Waleed A. Yousef, Ph.D., Senior Member, IEEE

PROFILE

An academic person, a teacher, and a researcher, involved in studying, teaching and researching in various institutions—Strong motivation towards utilizing various areas, e.g., engineering, mathematics, probability, statistics, and computer science, in solving data-analytic related problems and real-life interdisciplinary applications. More interested in filling the gap between academia and industry—My research area includes, statistical learning machines & pattern recognition (design and assessment), statistical data analysis and visualization—In addition, I am very interested in teaching rigorous and high quality undergraduate/graduate courses and offering them online to build a strong foundation for serious students pursuing research.

EDUCATION

M.Sc. (Jan. 2007)
Colombian School, Statistics Department, The George Washington University (GWU), dissertation: *"Nonparametric Estimation of the Threshold at an Operating Point on the ROC Curve."*

Ph.D. (Dec. 2005)
School of Engineering and Applied Science, Electrical and Computer Engineering Department, The George Washington University (GWU), GPA: 3.87, thesis: *"Assessment of Statistical Classification Rules: Implications for Computational Intelligence."*

M.Sc. (Nov. 1999)
Faculty of Computers and Information, Computer Science Department, Helwan University, thesis: *"Simulation of Prioritized Channel Assignment Models in Cellular Mobile Radio Networks."*.

Professional Certificate (Jul. 1997)
Computer Systems and Applications, The American University in Cairo (AUC), completion of 18 courses (66 credits), GPA: 3.99.

B.Sc. (Jun. 1995)
Faculty of Engineering, Communications and Electronics Department, Ain Shams University, cumulative grade: very good with honor degree, graduation project: *"A Complete Design for Optical Fiber Communication System"*.

POSITIONS AND WORK HISTORY

Adjunct Professor (Jul. 2021–present)
Electrical and Computer Engineering Department, University of Victoria.

Senior Scientist (Sep. 2019–present)
Electrical and Computer Engineering Department, University of Victoria.

Associate Professor (Dec. 2015–2019)
Computer Science Department, Faculty of Computers and Information, Helwan University.

Director of Human Computer Interaction Lab.[8] (2011–2019)
same as above

Assistant Professor (Apr. 2007–Dec. 2015)
Computer Science Department, Faculty of Computers and Information, Helwan University.

Research Member (2007–2009)
Microarray Quality Control Phase 2 (MAQC2) Project[6]. This is a group of over 100 members from , academia, and US government working on methods for developing predictive models that use high-dimensional microarray ("DNA chips") data to classify patients into low- or high-risk cancer.

Research Fellow (Dec. 2005–Jan. 2007)
U.S. Food and Drug Administration (FDA)/Center for Devices and Radiological Health (CDRH)—designing and testing statistical learning algorithms to work on real data problems, e.g., medical data for diagnostic purposes.

Internship Research Fellow (May. 2003–Aug. 2005)
same as above.

Assistant Lecturer (Nov. 2000–Jan. 2002)
Computer Science Department, Faculty of Computers and Information, Helwan University.

Research Assistant (Mar. 1997–Nov. 2000)
same as above.

Instructor (Sep. 1997–Jan. 2002)
Computer Science Department, CACE, The American University in Cairo (AUC).

GRANTS AND AWARDS

The University Award in Engineering and Technology (2019)
Monetary award and letter of recognition for contribution to Engineering and Technology.

University Award for Impact Factor Publications (2016, 2018)
Monetary award and letters of recognition for publishing in international journals with high impact factor.

NVIDIA GPU Grant (2017)
Titan X GPU's to pursue Deep Learning research.

Fund for Advanced Research Project (ARP) (2010–2012)
a grant from Information Technology Industry Development Agency (ITIDA)[4] for the project entitled: *"Designing a Computer Aided Detection (CAD) system for Breast Cancer Detection in Egypt"*. The project concluded by producing, LIBCAD[5], the first CAD system in Egypt and many countries in the middle east.

The George Washington University Co-op Student Award (2005)
for successful joint research between the George Washington University and Food and Drug Administration.

Internship at the Food and Drug Administration (2003–2005)
under the GWU cooperation program with the U.S. Food and Drug Administration.

