UNIVERSITY OF THE
DISTRICT OF COLUMBIA
SCHOOL OF ENGINEERING AND APPLIED SCIENCES

SEAS Faculty Publication Listing

AY 2022-2023

The School of Engineering and Applied Sciences (SEAS) offers nationally competitive and fully accredited professional programs at the bachelors, masters, and doctoral degree levels.

RESEARCH INITIATIVES AND CAPABILITIES

Research capabilities include Cyber Security, Cloud Computing Information Assurance, High Performance Computing, Wireless and Sensor Networks, Computational Intelligence, Computational Geometry, Robotics & Autonomous Systems, Mechatronics, Energy Conversion, Modeling and Simulation, Advanced Manufacturing, Product Design, Nanotechnology, Thermal Science, Optical Engineering, Renewable Energy, Rehabilitation Engineering and Bio-assisted devices, Structural Engineering, Intelligent Transportation System, Water Resources Engineering, and Construction Engineering.

BACHELOR OF SCIENCE - BS
Biomedical Engineering
Civil Engineering
Computer Engineering
Computer Science
Cybersecurity
Electrical Engineering
Information Technology
Mechanical Engineering

MASTER OF SCIENCE - MS
Civil Engineering
Computer Science
Electrical Engineering
Mechanical Engineering

DOCTOR OF PHILOSOPHY - PhD
Computer Science & Engineering

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A Note from the Dean

It is with great pleasure that I introduced the report on scholarly creative and professional work by our faculty. In addition to excellent teaching, the School of Engineering and Applied Sciences (SEAS) at the University of the District of Columbia believes that scholarship and involvement in grantsmanship are important to sustain excellence in engineering and computer science education and research.
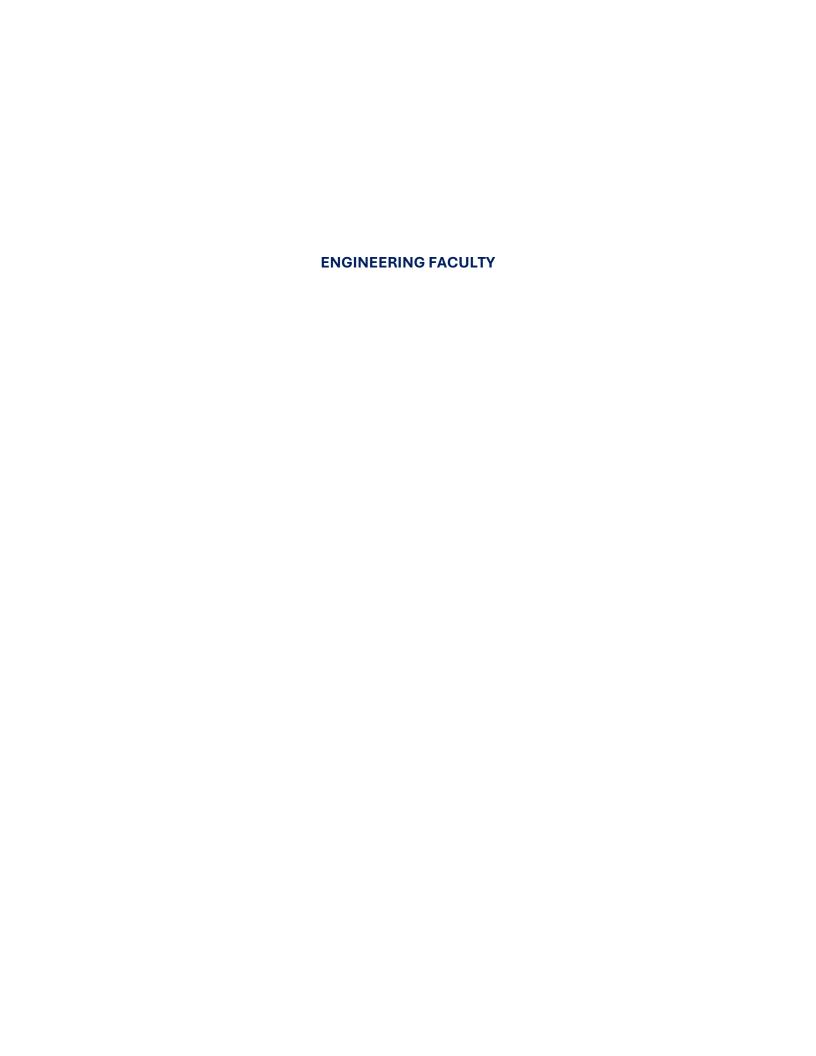
The scholarly activities at SEAS are uniquely focused on student experience and engagement. Several students have been awarded prestigious internships including research at NASA, NIST, Naval Research Laboratory, Air Force Research Laboratory, Goddard National Laboratory, Apple, Intel, Boston Scientific, Boeing and more.

UDC is a vibrant place with faculty collaborating on interdisciplinary grant proposals numerous research projects mentored by SEAS faculty, and student teams working and competing on real-world projects.

These activities have contributed to SEAS achieving national.

Dr. Devdas Shetty
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ENGINEERING FACULTY

Hossain, Azam, Ph.D.

- Bolen, T.J.; Hasan, M.; Conway, T.; Yameogo, D.; Sanchez, P.; Rahman, A. & Azam, H. (2022). Feasibility assessment of biogas production from the anaerobic co-digestion of cheese whey, grease interceptor waste and pulped food waste for WRRF. Energy. 254. 124144. 10.1016/j.energy.2022.124144.

- Gamwo, I. K.; Azam, H. and Baled, H. O. (2022), Produced Water Treatment Technologies: An Overview, Chapter 1, Solid–Liquid Separation Technologies-Applications for Produced Water, 1st Edition, CRC Press (eBook ISBN-9781003091011), DOI:10.1201/9781003091011-1

- **Azam, H** (2023), Editor, PFAS in the Water and Wastewater Sectors: Fundamentals, Management and Treatment, Water Environment Federation (WEF), https://www.wef.org/publications/publications/books/pfas-in-the-water-and-wastewater-sectors-fundamentals-management-and-treatment/?utm_campaign=PFAS+Book++Author+Social&utm_source=author&utm_medium=social&utmterm=&utm_content=&cpn_id=64f7844672c1d975ceac5f8a&e_id=64e3776c20063d5618a00deb, Dr Azam is lead author for Chapters 1, 3 and 9.

Ji Chen, Ph.D.

