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"Bridging Communications Theory with Biological Systems and Advanced Technologies"

Contents

1 EXECUTIVE SUMMARY

Dr. Mohammad Fayez Al Bataineh is an accomplished Assistant Professor of Electrical Engineering at the United Arab Emirates University (UAEU) with over 15 years of academic and research experience. His interdisciplinary expertise spans advanced wireless communications, machine learning, bioinformatics, and smart systems. With 45+ peer-reviewed publications in high-impact journals and conferences, he has established himself as a leading researcher in applying communications theory to biological systems and emerging technologies.

Key Achievements:

- **Research Excellence:** 45+ publications including papers in journals with Impact Factors up to 6.1 and CiteScores exceeding 12.0
- **Grant Success:** Secured 470,000+ AED in research funding as Principal Investigator
- **Teaching Excellence:** Consistent student evaluations averaging 4.52/5.0, exceeding departmental averages
- **Service Leadership:** Department Chair experience, committee leadership, and international conference roles
- **Innovation:** Pioneer in applying communications theory to genomic analysis and biological systems

2 BIOGRAPHICAL OVERVIEW

Mohammad Al Bataineh, a native of Irbid, Jordan, was born in 1979. He began his academic journey at the Hijjawi Faculty for Engineering Technology, Yarmouk University, Jordan, where he graduated with high honors, obtaining a Bachelor of Science degree in Telecommunications Engineering in 2003. His academic excellence throughout his undergraduate studies was recognized by consistent placement on the Dean's List. Following his graduation, Al Bataineh served as a Teaching Assistant at Yarmouk University from 2003 to 2004, earning a scholarship that would propel him to further his academic pursuits in the United States.

At the Illinois Institute of Technology (IIT), he completed his Master's degree in Electrical Engineering with superior distinction, maintaining a perfect 4.0 GPA in 2006. Al Bataineh remained at IIT from 2006 to 2010 as a Ph.D. candidate and Research Assistant, eventually earning his doctorate in Electrical Engineering with the highest distinction in May 2010, again maintaining a perfect 4.0 GPA. His doctoral research centered on the application of communications, coding theory, and information theory to the interpretation and understanding of information flow in biological systems, particularly gene expression. While pursuing his Ph.D., Al Bataineh also gained practical experience as a Research Assistant at Argonne National Laboratories in Chicago, Illinois, and subsequently as a Research and Development Engineer at MicroSun Technologies, Lisle, Illinois.

In September 2010, Al Bataineh returned to his alma mater, Yarmouk University, as an Assistant Professor in the Telecommunications Engineering Department at the Hijjawi Faculty for Engineering Technology. His exceptional performance led to his promotion to Associate Professor in February 2018, and he subsequently served as Department Head from 2018 to 2020, demonstrating strong leadership and administrative capabilities.

In August 2020, Al Bataineh joined the United Arab Emirates University (UAEU) as an Assistant Professor in the Electrical and Communication Engineering Department, bringing his expertise to contribute to the institution's growing research excellence and academic programs. During his tenure at UAEU, he has demonstrated remarkable achievements across teaching, research, and service. His research portfolio has expanded significantly, securing multiple grants including a 367,000 AED Start-up Grant, SDG Research Grants, and SURE Plus Grants totaling over 470,000 AED as Principal Investigator. His publication record has grown to over 45 peer-reviewed articles in high-impact journals and prestigious conferences, with notable publications in journals with impact factors exceeding 6.0 and CiteScores above 10.0.

Al Bataineh's commitment to teaching excellence is evidenced by consistently high student evaluations averaging 4.52 out of 5.0, surpassing departmental averages. He has pioneered innovative teaching methodologies, including iPad-integrated interactive lectures, recorded sessions for flexible learning, and comprehensive digital course management. His service contributions include leadership roles on multiple university committees, international conference organizing committees, and editorial review boards for prestigious journals.

