Student.
- [4] Hossein Baninajar, Jonathan Bird, and Victor Albarran. Investigating the performance of a new type of preloaded linear stroke length magnetic spring. *Progress In Electromagnetics Research C*, 111:1–14, 2021. Student.
- [5] Maggie Bao, Cole Powers, and Marek Perkowski. Quantum algorithm for machine learning and circuit design based on optimization of ternary - input, binary-output Kronecker-Reed-Muller forms. In 2021 IEEE 51st International Symposium on Multiple-Valued Logic (ISMVL), pages 120– 127. IEEE, May 2021. Student.
- [6] Jonathan Z. Bird. Electromagnetic configurations and assembly methods for a halbach rotor magnetic gear, 2021.
- [7] Jonathan Z. Bird. Variable stiffness magnetic spring, February 2021.
- [8] Marcos Blanco, Dionisio Ramirez, Mohammad Ebrahim Zarei, and Mahima Gupta. Dual multivector model predictive control for the power converters of a floating OWC WEC. *International Journal of Electrical Power & Energy Systems*, 133:107263, December 2021.
- [9] D. C. Burnett and J. Burnett. Enabling tethered ocean world vehicles by sharing power and communication conductors. In 52nd Lunar and Planetary Science Conference, Lunar and Planetary Science Conference, page 2407, March 2021.
- [10] D. C. Burnett, Filip Maksimovic, Brad Wheeler, Osama Khan, Ali M. Niknejad, and Kristofer S.J. Pister. Free-running 2.4ghz ring oscillator-based FSK TX/RX for ultra-small IoT motes. In 2020 15th European Microwave Integrated Circuits Conference (EuMIC), pages 101–104, 2021.
- [11] Erick Burns, Stanly Mordensky, John Lipor, Jennifer A. Curtis, and Roy Sando. Unconventional strategies to understand water resources of the northwest volcanic province. In *Geological Society of America Abstracts* with Programs. Geological Society of America, 2021.
- [12] Merlin Carson, Walt Woods, Sebastian Reynolds, Mark Wetzel, Adam J. Morton, Adam A. Hecht, Marek Osinski, and Christof Teuscher. Application of a simple, spiking, locally competitive algorithm to radionuclide identification. *IEEE Transactions on Nuclear Science*, 68(3):292–304, March 2021. Student.
- [13] Tengfei Chang, Thomas Watteyne, Brad Wheeler, Filip Maksimovic, David C. Burnett, and Kris Pister. Surviving the hair dryer: Continuous calibration of a crystal-free mote-on-chip. *IEEE Internet of Things Journal*, pages 1–11, 2021.
- [14] Dawei Che, Jonathan Z. Bird, Alex Hagmuller, and Md Emrad Hossain. An adjustable stiffness torsional magnetic spring with a linear stroke length. In 2021 IEEE Energy Conversion Congress and Exposition (ECCE), pages 5944–5948. IEEE, October 2021. Student.
- [15] Gang Chen, Xiaoyu Song, Guowu Yang, Ting Wang, Xiaoqiao Mu, and Yongqian Fan. A formal proof of PG recurrence equations of parallel adders. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 40(7):1489–1494, July 2021. Student.

- [16] Xi Cheng, Min Zhou, Xiaoyu Song, Ming Gu, and Jiaguang Sun. Automatic integer error repair by proper-type inference. *IEEE Transactions on Dependable and Secure Computing*, 18(2):918–935, March 2021.
- [17] Malgorzata Chrzanowska-Jeske, Stephen M. Goodnick, and Martin N. Wybourne. Nanoelectronics—beyond CMOS computing [guest editorial]. *IEEE Nanotechnology Magazine*, 15(6):6–7, December 2021.
- [18] Jiawang Dan, Zhaowei Qu, Xiaoru Wang, Fu Li, Jiahang Gu, and Bing Ma. Scale adaptive and lightweight super-resolution with a selective hierarchical residual network. In 2021 the 5th International Conference on Innovation in Artificial Intelligence. ACM, March 2021.
- [19] Richard Deng, Yuchen Huang, and Marek Perkowski. Quantum motions and emotions for a humanoid robot actor. In 2021 IEEE 51st International Symposium on Multiple-Valued Logic (ISMVL), pages 207–214. IEEE, May 2021. Student.
- [20] N. Sonali Fernando, John M. Acken, and Robert B. Bass. Developing a distributed trust model for distributed energy resources. In 2021 IEEE Conference on Technologies for Sustainability (SusTech), pages 1–6. IEEE, April 2021. Student.