- **J. Chen**; K. Lostroscio. **Development of OpenSim based workflow for estimation of joint load and muscle activation in reduced gravity.** American Society for Gravitational and Space Research (ASGSR), 2023 Annual Meeting, Washington DC, Nov. 14 – Nov.18, 2023

- **J. Chen**; R. Romero; L. A. Thompson. **Motion Analysis of Balance Pre and Post Sensorimotor Exercises to Enhance Elderly Mobility: A Case Study**. Appl. Sci. 2023, 13, 889. https://doi.org/10.3390/app13020889

- **J. Chen**, K. Darvish, W. G. Wright, and E. A. Keshner, "**Design and usability of a system for the study of head orientation.**" **Front Rehabil Sci**. 2022 Nov 1;3:978882. doi: 10.3389/fresc.2022.978882. PMID: 36386774; PMCID: PMC9663472.

Paul Cotae, Ph.D.

- Qorib, Miftahul, Timothy Oladunni, Max Denis, Esther Ososanya, and **Paul Cotae.** "COVID-19 Vaccine Hesitancy: A Global Public Health and Risk Modelling Framework Using an Environmental Deep Neural Network, Sentiment Classification with Text Mining and Emotional Reactions from COVID-19 Vaccination Tweets." International Journal of Environmental Research and Public Health 20, no. 10 (2023): 5803.

- Qorib, Miftahul, Timothy Oladunni, Max Denis, Esther Ososanya, and **Paul Cotae.** "Covid-19 vaccine hesitancy: Text mining, sentiment analysis and machine learning on COVID-19 vaccination Twitter dataset." Expert Systems with Applications 212 (2023): 118715.

- Qorib, Miftahul, Timothy Oladunni, Max Denis, Esther Ososanya, **Paul Cotae** and John Irungu COVID-19 Vaccine Hesitancy: A Deep Neural Network Sentiment Classification with Text Mining and Emotional Reactions from COVID-19 Vaccination Tweets" MPDI Manuscript ID: ijerph-2191136, accepted April 4, 2023.

- Temechu Girma Zewdie, Anteneh Tadesse, **Paul Cotae**, "Malware detection framework in cyber-physical systems using Artificial Intelligence - Machine Learning" Issues in Information Systems Volume 23, Issue 1, pp. 316-332, 2022, DOI: https://doi.org/10.48009/1_iis_2022_126

- Zewdie, T.G., Girma, A., **Cotae, P.** (2022). Ransomware Attack Detection on the Internet of Things Using Machine Learning Algorithm. In: Chen, J.Y.C., Fragomeni, G., Degen, H., Ntoa, S. (eds) HCI International 2022 – Late Breaking Papers: Interacting with eXtended Reality and Artificial Intelligence. HCII 2022. Lecture Notes in Computer Science, vol 13518. Springer, Cham. https://doi.org/10.1007/978-3-031-21707-4_43

- **Paul Cotae**, Nii Emil Alexander Reindorf, Myong Kang and Alexander Velazquez," A Hybrid Collaborative Multi Agent Decision Making Algorithm with Factored-Value Max-Plus" 2023 IEEE International Black Sea Conference on Communications and Networking (BlackSeaCom) http://blackseacom2023.ieee-blackseacom.org

- **Paul Cotae**, Myong Kang and Alexander Velazquez, "A Scalable Real-Time Distributed Multiagent Decision Making Algorithm with Cost," 2022 IEEE 19th Annual Consumer Communications & Networking Conference (CCNC), 2022, pp. 745-746, doi: 10.1109/CCNC49033.2022.9700566.

Max Denis, Ph.D.

- Qorib M, Oladunni T, **Denis M**, Ososanya E, Cotae P. Covid-19 vaccine hesitancy: Text mining, sentiment analysis and machine learning on COVID-19 vaccination Twitter dataset. Expert Systems with Applications. 2023 Feb 1;212:118715.

- Abdus-Shakur T, An J, **Denis M**. Ultrasound elastography evaluation of age-related eye lens nucleus stiffness: A porcine eye study. The Journal of the Acoustical Society of America. 2022 Oct 1;152(4):A75-.

- Chandra K, Kershaw T, Tripathy S, **Denis M**, Allen J, Liu H, Yu T, Thompson C. Work in Progress: Engaging Graduate Students as Co-creators of Educational Modules on an Interdisciplinary Topic. In2022 ASEE Annual Conference & Exposition 2022 Aug 23.

- An J, Abdus-Shakur T, **Denis M.** Quantitative Assessment of Tissue Stiffness Using Transfer Learning Ultrasound Elastography: A Breast Cancer Phantom Study. IEEE Sensors Letters. 2023 Aug 21.

- Irungu J, Ancel J, Mahmoud W, **Denis M.** Gunshot detection from audio excerpts of urban sounds using transfer learning. In Proceedings of Meetings on Acoustics 2023 May 8 (Vol. 51, No. 1). AIP Publishing.

- Qorib M, Oladunni T, **Denis M**, Ososanya E, Cotae P. COVID-19 Vaccine Hesitancy: A Global Public Health and Risk Modelling Framework Using an Environmental Deep Neural Network, Sentiment Classification with Text Mining and Emotional Reactions from COVID-19 Vaccination Tweets. International Journal of Environmental Research and Public Health. 2023 May 12;20(10):5803.

- Irungu J, Oladunni T, **Denis M**, Ososanya E, Muriithi R. A CNN Transfer Learning-Electrocardiogram (ECG) Signal Approach to Predict COVID-19. In2023 15th International Conference on Computer and Automation Engineering (ICCAE) 2023 Mar 3 (pp. 367-371). IEEE.

Kate Klein, Ph.D.

- Betelhiem Mengesha, Andrew Christopher Grizzle, Wondwosen Demisse, **Kate L. Klein**, Amy Elliott, Pawan Tyagi. Machine Learning Enabled Quantitative Analysis of Optically Obscure Scratch on Nickel Plated Additively Manufactured (AM) Samples. MATERIALS MDPI 16: 6301 (doi: 10.3390/ma16186301), September 2023.

- Joshua Dillard, Andrew Grizzle, Wondwosen Demisse, Lucas Rice, **Kate Klein**, Pawan Tyagi. Alternating chempolishing and electropolishing for interior and exterior surface finishing of additively manufactured (AM) metal components. INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY 121 (11-12): 8159-8170 (doi: 10.21203/rs.3.rs-1660978/v1), August 2022.

Esther Ososanya, Ph.D.