Throughout his career, Al Bataineh has taught a diverse range of undergraduate courses including Signals and Systems, Probability and Random Processes, Digital Image Processing, and Information Theory and Coding, as well

as graduate-level courses such as Artificial Neural Networks and Digital Signal Processing. His research portfolio has expanded significantly during his tenure at UAEU, evolving from his foundational work in bioinformatics and communications theory to encompass advanced wireless communications including RIS-assisted systems and mmWave MIMO technologies, machine learning applications for antenna optimization and network management, IoT security and cybersecurity education, smart city digital twin architectures, and mathematical modeling of complex systems. His continued work in computational biology now incorporates advanced neural network techniques for protein detection and gene identification. This diverse interdisciplinary approach demonstrates his ability to apply communications theory principles across emerging technological domains, from 5G/6G wireless systems and smart cities to healthcare applications and environmental challenges, positioning him as a versatile scholar who addresses contemporary engineering problems through innovative computational and theoretical approaches.

3 EDUCATION

3.1 Doctoral Education

Ph.D. in Electrical Engineering/Communications **2010**
Illinois Institute of Technology, Chicago, IL, USA
GPA: 4.0/4.0 (Outstanding Academic Achievement Award)
Advisor: Professor Guillermo E. Atkin (atkin@iit.edu)
Dissertation: *Analysis of Genomic Translation using a Communications Theory Approach*
Research Focus: Application of communications, coding theory, and information theory to biological systems
Awards: Awarded AAAEA College Scholarship, Oct 2008
Selected Graduate Coursework: Analysis of Random Signals; Modern Digital Communication; Statistical Signal Processing; Coding for Reliable Communications; Wireless Communication System Design; Digital Speech Processing; Applied Optimization for Engineers.

3.2 Master's Education

M.S. in Electrical and Computer Engineering **2006**
Illinois Institute of Technology, Chicago, IL, USA
GPA: 4.0/4.0 (Outstanding Academic Achievement Award)
Advisor: Professor Jafar Saniie (saniie@iit.edu)
Special Project: Data Compression (Lossless and Lossy Compression Techniques)
Selected Graduate Coursework (M.S.): Performance Evaluation of Computer & Communication Networks; Computer Vision & Image Processing; Machine Learning in Communications; Smart Systems & IoT; Advanced Wireless Communications; Engineering Analysis IB.

Selected Graduate Projects

- **Digital Speech Processing:** LP analysis & vocoder synthesis; pitch/voicing detection; rate–distortion study of residual quantization.
- **Statistical Signal Processing:** GLRT decision model for banking risk; EM/ML/Bayesian lifetime estimation; implemented compression (Huffman, arithmetic, scalar quant., transform, delta, wavelet).
- **Computer Vision & Image Processing:** Region-based segmentation (thresholding, k-means, growing, split–merge, labeling); edge/boundary detection (Sobel, Prewitt, Roberts, LoG, Canny); Hough transform for line detection.
- **Applied Optimization for Engineers:** Implemented steepest/gradient descent, Newton, and BFGS; compared convergence on benchmark problems.
- **Wireless Communications:** Performance analysis under correlated diversity; selection vs. MRC; closed-form diversity-gain expressions.
- **Performance Evaluation of Networks:** Loss-rate deviation for topologies with Markovian sources using NS-2 and MATLAB.

- **Digital Signal Processing:** FIR band-pass design (windowing, frequency sampling, equiripple) and IIR filters (Butterworth, Chebyshev, Elliptic); linear-phase IIR via frequency-weighted least squares with BFGS.

3.3 Bachelor's Education

B.S. in Telecommunications Engineering **2003**
Yarmouk University, Irbid, Jordan
Honors: High Honors, Dean's List (Consistent)
Scholarship: Awarded scholarship for graduate studies at IIT
Projects: Image Compression using Wavelet Transform, Transient Analysis on Transmission Lines
Selected Undergraduate Coursework: Analog Communications Systems; Probability & Random Processes; Microwave Systems; Electromagnetic Theory; Digital Signal Processing; Digital Communications; Antennas & Wave Propagation; Microprocessors; Pascal Programming; Introduction to Machine Learning.