Ph.D. Scholarship (2002–2005)
a four-year scholarship from home country to pursue the Ph.D. in the US.

TEACHING AND ONLINE OPEN-COURSE-WARE (OCW)

Rigorous teaching of many courses in different areas (1997–present)
Mathematics : discrete mathematics, linear algebra, probability, statistics, signals and systems.
Data Science : pattern recognition, data visualization, image processing.
Software : introduction to computers, Pascal, C Language, data structures, software engineering.
Hardware : digital design.

Online courses and lecture notes through FCIHOCW[9] (2010–present)
many of my undergraduate/graduate courses and lecture notes are available for free through this educational channel to build a strong foundation for serious students pursuing research in our region.

COMPUTER SKILLS

Linux, Windows, Mac, Mathematica, Matlab, Python, C, shell scripting, LaTeX, HTML, Emacs, OPNET.

ACTIVITIES AND MEMBERSHIPS IN SCIENTIFIC SOCIETIES

Invited Member :
- The National Committee of Experts for collaboration with the International Institute for Applied Systems Analysis (IIASA)[10].

Member :
- IEEE Senior Member, IEEE Computer Society, IEEE Engineering in Medicine and Biology Society, American Statistical Association (ASA).

Referee :
- **IEEE**: Access Journal, Transactions on Information Forensics & Security, Transactions on Medical Imaging, Transactions on Knowledge and Data Engineering, Signal Processing Letters, Systems Journal.
- **Elsevier**: Pattern Recognition, Computational Statistics and Data Analysis, Engineering Applications in Artificial Intelligence, Information Sciences, Statistics and Probability Letters, Biocybernetics and Biomedical Engineering.
- **Nature**: Springer Nature.

- **Other Journals**: International Journal of Biostatistics, Medical Physics, Australian & New Zealand Journal of Statistics, BMC Medical Imaging, Taylor & Francis, Journal of Image Science, Lead Guest Editor for The Scientific World Journal, The Kentucky Science and Engineering Foundation (KSEF), Information Technology Industry Development Agency (ITIDA)[4].

SELECTED PUBLICATIONS

U.S. Patents :

1. Yousef W. A., Traore I., and Briguglio W. "Unsupervised and Nonparametric Approach for Visualizing Outliers and Invariant Detection Scoring", **US Patent Pending**, 63168686, 2021.
2. Yousef, W. A. "Method and System for Computer Aided Detection for Cancer", **US Patent allowed**, 62/531,219, 07 11, 2017.

Book Chapters :

1. Yousef, W. A. (2022). "Machine learning: *construction*". In I. Traoré, I. Woungang, & S. Saad (Eds.), Artificial Intelligence for Cyber-Physical Systems Hardening, **Springer**, 7–44.
2. Yousef, W. A. (2022). "Machine learning: *assessment*". , In I. Traoré, I. Woungang, & S. Saad (Eds.), Artificial Intelligence for Cyber-Physical Systems Hardening, **Springer**, 45–80.
3. Wagner, R.F., W.A. Yousef, and W. Chen (2008), "Finite Training of Radiologists and Statistical Learning Machines: Parallel Lessons", Advances in Medical Physics: 2008, A.B. Wolbarst, K.L. Mossman, and W.R. Hendee, Editors, **Medical Physics Pub.**

Journals :