- Irungu, J., Oladunni, T., Grizzle,A., Dennis,M., Savadkoohi, M., and **Ososanya, E.** "ML-ECG-COVID: A Machine Learning-Electrocardiogram Signal Processing Technique for Predicting COVID-19." 2022, Journal of Biocybernetics and Biomedical Engineering

- Qorib M, Oladunni T, Denis M, **Ososanya E**, Cotae P. Covid-19 vaccine hesitancy: Text mining, sentiment analysis and machine learning on COVID-19 vaccination Twitter dataset. Expert Syst Appl. 2023 Feb;212:118715. doi: 10.1016/j.eswa.2022.118715. Epub 2022 Sep 5. PMID: 36092862; PMCID: PMC9443617.

- J. Irungu, T. Oladunni, M. Denis, **E. Ososanya** and R. Muriithi, "A CNN Transfer Learning -Electrocardiogram (ECG) Signal Approach to Predict COVID-19," 2023 15th International Conference on Computer and Automation Engineering (ICCAE), Sydney, Australia, 2023, pp. 367-371, doi: 10.1109/ICCAE56788.2023.10111114.

- Dang H, **Ososanya E,** Zhang N. Comparison of electrical characteristics of Schottky junctions based on CdS nanowires and thin film. Nanotechnology. 2022 Mar 4;33(21). doi: 10.1088/1361-6528/ac51eb. PMID: 35120341.

Ujwalkumar Patil, Ph.D.

Peer-reviewed Journal Papers:

- Yeo M-H, **Patil UD**, Chang A, King R. (2023). "Changing Trends in Temperatures and Rainfalls in the Western Pacific: Guam." Climate. 2023; 11(4):81. https://doi.org/10.3390/cli11040081

- **Patil, U. D.**, Shelton, A. J., Catahay, M., Kim, Y. S., & Congress, S. S. C. (2022). "Role of vegetation in improving the stability of a tropical hill slope in Guam." Environmental Geotechnics, Volume 9, Issue 8, Pages 562-581, https://www.icevirtuallibrary.com/doi/epdf/10.1680/jenge.21.00064

Peer-reviewed Conference Papers:

- **Patil, U. D.**, Mabagos, D., Yeo, M. H., Congress, S. S. C., Shelton, A., and Demeulenaere, E. (2023). "Improvement in Stability of a Tropical Hillslope via Mechanical Root Reinforcement". In Geo-Congress 2023: Sustainable Infrastructure Solutions from the Ground Up, held in Los Angeles, California on March 26–29, Geotechnics of Natural Hazards, Proceedings Editors Ellen Rathje, Brina Montoya, and Mark Wayne, https://doi.org/10.1061/9780784484654.047, 2023GSP 338, pp. 469-477.

- **Patil, U.D**., Yeo, M., Aquino, E., Congress, S.S.C., Demeulenaere, E. (2023). "Role of Acacia Tree Root's Reinforcement in Hill Slope Stability". Proceedings of the 9ICEG-9th International Congress on Environmental Geotechnics, Vol 5: Human-Induced and Natural Disaster Mitigation, pp. 436-443, 25-28 June 2023, Chania, Greece, https://doi.org/10.53243/ICEG2023-258.

- **Patil, U.D.**, Yeo, M. H., Demeulenaere, E., Mabagos, D., and Congress, S.S.C., (2023). "Contribution of Vetiver Grass Towards Slope Stability Via Mechanical Root Reinforcement." 2nd International Conference on Construction Resources for Environmentally Sustainable Technologies, CREST-2023, to be held from November 20-22, 2023.

- **Patil, U.D.**, Shelton III, A.J., Kim, Y.S., Aquino, E., S.S. Chandra Congress (2022). "Influence of Vegetation on the Stability of a Tropical Hill Slope Made from Low Hydraulic Conductivity Soil." ICONHIC 2022, 3rd International Conference on Natural Hazards & Infrastructure 5-7 July 2022, Athens, Greece, technical Session "Landslides: Advanced modelling and remote sensing", ISSN 2623-4513.

Alexander Peebles, Ph.D.

- Marrs, R.P., Covell, H.S., **Peebles**, A.T., Ford, K.R., Hart, J.M., Queen, R.M., 2023. Using load sensing insoles to identify knee kinetic asymmetries during landing in patients with an ACL reconstruction. Clinical Biomechanics.
  DOI: https://doi.org/10.1016/j.clinbiomech.2023.105941

- **Peebles**, A.T., Miller, T.K., Savla, J., Ollendick, T., Messier, S.P., Queen, R.M., 2022. Reduction of risk factors for ACL re-injury using an innovative biofeedback approach: a randomized clinical trial. Physical Therapy in Sport.
  DOI: https://doi.org/10.1016/j.ptsp.2022.07.007

- Renner, K.E. **Peebles**, A.T., Socha, J.J., Queen, R.M., 2022. The impact of sampling frequency on impact kinetic outcomes. Journal of Biomechanics.
  DOI: https://doi.org/10.1016/j.jbiomech.2022.111034

- **Peebles**, A.T., Van Der Veen, S.M, Stamenkovic, A., France, C.R., Thomas, J.S., 2022. A virtual reality game suite for graded rehabilitation in patients with low back pain and a high fear of movement: within-subject comparative study. JMIR Serious Games. DOI: https://doi.org/10.2196/32027

- Hill, C.N, Ross, S., **Peebles**, A.T., Queen, R.M., 2022. Continuous Similarity Analysis in Patient Populations. Journal of Biomechanics.
  DOI: https://doi.org/10.1016/j.jbiomech.2021.110916

- **Peebles**, A.T., Van Der Veen, S.M, Stamenkovic, A., Thomas, J.S., 2022. Patients with chronic non-specific low back pain have altered movement coordination during functional reaching tasks. Gait and Posture.
  DOI: https://doi.org/10.1016/j.gaitpost.2021.10.004

Amir Shahirinia, Ph.D.

Journal Publications:

- R. Amjadifard, M. Tavakoli Bina, H. Khaloozadeh, F. Bageroskuee, **Amir Shahirinia**, "Suggesting a Non-Unity Turn Ratio Two-Winding Coupled Inductor for Filtering CM EMI Noise in an SRC", IEEE Transaction on Consumer Electronics, 10.1109/TCE.2023.3287982, 2023.

- H. Jalat, S.G. Liasi, M. Tavakoli Bina, **Amir Shahirinia**, "Optimal Placement of STATCOM Using a Reduced Computational Burden by Minimum Number of Monitoring Units Based on Area of Vulnerability", IET Generation, Transmission & Distribution, 10.1049/gtd2.12804, 2023.