4 PROFESSIONAL EXPERIENCE

4.1 United Arab Emirates University (UAEU), Al Ain, UAE

Assistant Professor **August 2020 – Present**
Electrical and Communication Engineering Department, College of Engineering

Key Responsibilities & Achievements:

- Teaching undergraduate and graduate courses with consistent excellence (4.52/5.0 average evaluation)
- Principal Investigator on 367,000 AED Start-up Grant for genomic research
- Supervisor of multiple SDG and SURE Plus grants (total funding: 111,820+ AED)
- Published 20+ high-impact publications since joining UAEU
- Digital Liaison for College of Engineering (2024-2025)
- Chair of Department Travel Committee (2024-2025)
- Academic advisor for 57+ undergraduate students

Current Service Roles:

- Member, ECE Department Assessment Committee (2021–2025).
- Chair, Department Travel Committee (2024–2025).
- Secretary of Department Council (meeting minutes and coordination).
- Coordinator, Communications and Microprocessors Laboratory (equipment maintenance, scheduling, training).
- Digital Liaison, Educational Technology Integration (2025).
- Academic advisor for 57+ undergraduate students, including Communication Engineering cadets at Zayed Military College.
- Examiner for Ph.D. and M.Sc. theses; member of multiple prospectus and defense committees.
- Chair and member of Ph.D. Comprehensive Exam committees.
- Member of Graduation Project II (GPII) examination committees.
- Active participant in university, college, and departmental committees.
- Organizing Committee Administrator, IEEE BioCAS 2025 (Abu Dhabi).
- Technical Program Committee Member, IEEE AICT 2025 (Al Ain).

4.2 Yarmouk University, Irbid, Jordan

Associate Professor **January 2018 – August 2020**
Assistant Professor **September 2010 – January 2018**
Telecommunications Engineering Department

Leadership Experience:

- **Department Head** (2018–2020): Led faculty of 15+ members, managed curriculum development.
- **ABET Accreditation Chair:** Successfully led ABET accreditation for BS Telecommunications Engineering.
- **Tempus Project Leader:** 1 million Euro EU grant for MSc program modernization, including course descriptors and two new MSc tracks (Wireless Communications and Wireless Technology).
- Head of election committee for student congress elections (2010).
- Served as Master of Ceremonies for several faculty-organized workshops.

Teaching & Academic Contributions:

- Taught undergraduate courses: Signals and Systems, Communication Systems, Digital Communications, Probability and Random Processes.
- Taught graduate-level courses: Digital Signal Processing, and Information Theory and Coding.
- Designed new course descriptors and materials for MSc programs.
- Supervised 5 Master's theses and 10+ undergraduate projects, including both primary and secondary tracks.
- Acted as academic advisor for Telecommunications Engineering students.

Research & Laboratory Contributions:

- Conducted research in Telecommunications Engineering, resulting in publications in journals such as *Biomedical Signal Processing and Control* (CiteScore: 11.5, IF: 4.9) and *AEU–International Journal of Electronics and Communications* (CiteScore: 6.7, IF: 3.2).
- Supervised and managed multiple labs: Analog Communications, Digital Communications, Microwave Systems, and Digital Signal Processing Laboratories.
- Managed teaching/lab operations across Analog Communications, Digital Communications, Microwave Systems, and Digital Signal Processing labs (equipment procurement, TA supervision, safety).

Service Roles:

- Member, College Council, Hijjawi Faculty for Engineering Technology (2013–2014).
- Active contributor to departmental and faculty committees.

4.3 Early Academic Appointment

Teaching Assistant / Lab Instructor **May 2003 – July 2004**
Hijjawi Faculty for Engineering Technology, Yarmouk University, Irbid, Jordan

- Led labs in Analog Communications, Antennas & Microwave, Numerical Analysis, and Digital Logic Design.
- Graded assignments and delivered lab tutorials.

4.4 Research and Industry Experience

Research Assistant **2006–2010**
Illinois Institute of Technology & Argonne National Laboratory

- Researched applications of communications and coding theory to genomic signal processing.
- Developed algorithms for transcription factor binding site and gene identification.
- Validated biologically motivated coding models for translation and created novel TF binding-site detection methods (Frequency Weight Matrix; Center of Gravity).
- Collaborated with Argonne National Lab on high-performance computing for biological data.