1. Briguglio, W., Yousef, W. A., Traore, I., & Mamun, M. (2024) "Federated Supervised Principal Component Analysis", **IEEE Transactions on Information Forensics and Security**, 19, 646–660.
2. Yousef, W. A., Traore, I., Briguglio, W., (2023) "Classifier Calibration: With Application to Threat Scores in Cybersecurity", **IEEE Transactions on Dependable and Secure Computing**, 20, 3, 1994-2010.
3. Yousef, W. A., Traoré, I., & Briguglio, W. (2021). "UN-AVOIDS: unsupervised and nonparametric approach for visualizing outliers and invariant detection scoring". **IEEE Transactions on Information Forensics and Security**, 16, 5195-5210.
4. Briguglio, W., Moghaddam, P., Yousef, W. A., Traore, I., & Mamun, M. (2021), "Machine Learning in Precision Medicine to Preserve Privacy via Encryption". **Pattern Recognition Letters**, 151, 148–154.
5. Yousef, W. A. (2021). "Estimating the Standard Error of Cross-Validation-Based Estimators of Classifier Performance". **Pattern Recognition Letters**, 146, 115–145.
6. Yousef, W. A., (2020) "Prudence When Assuming Normality: an advice for machine learning practitioners", **Pattern Recognition Letters**, 138, 44–50.
7. Mousa, W. A. Y., Lang, W., & Yousef, W. A. (2017). "A Pattern Recognition Approach for Modeling the Air Change Rates in Naturally Ventilated Buildings from Limited Steady-State CFD Simulations", **Journal of Energy and Buildings**, 54–65.
8. Mousa, W. A. Y., Lang, W., & Yousef, W. A. (2017). "Simulations and Quantitative Data Analytic Interpretations of Indoor-Outdoor Temperatures in a High Thermal Mass Structure". **Journal of Building Engineering**, 12, 68-76.
9. Yousef, W. A., Kundu, S. (2014), "Learning Algorithms May Perform Worse With Increasing Training Set Size: algorithmdata incompatibility". **Computational Statistics & Data Analysis**, 74, 181–197.
10. Abdel Razek, N. M., W. A. Yousef and W. A. Mustafa (2013). "Microcalcification Detection with and without CAD System (LIBCAD): A Comparative Study". **The Egyptian Journal of Radiology and Nuclear Medicine** 44(2): 397–404.
11. Yousef, W. A. (2013). "Assessing Classifiers in Terms of the Partial Area Under the ROC Curve". **Computational Statistics & Data Analysis** 64(0): 51–70.
12. Chen, W.; Gallas, B.; Yousef, W (2012), "Classifier Variability: accounting for training and testing". **Pattern Recognition** 45(7): 2661–2671.
13. Chen, W.; Gallas, B.; Yousef, W; et. al. (2012), "Uncertainty Estimation with a Finite Dataset in the Assessment of Classification Models". **Computational Statistics & Data Analysis** 56(5): 1016–1027.
14. Shi, L., G. Campbell, et al. (2010). "The MicroArray Quality Control (MAQC)-II Study of Common Practices for the Development and Validation of Microarray-Based Predictive Models." **Nature Biotechnology** 28(8): 827–838.
15. Yousef, W.A., S. Kundu, and R.F. Wagner (2009), "Nonparametric Estimation of the Threshold at an Operating Point on the ROC Curve". **Computational Statistics & Data Analysis**, 53(12), 4370–4383.
16. Yousef, W.A., Wagner, R.F., and Loew M.H. (2006). "Assessing Classifiers From Two Independent Data Sets in Terms of The ROC Parameters: a Nonparametric Approach". **IEEE Transactions on Pattern Analysis and Machine Intelligence**, vol. 28, 1809.
17. Yousef, W.A., Wagner, R.F., and Loew, M.H. (2005) "Estimating the Uncertainty in the Estimated Mean Area Under the ROC Curve of a Classifier". **Pattern Recognition Letters**, 26(16), 2600–2610.

Conferences :

1. Briguglio, W., Yousef, W. A., Traore, I., & Mamun, M., and Sherif Saad (2025) "An Alternative Approach to Federated Learning for Model Security and Data Privacy", **Proceedings of the 11th International Conference on Information Systems Security and Privacy ICISSP**, Vol 1, 291–301.
2. Abdelrazek, N.; Yousef, W.; Mustafa, W. (2012) "Microcalcification Detection with and without Prototype Cad System (LIBCAD): a comparative study", **European Society of Radiology** (ECR 2012 / C-1063).
3. Yousef, W. A. et al. (2010). "On Detecting Abnormalities in Digital Mammography". **Applied Imagery Pattern Recognition Workshop, IEEE Computer Society**, Proceedings. 39rd.
4. Yousef, W.A. and W. Chen. (2009) "Estimating Cross-Validation Variability". **Joint Statistical Meeting, American Statistical Association**, Section on Statistics in Epidemiology, Proceedings.
5. Chen, Weijie; Wagner, Robert; Yousef, Waleed; Gallas, Brandon (2009). "Comparison of Classifier Performance Estimators: a simulation study". **IEEE Medical Imaging, SPIE**, Proceedings of Vol. 726, 3.
6. Yousef, W. A. (2008). "Statistical Learning Machines from ATR to DNA Microarrays: Design, Assessment, and Advice for Practitioners". **International Conference on Electrical Engineering, Military Technical College**, Proceedings. 6th.
7. Kondratovich, M. and Yousef, W.A. (2005) "Evaluation of Accuracy and "Optimal" Cutoff of Diagnostic Devices in the Same Study". **Joint Statistical Meeting, American Statistical Association**, Proceedings.
8. Yousef, W.A., Wagner, R.F., and Loew, M.H. (2004) "Comparison of Non-Parametric Methods for Assessing Classifier Performance in Terms of ROC Parameters". **Applied Imagery Pattern Recognition Workshop, IEEE Computer Society**, Proceedings.