- S. Abbasian, M. Farsijani, M. Tavakoli Bina, **Amir Shahirinia**, A. Abrishamifar, A. Hosseini, "An Interleaved Non-Isolated High Gain Soft Switching DC-DC Converter with Small Input Current Ripple", IET Power Electronics, 10.1049/pel2.12425, 2023.

- S. Rezazade, **Amir Shahirinia**, R. Naghash, N. Rasekh, E. Afjei, "A Novel Efficient Hybrid Compensator for Wireless Power Transfer", IEEE Transaction on Industrial Electronics, 10.1109/TIE. 2022.3169840, 2022.

- S. Abbasian, M. Farsijani, M. Tavakoli Bina, **Amir Shahirinia**, "A Nonisolated CommonGround High Step-Up Soft-Switching DC–DC Converter with Single Active Switch", IEEE Transaction on Industrial Electronics, 10.1109/TIE.2022.3198262, 2022.

Conference Proceedings:

- P. Farhadi, S.M.M. Tafreshi, **Amir Shahirinia**, "Multivariate Dependence Modeling of Electric Vehicle Charging Stochastic", IEEE International Conference on Smart Energy Grid (SGC 2022), Kerman, Iran, 13-15 Dec. 2022.

Devdas Shetty, Ph.D.

- **Shetty, D**., Kotian, R., Sequeira, S., Umesh, P., and Gangadharan, KV "An Economical Approach towards Bathymetric mapping of Shallow Water basins using Unmanned Surface Vehicles" Proceedings of International Mechanical Engineering Congress and Exposition IMECE 2022 -97015, October 30- November 3, 2022, Columbus, OH

- **Shetty, D** and Campana, C "Exploring Transition into Industry 4.0 with Case Studies on Four Engineering Education Disciplines" EDULEARN23, 15th annual International Conference on Education and New Learning Technologies, Spain, July 2023

- **Shetty, D** "Strategy for Systematic Education of Robotics, Drones and Unmanned Systems through Case Studies," EDULEARN23, 15th annual International Conference on Education and New Learning Technologies, Spain, July 2023.

- **Shetty, D**., Kotian, R., Sequeira, S., Umesh, P., and Gangadharan, KV "Development of portable ground control station for real time data monitoring of an Unmanned surface vessel" Proceedings of International Mechanical Engineering Congress and Expo.IMECE2023, Accepted for presentation at New Orleans, October 29- Nov 2, 2023, IMECE 2023-114071

- Manish, E.S. Umesh, P. Gangadharan, KV and **Shetty, D** "Development of a LoRaWAN-Enabled Unmanned Aerial System for Autonomous Real-Time Surveillance and Monitoring" Proceedings of International Mechanical Engineering Congress and Expo.IMECE2023, Accepted for presentation at New Orleans, October 29- Nov 2, 2023, IMECE 2023-114316

- **Shetty, D,** Thompson, L, Sanchez, P and Campana, C "Control of Fall Prevention Rehabilitation Device BY ALGORITHMIC Modification through Testing" Proceedings of International Mechanical Engineering Congress and Expo.IMECE2023, Accepted for presentation at New Orleans, October 29- Nov 2, 2023

Lara Thompson, Ph.D.

- Romero R, Butler J, Zhang N, Mahmoud W, **Thompson LA**. Deep U-Net Neural Network for 3D Brain MRI Segmentation. (Submitted 2024 ASEE Annual Conference).

- Azikiwe C, Wilson O, El Hakour Y, Newby A, Butler J, Romero R, **Thompson LA**. Virtual Reality-Based Balance Training: an Approach to Improve Balance in Elderly Individuals. Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) Nov. 2023, Phoenix, AZ.

- Wilson O, Azikiwe C, El Hakour Y, Newby A, Butler J, Romero R, **Thompson LA**. Virtual Reality (VR) Based Training Towards Improving Balance Confidence and Reducing Falls Risk in Older Adults. Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) Nov. 2023, Phoenix, AZ.

- Romero R, Thorpe B, El Hakour Y, Butler J, Wilson O, Newby O, Okhouya O, **Thompson LA**. Investigating Simulated Exploration Extravehicular Mobility Unit (xEMU) Effects on Standing Balance. Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) Nov. 2023, Phoenix, AZ.

- Shetty D, Campana C, **Thompson LA**, Sanchez Guerrero P. Improving the Control of Fall Prevention Rehabilitation Device by Algorithmic Modification Through Testing, ASME IMECE 2023.

- Chen J, Romero R, **Thompson LA**. Motion Analysis of Balance Pre and Post Sensorimotor Exercises to Enhance Elderly Mobility: A Case Study, Applied Sciences, vol. 13, no. 2, p. 889, 2023. [Online]. Available: https://www.mdpi.com/2076-3417/13/2/889.

- Butler J, Thorpe B, Romero R, **Thompson LA**, Chen J. Biomechanical Analysis of Aging Balance: Pre and Post Sensorimotor Exercises, Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) 2022, Anaheim, CA.

- Romero R, Chen J, **Thompson LA**. Exploring Postural Control Strategies: Relative Motion of Body Segments in Older Survivors of Stroke, Biomedical Engineering Society (BMES) Annual Meeting 2022, San Antonio, TX.

- Walker T, Zhang N, **Thompson LA**, Shetty D. Diversity, Equity, and Inclusion in Engineering Education. 2022 ASEE Mid-Atlantic meeting, April 2022.

- Martin G, Ancel J, Zhang N, **Thompson LA**, Shetty D. K-12 Engineering Education Program Goals based on Interests, Challenges and Childhood Development Stages. 2022 ASEE Mid-Atlantic meeting, April 2022.

Pawan Tyagi, Ph.D.

Patent

- **P. Tyagi**, "Systems and Methods of Fabricating Gate Electrode on Trenched Bottom Electrode based Molecular Spintronics Device.," WO/2022/066263, PCT/US2021/040607, Filing date 07.07.2021, Publication date 31.03.2022.

Journal Papers

- B. N. Mengesha, A. C. Grizzle, W. Demisse, K. L. Klein, A. Elliott, and **P. Tyagi**, "Machine Learning-Enabled Quantitative Analysis of Optically Obscure Scratches on Nickel-Plated Additively Manufactured (AM) Samples," Materials, vol. 16, p. 6301, 2023.