- [21] John Gebbie and Martin Siderius. Oceanographic property estimation with ambient noise on the New England shelf. volume 150, pages A277– A277. Acoustical Society of America (ASA), October 2021.
- [22] John Gebbie and Martin Siderius. Optimal environmental estimation with ocean ambient noise. The Journal of the Acoustical Society of America, 149(2):825–834, February 2021.
- [23] Garrison Greenwood and Daniel Ashlock. A comparison of the Moran Process and replicator equations for evolving social dilemma game strategies. *Biosystems*, 202:104352, April 2021.
- [24] Zhengang Guo, Yingfeng Zhang, Xibin Zhao, and Xiaoyu Song. CPS-based self-adaptive collaborative control for smart production-logistics systems. *IEEE Transactions on Cybernetics*, 51(1):188–198, January 2021.
- [25] Mahima Gupta. A PWM control method for reducing dv/dt in cascaded power converters. In 2021 IEEE Energy Conversion Congress and Exposition (ECCE), pages 3308–3315. IEEE, October 2021.
- [26] Cody Henderson and Charles W. Holland. Estimating sediment interval velocity using a monostatic sonar from a seabed with tilted layers. volume 150, pages A157–A157. Acoustical Society of America (ASA), October 2021. Student.
- [27] Alex Higgins and Martin Siderius. Implementation and analysis of high-performance cloud computing for underwater acoustic modeling applications. volume 150, pages A209–A209. Acoustical Society of America (ASA), October 2021. Student.
- [28] Andrea Hildebrand, Peter G. Jacobs, Jonathon G. Folsom, Clara Mosquera-Lopez, Eric Wan, and Michelle H. Cameron. Comparing fall detection methods in people with multiple sclerosis: A prospective observational cohort study. *Multiple Sclerosis and Related Disorders*, 56:103270, November 2021.
- [29] Charles W. Holland. Sound speed gradients in mud. JASA Express Letters, 1(6):066001, June 2021.
- [30] Charles W. Holland and Stan Dosso. Compressional wave attenuation in muddy sediments at the new england mud patch. volume 149, pages A149–A149. Acoustical Society of America (ASA), April 2021.
- [31] Charles W. Holland and Stan E. Dosso. On compressional wave attenuation in muddy marine sediments. The Journal of the Acoustical Society of America, 149(5):3674–3687, May 2021.
- [32] Charles W. Holland, Chad M. Smith, Zackary Lowe, and Jim Dorminy. Seabed observations at the New England mud patch: Reflection and scattering measurements and direct geoacoustic information. *IEEE Journal of Oceanic Engineering*, pages 1–16, 2021.
- [33] Md Emrad Hossain, Jonathan Z. Bird, Victor Albarran, and Dawei Che. Analysis and experimental testing of a new type of variable stiffness

1

- magnetic spring with a linear stroke length. In 2021 IEEE Energy Conversion Congress and Exposition (ECCE), pages 5961–5965. IEEE, October 2021. Student.
- [34] Yong-Min Jiang, Stan Dosso, Charles W. Holland, and Jan Dettmer. Information content of reflection-coefficient data versus angle and frequency for geoacoustic inversion. volume 149, pages A135–A135. Acoustical Society of America (ASA), April 2021.
- [35] Mojtaba Bahrami Kouhshahi Jonathan Z. Bird. A low cost magnetically geared lead screw (mgls), 2021. Student.
- [36] Rasika Joshi and John M Acken. Detection limit for intermediate faults in memristor circuits. In 2021 22nd International Symposium on Quality Electronic Design (ISQED), pages 216–220. IEEE, April 2021. Student.
- [37] Rasika Joshi and John M. Acken. Utilizing sneak paths for memristor test time improvement. *IETE Journal of Research*, pages 1–10, February 2021. Student.
- [38] Mark A. Langhirt, Charles W. Holland, Ying-Tsong Lin, Sheri Martinelli, and Daniel C. Brown. Using energy flux methods to derive a 3D ocean acoustic propagation model. volume 150, pages A318–A318. Acoustical Society of America (ASA), October 2021.
- [39] Jie Li, Martin Siderius, Peter Gerstoft, Jun Fan, and Lanfranco Muzi. Head-wave correlations in layered seabed: Theory and modeling. JASA Express Letters, 1(9):096001, September 2021.
- [40] Ying-Tsong Lin, Glen Gawarkiewicz, Andone C. Lavery, Weifeng G. Zhang, J Michael Jech, Martin Siderius, Jason Chaytor, William L. Siegmann, Emma Reeves Ozanich, Brendan J. DeCourcy, Scott Loranger, Jacob Forsyth, Jennifer Johnson, Arthur E. Newhall, and Frank Bahr. Correlation between the fluctuations of underwater sound propagation and shelfbreak oceanography. volume 150, pages A157–A157. Acoustical Society of America (ASA), October 2021.