R&D Engineer **2010**
MicroSun Technologies, LLC, Lisle, IL

- Designed and tested battery management and wireless monitoring systems.
- Built signal processing algorithms for embedded systems in renewable/automotive use.
- Worked with cross-functional teams to integrate hardware/software for energy storage.

4.5 Industry Training

Communications Engineering Intern **Jul 2001 – Sep 2001**
Royal Jordanian Air Force (RJAF), Amman, Jordan
AXT 121 exchanges; optical fiber & splicing; FDM/TDM multiplexing; radar & microwave ground telephony.

Communications Engineering Intern **Oct 2001 – Jan 2002**
Egyptian Telephone Company (QuickTel), Cairo, Egypt
Access network assembly/installation; telephone set testing/maintenance; cabinet/box assembly; MDF jumpering.

5 RESEARCH INTERESTS & EXPERTISE

5.1 Primary Research Areas

- **Advanced Wireless Communications:** RIS/IRS-Assisted Systems, mmWave and THz Technologies, Machine Learning-Enhanced Channel Estimation
- **Applied Machine Learning:** AI Applications in Communications, Neural Networks for Engineering Optimization, Digital Signal Processing
- **Computational Biology:** Genomic Signal Processing, Communications Theory in Biological Systems, Protein Detection Algorithms
- **Smart Systems & IoT:** Cybersecurity Education, Smart City Technologies, Digital Twin Architectures
- **Applied Mathematics:** Optimization Theory, Statistical Signal Processing, Information Theory

5.2 Interdisciplinary Innovation

My research uniquely bridges communications engineering with biological systems, applying coding theory and information theory to understand gene expression, protein synthesis, and genomic translation. This interdisciplinary approach has led to novel algorithms for biological sequence analysis and contributed to both engineering and bioinformatics fields.

6 COMPLETE PUBLICATIONS PORTFOLIO

6.1 Publication Summary

Total Publications: 45 peer-reviewed works
Journal Articles: 28 (including high-impact venues with IF up to 6.1, CiteScore up to 12.2)
Conference Papers: 15 (presented at prestigious international conferences)
Book Chapters: 1
Dissertation: 1

6.2 Journal Publications at United Arab Emirates University (UAEU)

1. Z. Albataineh, H. B. Salameh, M. Al Bataineh, and A. M. Alshorman, "Adaptive beam pairing and local interpolation for robust analytical beam training in RIS-assisted wideband THz systems," *IEEE Open Journal of the Communications Society*, 2025. (IF: 6.1; CiteScore: 10.5)

2. M. H. Alrashdan, Z. Al-qudah, and M. Al Bataineh, "Enhancing impedance control in microstrip lines using the Taguchi approach," *Journal of King Saud University–Engineering Sciences*, vol. 37, no. 5, p. 24, 2025. (IF: 2.16; CiteScore: 12.1)

3. K. Khurshid, K. Khurshid, M. U. Hadi, M. Al Bataineh, and N. Saeed, "Securing AIoT surveillance: Techniques, challenges, and solutions," *IEEE Open Journal of the Communications Society*, 2025. (IF: 6.1; CiteScore: 10.5)

4. M. Al Bataineh, D. I. A. Abdoun, and M. Al Ahmad, "Comparative analysis of machine learning algorithms for antenna alignments," *IEEE Access*, 2025. (IF: 3.9; CiteScore: 9.0)

5. Z. Albataineh, H. B. Salameh, and M. Al Bataineh, "Two-stage power allocation for IRS-assisted downlink NOMA: Intra-group optimization and inter-group allocation," *IEEE Access*, 2025. (IF: 3.9; CiteScore: 9.0; Citations: 1)

6. Z. Albataineh, M. Al Bataineh, K. F. Hayajneh, and R. Al Athamneh, "Advanced 5G channel estimation in mmWave MIMO systems: Leveraging compressive sensing for enhanced performance," *IEEE Access*, 2025. (IF: 3.9; CiteScore: 9.0; Citations: 1)

7. A. Alhawatmeh, M. Al Bataineh, N. Alashqar, and R. Khalil, "Atomic solutions to Bateman–Burgers type equation via tensor products," *Partial Differential Equations in Applied Mathematics*, vol. 13, p. 101102, 2025. (IF: 2.476; CiteScore: 5.9; Citations: 1)