- E. Mutunga, C. D'Angelo, and **P. Tyagi**, "Magnetic molecules lose identity when connected to different combinations of magnetic metal electrodes in MTJ-based molecular spintronics devices (MTJMSD)," Scientific Reports, vol. 13, p. 16201, 2023/09/27 2023.

- M. Savadkoohi, D. Gopman, P. Suh, C. Rojas-Dotti, J. Martínez-Lillo, and **P. Tyagi**, "Spin Solar Cell Phenomenon on a Single-Molecule Magnet (SMM) Impacted CoFeB-Based Magnetic Tunnel Junctions," ACS Applied Electronic Materials, 2023/05/31 2023.

- **P. Tyagi**, "New value of old knowledge: sulphur-based GaAs surface passivation and potential GaAs application in molecular electronics and spintronics," Materials Research Express, vol. 10, p. 042003, 2023.

- W. Demisse, J. Xu, L. Rice, and **P. Tyagi**, "Review of internal and external surface finishing technologies for additively manufactured metallic alloys components and new frontiers," Progress in Additive Manufacturing, 2023/02/18 2023.

- J. Dillard, A. Grizzle, W. Demisse, L. Rice, K. Klein, and **P. Tyagi**, "Alternating chempolishing and electropolishing for interior and exterior surface finishing of additively manufactured (AM) metal components," The International Journal of Advanced Manufacturing Technology, vol. 121, pp. 8159-8170, 2022/08/01 2022.

- C. S. Taylor, M. Savadkoohi, **P. Tyagi**, J. E. Shoup, D. A. Arena, J. A. Borchers, et al., "Sputter Gas Damage in Nanolayered Pt/Co/Ir-based Synthetic Antiferromagnets for Top-Pinned Magnetic Tunnel Junctions," ACS Applied Nano Materials, vol. 6, pp. 131-139, 2023/01/13 2023.

- E. Mutunga, C. D'Angelo, A. Grizzle, V. Lamberti, and **P. Tyagi**, "Dramatic effect of electrode type on tunnel junction based molecular spintronic devices," Organic Electronics, vol. 106, p. 106526, 2022/07/01/ 2022.

- B. R. Dahal, A. Grizzle, C. D'Angelo, V. Lamberti, and **P. Tyagi**, "Competing Easy-Axis Anisotropies Impacting Magnetic Tunnel Junction-Based Molecular Spintronics Devices (MTJMSDs)," International Journal of Molecular Sciences, vol. 23, p. 14476, 2022.

- B. R. Dahal, M. Savadkoohi, A. Grizzle, C. D'Angelo, V. Lamberti, and **P. Tyagi**, "Easy axis anisotropy creating high contrast magnetic zones on magnetic tunnel junctions based molecular spintronics devices (MTJMSD)," Scientific reports, vol. 12, pp. 1-14, 2022.

- M. Savadkoohi, C. D'Angelo, A. Grizzle, B. Dahal, and **P. Tyagi**, "Spatial influence of paramagnetic molecules on magnetic tunnel junction-based molecular spintronic devices (MTJMSD)," Chemical Physics Letters, vol. 800, p. 139667, 2022/08/01/ 2022.

- M. Savadkoohi, C. D'Angelo, A. Grizzle, B. Dahal, and **P. Tyagi**, "Impact of ferromagnetic electrode length and thickness on Magnetic Tunnel Junction-Based Molecular Spintronic Devices (MTJMSD)," Organic Electronics, p. 106429, 2022.

Conference Papers:

- **P. Tyagi**, S. Addo (2022) STUDENT PRESENTATION-BASED TEACHING TO PROVIDE TRANSACTIONAL ANALYSIS TRAINING TO PRODUCE EMOTIONALLY INTELLIGENT ENGINEERING GRADUATE STUDENTS, EDULEARN22 Proceedings, pp. 10169-10175. ISBN: 978-84-09-42484-9; ISSN: 2340-1117, https://doi.org/10.21125/edulearn.2022.2459

- **P. Tyagi** (2022) PREPARATORY DISCUSSION AND PROJECT AUGMENTED STUDENT LEARNING VIA STUDENT PRESENTATION BASED EFFECTIVE TEACHING (SPET) APPROACH, EDULEARN22 Proceedings, pp. 10161-10168. ISBN: 978-84-09-42484-9, ISSN: 2340-1117, doi: https://doi.org/10.21125/edulearn.2022.2458

- **Tyagi, P**. "Transactional Analysis Training for Improving Engineering Graduate Students' Abilities to Understand Different Personalities." Proceedings of the ASME 2022 International Mechanical Engineering Congress and Exposition. Volume 9: Mechanics of Solids, Structures, and Fluids; Micro- and Nano-Systems Engineering and Packaging; Safety Engineering, Risk, and Reliability Analysis; Research Posters. Columbus, Ohio, USA. October 30–November 3, 2022. V009T15A006. ASME. https://doi.org/10.1115/IMECE2022-95284

- Addo, S, **Tyagi, P**, & Mutunga, E. "Assessing Undergraduate Students' Level of Awareness of Commercialization of Engineering Research Innovation at a Historically Black College and University." Proceedings of the ASME 2022 International Mechanical Engineering Congress and Exposition. Volume 7: Engineering Education. Columbus, Ohio, USA. October 30–November 3, 2022. V007T09A020. ASME. https://doi.org/10.1115/IMECE2022-95446

- Addo, S, **Tyagi, P**, Gaye, S, & Baker, K. "Promoting Globalization of Engineering by Developing Students' Potential for Productive Communication and Interaction Using Transactional Analysis in a Historically Black College and University." Proceedings of the ASME 2022 International Mechanical Engineering Congress and Exposition. Volume 7: Engineering Education. Columbus, Ohio, USA. October 30–November 3, 2022. V007T09A028. ASME. https://doi.org/10.1115/IMECE2022-9425

- Sanchez, P, Waqar, Z, & **Tyagi, P**. "Application of Nickel Deposition on Electropolishing (EP), Chempolishing (CP), and As-Built Additively Manufactured (AM) Metal Components." Proceedings of the ASME 2022 International Mechanical Engineering Congress and Exposition. Volume 2A: Advanced Manufacturing. Columbus, Ohio, USA. October 30–November 3, 2022. V02AT02A045. ASME. https://doi.org/10.1115/IMECE2022-96200

Jiajun Xu, Ph.D.