- [41] Angelina Lu and Marek Perkowski. Deep learning approach for screening autism spectrum disorder in children with facial images and analysis of ethnoracial factors in model development and application. *Brain Sciences*, 11(11):1446, October 2021.
- [42] Patrick Mcgurrin, James McNames, Tianxia Wu, Mark Hallett, and Dietrich Haubenberger. Quantifying tremor in essential tremor using inertial sensors—validation of an algorithm. *IEEE Journal of Translational Engineering in Health and Medicine*, 9:1–10, 2021.
- [43] Sina Mehdinia, Thomas Schumacher, Xubo Song, and Eric Wan. A pipeline for enhanced multimodal 2D imaging of concrete structures. *Materials and Structures*, 54(6), November 2021.
- [44] Sina Modaresahmadi, David Barnett, Hossein Baninajar, Jonathan Z. Bird, and Wesley B. Williams. Structural modeling and validation of laminated stacks in magnetic gearing applications. *International Journal* of Mechanical Sciences, 192:106133, February 2021. Student.
- [45] Stanley Mordensky, John Lipor, Jacob DeAngelo, Erick R. Burns, and Cary Lindsey. Applying data-driven machine learning to geothermal favorability, Western United States. In *Geological Society of America Abstracts with Programs*. Geological Society of America, 2021.
- [46] Aurelien T Mozipo and John M Acken. Power side channel attack of AES FPGA implementation with experimental results using full keys. In 2021 IEEE International Conference on Design & Test of Integrated Micro & Nano-Systems (DTS), pages 1–6. IEEE, June 2021.
- [47] Lanfranco Muzi, Scott Schecklman, Martin Siderius, and Peter L. Nielsen. Glider-based passive bottom reflection-loss estimation: Proof of concept. volume 149, pages A35–A35. Acoustical Society of America (ASA), April 2021.
- [48] Adewale K. Oladeinde, Ehsan Aryafar, and Branimir Pejcinovic. EBG-based self-interference cancellation to enable mmWave full-duplex wireless. In 2021 IEEE Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS). IEEE, May 2021. Student.
- [49] Adewale K. Oladeinde, Ehsan Aryafar, and Branimir Pejcinovic. MmWave full-duplex wireless communication: TX-RX self-interference reduction through passive cancellation techniques. In 2021 IEEE-APS Topical Conference on Antennas and Propagation in Wireless Communications (APWC). IEEE, August 2021. Student.
- [50] B. Pejcinovic. Teaching high-frequency circuit design in online environment. In 2021 44th International Convention on Information, Communication and Electronic Technology (MIPRO). IEEE, September 2021.
- [51] Marek Perkowski and Kyle Liu. Binary, multi-valued and quantum board and computer games to teach synthesis of classical and quantum logic circuits. In 2021 IEEE 51st International Symposium on Multiple-Valued Logic (ISMVL), pages 93–100. IEEE, May 2021. Student.
- [52] Philippe Proctor, Christof Teuscher, Adam Hecht, and Marek Osiński. Proximal policy optimization for radiation source search. *Journal of Nuclear Engineering*, 2(4):368–397, September 2021. Student.

- [53] Vrutangkumar V. Shah, Carolin Curtze, Martina Mancini, Patricia Carlson-Kuhta, John Nutt, Christopher M. Gomez, Mahmoud El-Gohary, Fay Horak, and James McNames. Inertial sensor algorithms to characterize turning in neurological patients with turn hesitations. *IEEE Transactions on Biomedical Engineering*, 68(9):2615–2625, 2021.
- [54] Vrutangkumar V. Shah, James McNames, Graham Harker, Carolin Curtze, Patricia Carlson-Kuhta, Rebecca I. Spain, Mahmoud El-Gohary, Martina Mancini, and Fay B. Horak. Does gait bout definition influence the ability to discriminate gait quality between people with and without multiple sclerosis during daily life? Gait & Posture, 84:108–113, February 2021.
- [55] Vrutangkumar V. Shah, Roberto Rodriguez-Labrada, Fay B. Horak, James McNames, Hannah Casey, Kyra Hansson Floyd, Mahmoud El-Gohary, Jeremy D. Schmahmann, Liana S. Rosenthal, Susan Perlman, Luis Velázquez-Pérez, and Christopher M. Gomez. Gait variability in spinocerebellar ataxia assessed using wearable inertial sensors. *Move-ment Disorders*, 36(12):2922–2931, August 2021.