Open-source Software and Datasets :

1. Yousef, W. A., Traoré, I., & Briguglio, W. (2021). "UN-AVOIDS: unsupervised and nonparametric approach for visualizing outliers and invariant detection scoring" https://github.com/isotlaboratory/UNAVOIDS-Code
2. Yousef, W. A., Traore, I., & Briguglio, W., (2021) "Classifier Calibration: with implications to threat scores in cybersecurity" https://github.com/isotlaboratory/ClassifierCalibration-Code
3. Briguglio, W., Moghaddam, P., Yousef, W. A., Traore, I., & Mamun, M. (2021), "Machine Learning via Encryption (MLE) Framework in Precision Medicine to Preserve Privacy" https://github.com/isotlaboratory/Healthcare-Security-Analysis-MLE.
4. Yousef, W. A., Mohammed, H. E., Naguib, A. A., Khalifa, Y. M., Mamdoh, A. M., Awad, E. A., AbdElrheem, N. A. S. S. T. (2019). "JSOL: javascript-based open-source library." https://github.com/hci-lab/JSOL
5. Yousef, W. A., Ibrahime, O. M., Madbouly, T. M., Mahmoud, M. A., El-Kassas, A. H., Hassan, A. O., & Albohy, A. R. (2018), "Poem Comprehensive Dataset (PCD)" https://hci-lab.github.io/ArabicPoetry-1-Private/#PCD.
6. Yousef, W. A., Madbouly, T. M., Ibrahime, O. M., El-Kassas, A. H., Hassan, A. O., Albohy, A. R., & Mahmoud, M. A. (2018), "Pyquran: The Python Package for Quranic Analysis" https://hci-lab.github.io/PyQuran-Private.
7. Marzouk, Omar S., Yousef, Waleed A. , "LIBCAD-Open-Source: Software Utilities for Computer Aided Detection (CAD)", MESC for Research and Development, https://github.com/mesclabs/LIBCAD-OpenSource-Utils.

Recent Research on arxiv (still under submission to peer-reviewed journals) :

1. Andrew Naguib and Waleed A. Yousef and Issa Traoré and Mohammad Mamun (2023). "On Statistical Learning of Branch and Bound for Vehicle Routing Optimization". arXiv preprint, arXiv:2310.09986
2. Waleed A. Yousef (2022). "Arabic Poem about Pattern Recognition and Recognizing The Patterns of Arabic Poetry". OSF preprints, doi: 10.31219/osf.io/cfp3a.
3. Waleed A. Yousef and Hisham E. Mohammed and Andrew A. Naguib and Yusuf M. Khalifa and Alaa M. Mamdoh and Eman A. Awad and Nada A. Shawky Shrouk T. AbdElrheem and Sara G. Gaafar (2022). "JSOL: Javascript-based Open-Source Library". arXiv preprint arXiv:2201.04205
4. Elsayed, A. A., Yousef, W. A. (2019) "Matlab vs. Opencv: a comparative study of different machine learning algorithms". arXiv preprint arXiv:1905.01213.
5. Yousef, W. A., Ibrahime, O. M., Madbouly, T. M., Mahmoud, M. A. (2019) "Learning Meters of Arabic and English Poems with Recurrent Neural Networks: a step forward for language understanding and synthesis". arXiv preprint arXiv:1905.05700.
6. Mustafa, W. A., and Yousef, W. A. (2019). "Nested Cavity Classifier: performance and remedy". arXiv preprint arXiv:1906.09669.
7. Yourself, W. A., Abouelkahire, A. A., Marzouk, O. S., Mohamed, S. K., and Alaggan, M. N. (2019). "DVP: Data Visualization Platform". arXiv preprint arXiv:1906.11738.
8. Yousef, W. A. (2019). "A Leisurely Look at Versions and Variants of the Cross Validation Estimator". arXiv preprint arXiv:1907.13413.
9. Waleed A. Yousef, Ahmed A. Abouelkahire, Deyaaeldeen Almahallawi, Omar S.Marzouk, Sameh K. Mohamed, Waleed A. Mustafa, Omar M. Osama, Ali A. Saleh, Naglaa M. Abdelrazek (2019). "Method and System for Image Analysis to Detect Cancer". arXiv preprint arXiv:1908.10661