Journals:

- Eden C, Walker R, Gebre F, Xu J, "Experimental investigation of the effect of heat treatment on mechanical performance of additively manufactured maraging steel lattice structures", Materials Science and Engineering

- Downer J, Kabir M, Xu J, "The Design and Development of a Smart Multilayer Coating with Variable Emissivity Capability for Space Vehicle Thermal Control Systems", IEEE Transactions on Components, Packaging and Manufacturing Technology (TCPMT).

- Demisse, W*, Xu, J, Tyagi, P, "Review of internal and external surface finishing technologies for additively manufactured metallic alloys components and new frontiers", Springer.

Conference proceedings:

- Preller, E*, Rios, J*, Kabir, M., Xu, J, „"Design and Development of Additively Manufactured Microchannel Heat Exchangers of Different Cross Sections and Aspect Ratios", 7th Thermal and Fluids Engineering Conference (TFEC2022) /Hybrid

- Adegbaye P*, Pei Y*,Kabir M, Tchamba H*, Yang B, Xu J, "Development of Phase-Change Materials with Improved Thermal Properties for Space-Related Applications", International Mechanical Engineering Congress and Exposition IMECE2022/Columbus, OH

- Malhotra T*, Davis D*, Bowman O*, Adams *, Gebre F, Xu J, "Design of an Improved Vertical Spiral Closed Loop Geothermal Heat Exchanger ", International Mechanical Engineering Congress and Exposition, IMECE2022/Columbus, OH

- Preller, E*, Dillard J*, Botchway B*, Iwuchukwu K*, Gebre F, Xu, J, "Artmis X Portable Power System: Solar Array Deployment and Stabilization ", International Mechanical Engineering Congress and Exposition, IMECE2022/Columbus, OH

- Xu J, Shetty D, Sanchez P, "Experiential Learning for Undergraduate Students Through Collaborative Capstone Projects on Advanced Manufacturing", International Mechanical Engineering Congress and Exposition IMECE2022/Columbus, OH

- A * Siva Surya, Bai F*, Zhang N, Gebre F, Xu J, "Using machine learning to predict the melt-poop depth using structural melt pool length data in laser powder bed fusion", 8TH Thermal and Fluids Engineering Conference, College Park/MD

- Kabir M, Walker R*, Eden C*, Gebre F, Xu J, Experimental Investigation of Capillary Performance of Additively-Manufactured Lattice Structures for Fluid Wicking Applications, 2023 International Manufacturing Science and Engineering Conference (MSEC2023) New Brunswick, NJ

- Harrigan V*, Carter K*, Gilmore M*, Kabir M, Xu J, Nano Fabricated Electrostatic Cleaning Technique for Dust Control for Solar Power Efficiency, POWER APPLIED R&D 2023, ASME Power Division Conference, Long Beach, CA

- Preller E*, Dillard J*, Botchway B*, Iwuchukwu K*, Gebre F, Xu J, "Design and Development of Solar Array Deployment and Stabilization System for Nasa Minds Student Competition ", IDETC-CIE 2023 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Boston MA

- Kabir M, Preller E*, Mohammed R*, Tarau C, Yang B, Alvarez-Hernandez A, Xu J, "Investigation of an Additively Manufactured Two-Phase Heat Exchanger with Built-In Thermal Storage", 2023 IEEE ITherm Conference, Orlando, FL

- Xu J, Kabir M, Adegbaye P*, Pei Y*, Yang B, "Development of Nano-Enhanced Micro-Encapsulated Phase-Change Materials for Passive Thermal Management and Storage", 8TH Thermal and Fluids Engineering Conference, College Park/MD

- Bai F*, Arikatla S*, Zhang N, GebreF, Xu J, "Comparison of machine learning models and analytical scaling law for predicting melt-pool depth in laser power bed fusion (LPBF) additive manufacturing", 2023 IMECE® International Mechanical Engineering Congress & Exposition/New Orleans, LA, USA

- Mathew B*, Tchamba H*, Telha A*, Abdelaziz H*, Xu J, "Design and Development of a mini-channel thermal management system with active liquid cooling for electromechanical asteatosis aircraft", 2023 IMECE® International Mechanical Engineering Congress & Exposition/New Orleans, LA, USA
- Garcia D*, Brown H*, GebreF, Xu J, "Design and development of low temperature NI coating without plasma using atomic layer deposition", 2023 IMECE® International Mechanical Engineering Congress & Exposition/New Orleans, LA, USA

- Harrigan V*, Carter K*, Gilmore M*, Kabir M, Xu J, "Lunar Dust Mitigation Techniques in Spacesuit Technology Using Nanofabricated Thin Films", 2023

IMECE® International Mechanical Engineering Congress & Exposition/New Orleans, LA, USA

- Afreen J*, GebreF, Xu J, "Study on Molecular Dynamics Simulation with boiling Water and Copper for different nanostructured surfaces", 2023 IMECE® International Mechanical Engineering Congress & Exposition/New Orleans, LA, USA

- Eden C*, Walker R*, Kabir M, Gebre F, Xu J, Experimental Investigation of Capillary Performance of Additively Manufactured Lattice Structures for Fluid Wicking Applications, 2023 IMECE® International Mechanical Engineering Congress & Exposition/New Orleans, LA, USA

- Bai F*, Arikatla S*, Zhang N, GebreF, Xu J, "Investigation of Effects of Process Parameters on Melt Pool Geometry in Metal Additive Manufacturing Using Machine Learning Algorithms with Nickel alloys IN625 and IN718", 30th International conference on system engineering.

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Anteneh Girma, Ph.D.

- John Irungu, Steffi Graham, **Anteneh Girma**, and Thabet Kacem. **2023**. Artificial Intelligence Techniques for SQL Injection Attack Detection. In Proceedings of the 2023 8th International Conference on Intelligent Information Technology (ICIIT '23). Association for Computing Machinery, New York, NY, USA, 38–45. https://doi.org/10.1145/3591569.3591576

- Irungu, J., **Girma, A**. (**2023**). Mitigating IoT Enterprise Vulnerabilities Using Radio Frequency Security Architecture. In: Arai, K. (eds) Intelligent Systems and Applications. IntelliSys 2022. Lecture Notes in Networks and Systems, vol 544. Springer, Cham. https://doi.org/10.1007/978-3-031-16075-2_45

- **Girma, A**., Guo, M.A., Irungu, J. (**2023**). Identifying Shared Security Vulnerabilities and Mitigation Strategies at the Intersection of Application Programming Interfaces (APIs), Application-Level and Operating System (OS) of Mobile Devices. In: Arai, K. (eds) Proceedings of the Future Technologies Conference (FTC) 2022, Volume 2. FTC 2022 2022. Lecture Notes in Networks and Systems, vol 560. Springer, Cham. https://doi.org/10.1007/978-3-031-18458-1_34

- Temechu Girma Zewdie, **Anteneh Girma**, Paul Cotae, Temechu Girma Zewdie, Malware detection framework in cyber-physical systems using artificial intelligence - machine learning, Volume 23, Issue 1, pp. 316-332, **2022**, IACIS A Journal of the International Association for Computer Information Systems, DOI: https://doi.org/10.48009/1_iis_2022_126.