- [56] Martin Siderius and John Gebbie. Signal processing ocean ambient sound for environmental awareness. volume 150, pages A314–A314. Acoustical Society of America (ASA), October 2021.
- [57] Justin Simmons and Richard Tymerski. Design and control of an alternative buck PWM DC-to-DC converter. *Journal of Power and Energy Engineering*, 09(06):43–61, 2021. Student.
- [58] Justin Simmons and Richard Tymerski. Exact dynamic modeling of PWM DC-to-DC power converters—part I: Continuous conduction mode. *Journal of Power and Energy Engineering*, 09(05):26–47, 2021. Student.
- [59] Justin Simmons and Richard Tymerski. Exact dynamic modeling of PWM DC-to-DC power converters—part II: Discontinuous conduction mode. *Journal of Power and Energy Engineering*, 09(05):48–62, 2021. Student.
- [60] Tylor Slay and Robert B. Bass. An energy service interface for distributed energy resources. In 2021 IEEE Conference on Technologies for Sustainability (SusTech). IEEE, April 2021. Student.
- [61] Tim Sonnemann, Jan Dettmer, Charles W. Holland, and Stan Dosso. Geoacoustic inversion for a 14-km autonomous underwater vehicle survey on the Malta plateau. volume 150, pages A170–A170. Acoustical Society of America (ASA), October 2021.
- [62] Christof Teuscher. A golden age for computing frontiers, a dark age for computing education? In Proceedings of the 18th ACM International Conference on Computing Frontiers, pages 140–143. ACM, May 2021.
- [63] Dat Tran and Christof Teuscher. Computational capacity of complex memcapacitive networks. ACM Journal on Emerging Technologies in Computing Systems, 17(2):1–25, April 2021. Student.
- [64] Satya K. Vendra and Malgorzata Chrzanowska-Jeske. Fast thermal goodness evaluation of a 3D-IC floorplan. In 2021 22nd International Symposium on Quality Electronic Design (ISQED), pages 367–373. IEEE, April 2021. Student.
- [65] Satya Keerthi Vendra and Malgorzata Chrzanowska-Jeske. Critical path tube redundancy for power minimization in CNFET circuits with variations. *IEEE Transactions on Nanotechnology*, 20:598–609, 2021. Student.
- [66] Rajesh Venkatachalapathy, Martin Zwick, Adam Slowik, Kai Brooks, Mikhail Mayers, Roman Minko, Tyler Hull, Bliss Brass, and Marek Perkowski. Universal biological motions for educational robot theatre and games. In 2021 International Conference on Information and Digital Technologies (IDT), pages 162–170. IEEE, June 2021. Student.
- [67] Zhuowei Wang, Xiaoyu Song, Lianglun Cheng, and Hao Wang. Activity-driven task allocation in energy-constrained heterogeneous GPUs systems. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 40(11):2357–2371, November 2021.
- [68] Drew Wendeborn, Bill Stevens, and Martin Siderius. New England shelf break acoustic experiment (NESBA): Assimilation of acoustic pressure observations. volume 150, pages A158–A158. Acoustical Society of America (ASA), October 2021. Student.
- [69] Ho Yin David Wong and Jonathan Z. Bird. Performance potential of high gear ratio coaxial magnetic gears. In 2021 IEEE International Magnetic Conference (INTERMAG). IEEE, April 2021. Student.
- [70] Hao Wu, Xin Chen, Xiaoyu Song, Chi Zhang, and He Guo. Scheduling large-scale scientific workflow on virtual machines with different numbers of vCPUs. *The Journal of Supercomputing*, 77(1):679–710, April 2021.
- [71] Xianzhen Yang, Shiyu Li, and Fu Li. Fourth-order nonlinear distortion to the power spectrum of RF amplifiers. *The Journal of Engineering*, 2022(1):53–63, October 2021. Student.

- [72] Xianzhen Yang, Shiyu Li, Siyuan Yan, and Fu Li. On IP2 impact to nonlinear distortion of RF amplifiers. *The Journal of Engineering*, 2021(4):209–215, March 2021. Student.
- [73] Siva K. Yerramilli, John M. Acken, and Robert J. Aslett. A Perspective on Holistic Engineering Management. WSPC, February 2021.
- [74] Mohammad Ebrahim Zarei, Mahima Gupta, Dionisio Ramirez, and Fernando Martinez-Rodrigo. Switch fault tolerant model-based predictive control of a VSC connected to the grid. *IEEE Journal of Emerging and Selected Topics in Power Electronics*, 9(1):949–960, February 2021.