10. Yousef, W. A. (2019) "Assessment of Multiple-Biomarker Classifiers: Fundamental Principles and a Proposed Strategy". arXiv preprint arXiv:1910.14502

SELECTED INVITED TALKS, COMMITTEES, AND CHAIRING

1. Ryerson University, Toronto "Statistical Learning Machines: The big picture" (2020)
2. Etisal Alliance, the Conrad Hotel, "Hurdles Before Companies Transforming from Software Development to Artificial Intelligence Development" (2019)
3. The Suez Canal University, "LIBCAD, a commercial system for computer aided detection" (2016)
4. The Food and Drug Administration, "On Detecting Abnormalities in Digital Mammography" (2010)
5. The George Washington University, "On Detecting Abnormalities in Digital Mammography" (2010)
6. The George Washington University (GWU), "Statistical Learning Machines: The big picture" (2009)
7. British University in Cairo (BUC), "Statistical Learning Machines: The big picture" (2008)
8. Ain Shams University, Mathematics Department, "Statistical Learning Machines: The big picture" (2008)
9. Military Technical College (MTC), "Statistical Learning Machines from ATR to DNA Microarrays: Design, Assessment, and Advice for Practitioners" (2008)
10. National Institutes for Health (NIH), "ROC Analysis of the Multiple-Biomarker Classifier Training and Testing Problem" (2007)
11. CDRH, Office of Surveillance and Biostatistics, Division of Biostatistics, "Nonparametric Techniques for assessing classifiers performance" (2006)
12. Virginia Tech Advanced Research Institute, Bioinformatics Division, "Nonparametric Techniques for Assessing Classifiers Performance, a Summary of D.Sc. Dissertation" (2005)
13. Food and Drug Administration (FDA) Science Symposium, Washington Convention Center, Washington DC., "Estimating the Uncertainty in the Estimated Mean Area Under the ROC Curve of a Classifier" (2004)

ENDNOTES

1. http://www.Arabsera.org Arabsera.
2. http://www.mesclabs.com/VAAD VAAD.
3. http://www.mesclabs.com/ MESC Labs. for Research and Development.
4. http://www.itida.gov.eg Information Technology Industry Development Agency (ITIDA).
5. http://libcad.mesclabs.com/ LIBCAD: LIBrary for Computer Aided Detection (© 2013), MESC Labs.
6. http://www.fda.gov/ScienceResearch/BioinformaticsTools/MicroarrayQualityControlProject/default.htm Microarray Quality Control Phase 2 (MAQC2) Project, Food and Drug Administration.
7. http://dvp.mesclabs.com/ DVP: Data Visualization Platform (© 2015), MESC Labs.
8. http://www.hciegypt.com HCI Lab.: Human Computer Interaction Laboratory, Computer Science Department, Helwan University.
9. https://www.youtube.com/fcihocw FCIHOCW: YouTube educational channel.
10. http://www.iiasa.ac.at/ IIASA: International Institute for Applied Systems Analysis.

الصورة الشخصية	وليد أحمد يوسف موسى	الاسم
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	Attached	السيرة الذاتية
	Attached	الأبحاث المنشورة

الجوائز		