- Temechu Girma Zewdie, **Anteneh Girma**, Paul Cotae, Temechu Girma Zewdie, Malware detection framework in cyber-physical systems using artificial intelligence - machine learning, Volume 23, Issue 1, pp. 316-332, **2022**, IACIS A Journal of the International Association for Computer Information Systems, DOI: https://doi.org/10.48009/1_iis_2022_126.

- I. A. R. Djinko, T. Kacem and **A. Girma**, "Blockchain-based Approach to thwart Replay Attacks targeting Remote Keyless Entry Systems," 2022 International Conference on Engineering and Emerging Technologies (ICEET), Kuala Lumpur, Malaysia, **2022**, pp. 1-6, doi: 10.1109/ICEET56468.2022.10007335.

- Sandra Delancy, Lily Liang, **Anteneh Girma**, "ENCRYPTED PRINCIPAL PIXEL LOCATION EMBEDDING for IMAGE STEGANOGRAPHY", The Association of Computer Science Departments at Minority Institutions (ADMI)- High Performance Computing and Gateways 2022 Symposium, **2022**.

- Temechu Girma Zewdie, **Anteneh Girma**, "SECURING SOFTWARE DEFINING NETWORK FROM EMERGING DDOS ATTACK". 24th International Conference on Human-Computer Interaction, Springer: **2022**

- Temechu Girma Zewdie, **Anteneh Girma**, Paul Cotae, Temechu Girma Zewdie, "RANSOMWARE ATTACK DETECTION ON THE INTERNET OF THINGS USING MACHINE LEARNING ALGORITHM", 24th International Conference on Human-Computer Interaction, Springer, **2022**"

- Veronica Wendt, Michelle Guo, **Anteneh Girma**, "IDENTIFYING SHARED VULNERABILITIES AND MITIGATION STRATEGIES FOR CLOUD, WIRELESS, AND IOT", AFCEA Cyber Edge Writing Contest- Emerging Technologies in the Cyber Realm, July **2022** issue of SIGNAL magazine.

- Anteneh Girma, Lijaddis Layew, Mubarek Abdela, Getaante Yilma, "SECURING DATA AND PREVENTING POLITICAL POLARIZATION", Intelligent Systems Conference (IntelliSys) 2022

- **Anteneh Girma**, Michelle Guo, "IDENTIFYING SHARED SECURITY VULNERABILITIES AND MITIGATION STRATEGIES AT THE INTERSECTION OF APPLICATION PROGRAMMING INTERFACES (APIS), APPLICATION-LEVEL, AND OPERATING SYSTEM (OS) OF MOBILE DEVICES", FTC 2022 - Future Technologies Conference 2022

- T. G. Zewdie and **A. Girma,** "AN EVALUATION FRAMEWORK FOR MACHINE LEARNING METHODS IN DETECTION OF DOS AND DDOS INTRUSION," 2022 International Conference on Artificial Intelligence in Information and Communication (ICAIIC), **2022**, pp. 115-121, doi: 10.1109/ICAIIC54071.2022.9722661.

- Girma, A., Irungu, J., (**2023**), Cybersecurity and Electoral Processes. An Analysis of Block Chain Enabled Biometric Voter System and Risk Control in Kenya's 2022 Electoral Process and the United States Election System Infrastructure, The 14th International Conference on ICT Convergence, Oct.11 WED. - 13 FRI. 2023, Lotte Hotel, Jeju Island, Korea.

- Jermel Watson, Adine Barrett, Anteneh Girma, and Kacem Thabet, (**2023**), Double Encrypted Data Communication Using Cryptography and Steganography, ICCDPC 2023: 17. International Conference on Cybersecurity, Data Privacy, and Cyberresilience, August 17-18, 2023 in Tokyo, Japan

- Girma, A., Irungu, J., (2023**), Analysis of Baseline Security Standards and Predictive Analytics for Cyber Supply Chain Attacks and Artificial Neural Network as a Proposed Solution,** 3rd International Conference on Electrical, Computer and Energy Technologies (ICECET), Nov 16-17, Cape Town- South Africa.

Dong Hyun Jeong, Ph.D.

Journals

- SY Ji, BK Jeong, DH Jeong, An Analysis of Temporal Features in Multivariate Time Series to Forecast Network Events, Applied Sciences 13 (18), 10411, 2023

- Z Guo, Z Wan, Q Zhang, X Zhao, Q Zhang, LM Kaplan, A Jøsang, DH Jeong, F Chen, J Cho, A survey on uncertainty reasoning and quantification in belief theory and its application to deep learning, Information Fusion, 101987, 2023

- DH Jeong, BK Jeong, SY Ji, Multi-Resolution Analysis with Visualization to Determine Network Attack Patterns, Applied Sciences 13 (6), 3792 1 2023

- DH Jeong, JH Cho, F Chen, L Kaplan, A Jøsang, SY Ji, Interactive Web-Based Visual Analysis on Network Traffic Data, Information 14 (1), 16 1 2022

- DH Jeong, BK Jeong, N Leslie, C Kamhoua, SY Ji, Designing a supervised feature selection technique for mixed attribute data analysis, Machine Learning with Applications 10, 100431 3, 2022

- SY Ji, BK Jeong, C Kamhoua, N Leslie, DH Jeong, Forecasting network events to estimate attack risk: Integration of wavelet transform and vector auto regression with exogenous variables, Journal of Network and Computer Applications 203, 103392 7, 2022

- BK Jeong, SY Ji, DH Jeong, Information Resources Management Journal (IRMJ) 35 (1), 1-18, 2022

Conferences / Workshops

- Z Guo, Q Zhang, Q Zhang, LM Kaplan, A Jøsang, F Chen, DH Jeong, J Cho, Detecting intents of fake news using uncertainty-aware deep reinforcement learning, 2023 IEEE International Conference on Web Services (ICWS), 722-724 2023

- X Zhao, X Zhang, C Zhao, JH Cho, L Kaplan, DH Jeong, A Jøsang, H Chen, F Chen, ICASSP 2023 - 2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Rhodes Island, Greece, 2023, pp. 1-5

- SY Ji, S Jayarathna, AM Perrotti, K Kardiasmenos, DH Jeong, EEG analysis of neurodevelopmental disorders by integrating wavelet transform and visual analysis, International Workshop on Health Intelligence, 109-121 1 2023

- DH Jeong, JH Cho, F Chen, A Josang, SY Ji, Active Learning on Neural Networks through Interactive Generation of Digit Patterns and Visual Representation, 13th IEEE Integrated STEM Education Conference, 2023

Thabet Kacem, Ph.D.

- Sourou Tossou, Thabet **Kacem**, "Mobile Threat Detection System: A Deep Learning Approach". The 13th International Conference on Information Science and Technology (ICIST 2023), Cairo, Egypt (to appear soon).

- Thabet **Kacem**, "VANET-Sec: A Framework to Secure Vehicular Ad-hoc Networks using a Permissioned Blockchain". The 10th International Symposium on Networks, Computers and Communications (ISNCC23), Doha, Qatar (to appear soon).

- Sourou Tossou, Miftahul Qorib, Thabet **Kacem**, "Anomaly Based Intrusion Detection System: A Deep Learning Approach". The 10th International Symposium on Networks, Computers and Communications (ISNCC23), Doha, Qatar (to appear soon).

- Thabet **Kacem**, "UASChainSec: A Blockchain Based Framework for Secure 5G-Capable UAS Communication". The 10th International Conference on Recent Advances in Air and Space Technologies (RAST2023), Istanbul, Turkey, June 2023.

- Issa Abdoul Razac Djinko, Thabet **Kacem**, "Video-based Object Detection Using Voice Recognition and YoloV7", The Twelfth International Conference on Intelligent Systems and Applications (Intelli2023), Barcelona, Spain, March 2023.

- John Irungu, Steffi Graham, Anteneh Girma and Thabet **Kacem**, "Artificial Intelligence Techniques for SQL Injection Attack Detection", The 8th International Conference on Intelligent Information Technology (ICIIT 2023), Da Nang, Vietnam, February 2023.

- Issa Abdoul Razac Djinko, Thabet **Kacem** and Anteneh Girma, "Blockchain-based Approach to thwart Replay Attacks targeting Remote Keyless Entry Systems", 2022 International Conference on Engineering and Emerging Technologies (ICEET), Kuala Lumpur, Malaysia, October, 2022, pp. 1-6

- Thabet **Kacem**, Alexandre Barreto, Duminda Wijesekra and Paulo Costa, "A Key Management Module for Secure ADS-B", 2022 IEEE 25th International Conference on Intelligent Transportation Systems (ITSC 2022), Macau, China, September 2022.

Junwhan Kim, Ph.D.

- V. Wendt, B. Yu, C. Kelly, and J. Kim, "ROC or Knee," 4th International Conference on Signal Processing and Machine Learning (CONF-SPML 2024). Jan. 2024

- A. Barry, J. Kim, B. Yu, S. O'Hara A Noise Suppression of LSTM algorithm combined with Kalman filter for Agriculture Automation, The ACM International Conference on Machine Learning Tech, April,2023

- M. Qorib, R. Gizaw J. Kim, Impact of Sentiment Analysis for the 2020 U.S. Presidential Election on Social Media Data, The ACM International Conference on Machine Learning Tech, April, 2023

- J. Kim, B. Yu, S. O'Hara, LSTM Filter for Smart Agriculture, The 13th International Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN) Affiliated Workshops, pp 289-294, Nov. 2022

Lily R. Liang, Ph.D.

- Liang LR, Wellman BL, Kang R. Developing Post-Pandemic Learning Community on an Urban Commuter Campus. ASEE Peer Document Repository. 2023 ASEE Annual Conference & Exposition; 2023 June 25; Baltimore, MD, USA. Available from: https://peer.asee.org/developing-post-pandemic-learning-community-on-an-urban-commuter- campus.

Briana Wellman, Ph.D.

- L. R. Liang, B. Wellman, and U. Amir, "ExCITE: Broadening Participation with Service Learning," in Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2, Providence RI USA: ACM, Mar. 2022, pp. 1122–1122. doi: 10.1145/3478432.3499078.

- Liang, Lily, Wellman, Briana, and Kang, R, "Developing Post-pandemic Learning Community on an Urban Commuter Campus," presented at the 2023 ASEE Annual Conference & Exposition, 2023, Baltimore, MD.

- F. Osamor and B. Wellman, "Deep learning-based hybrid model for efficient anomaly detection," International Journal of Advanced Computer Science and Applications, vol. 13, no. 4, 2022.

- Osamor, Frances and Wellman, Briana, "Comparative Analysis of LSTM and CNN for Efficient Malware Detection," presented at the 2022 International Conference on Computational Science and Computational, Las Vegas, NV: IEEE, Dec. 2022, pp. 965–970.

Temechu Zewdie, Ph.D.

- T. G. Zewdie and A. Girma, "An Evaluation Framework for Machine Learning Methods in Detection of DoS and DDoS Intrusion," 2022 International Conference on Artificial Intelligence in Information and Communication (ICAIIC), Jeju Island, Korea, Republic of, 2022, pp. 115-121, doi: 10.1109/ICAIIC54071.2022.9722661.

- Zewdie, T.G., Girma, A., Cotae, P. (2022). Ransomware Attack Detection on the Internet of Things Using Machine Learning Algorithm. In: Chen, J.Y.C., Fragomeni, G., Degen, H., Ntoa, S. (eds) HCI International 2022 – Late Breaking Papers: Interacting with eXtended Reality and Artificial Intelligence. HCII 2022. Lecture Notes in Computer Science, vol 13518. Springer, Cham. https://doi.org/10.1007/978-3-031-21707-4_43

- Zewdie, T.G., Girma, A. (2022). Securing Software Defining Network from Emerging DDoS Attack. In: Moallem, A. (eds) HCI for Cybersecurity, Privacy and Trust. HCII 2022. Lecture Notes in Computer Science, vol 13333. Springer, Cham. https://doi.org/10.1007/978-3-031-05563-8_7

- Zewdie, Temechu Girma, Anteneh Girma, and Paul Cotae. "Malware detection framework in cyber-physical systems using artificial intelligence-machine learning." Issues in Information Systems 23.1 (2022).