8. N. Jayachandran, A. Abdrabou, M. Al Bataineh, and K. A. Noordin, "An architecture and realization of a smart city digital twin with eHealth case studies," *IET Smart Cities*, 2025. (IF: 2.3; CiteScore: 5.2)

9. Z. Albataineh, K. Hayajneh, H. Shakhatreh, R. Al Athamneh, and M. Al Bataineh, "Adaptive machine learning-enhanced channel estimation for RIS-assisted mmWave systems: A hybrid approach," *Cluster Computing*, 2025. (IF: 4.1; CiteScore: 8.7)

10. M. Ismail, N. T. Madathil, M. Alalawi, S. Alrabaee, M. Al Bataineh, S. Melhem, and D. Mouheb, "Cybersecurity activities for education and curriculum design: A survey," *Computers in Human Behavior Reports*, vol. 16, p. 100501, 2024. (IF: 5.8; Citations: 19)

11. M. H. Alrashdan, Z. Al-qudah, and M. Al Bataineh, "Microstrip patch antenna directivity optimization via Taguchi method," *Ain Shams Engineering Journal*, vol. 15, no. 9, p. 102923, 2024. (IF: 5.9; CiteScore: 12.2; Citations: 6)

12. S. Al-Shihabi, R. Aydin, Z. C. Araci, F. Dweiri, M. Obeidat, and M. F. Al Bataineh, "Abolishing single-use plastic water bottles in Dubai hotels as a voluntary act—scenarios and environmental impacts," *Sustainability*, vol. 16, no. 8, p. 3121, 2024. (IF: 5.1; CiteScore: 7.7; Citations: 1)

13. M. Al Bataineh, D. I. A. Abdoun, H. Alnuaimi, Z. Al-Qudah, Z. Albataineh, and M. Al Ahmad, "Head impact detection using machine learning algorithms," *IEEE Access*, vol. 12, pp. 4938–4947, 2024. (IF: 3.9; CiteScore: 9.0; Citations: 4)

14. M. Al Bataineh, M. M. Umar, A. Moin, M. I. Hussein, and M. Al Ahmad, "Classification and prediction of communication cables length based on S-parameters using a machine-learning method," *IEEE Access*, vol. 11, pp. 108041–108049, 2023. (IF: 3.9; CiteScore: 9.0; Citations: 4)

15. R. Shams, A. Abdrabou, M. Al Bataineh, and K. A. Noordin, "Managing energy consumption of devices with multiconnectivity by deep learning and software-defined networking," *Sensors*, vol. 23, no. 18, p. 7699, 2023. (IF: 3.5; CiteScore: 8.2; Citations: 2)

16. M. Al Bataineh, Z. Al-qudah, A. Abdrabou, and A. N. Sandokah, "Geometric probability analysis of meeting probability and intersection duration for triple event concurrency," *Mathematics*, vol. 11, no. 12, p. 2708, 2023. (IF: 2.3; CiteScore: 4.6)

17. Z. Al-qudah, M. Al Bataineh, and A. Musa, "A novel multiple access diamond channel model," *International Journal of Communication Systems*, vol. 33, no. 17, e4616, 2020. (IF: 1.8; CiteScore: 6.1; Citations: 3)

6.3 Journal Publications at Yarmouk University (YU)

18. Z. Al-Qudah, L. Al-Hawary, M. Alrwashdeh, and M. Al Bataineh, "Parallel relay network with orthogonal components: Capacity and power allocation," *Wireless Personal Communications*, vol. 96, no. 3, pp. 4869–4884, 2017. (IF: 2.2; CiteScore: 6.6; Citations: 2)

19. Z. Al-qudah and M. Al Bataineh, "Allocation of resources for the Gaussian multiple access channel with practical partial cooperation," *AEU–International Journal of Electronics and Communications*, vol. 74, pp. 145–149, 2017. (IF: 3.2; CiteScore: 6.7; Citations: 7)

20. M. Al Bataineh and Z. Al-qudah, "A novel gene identification algorithm with Bayesian classification," *Biomedical Signal Processing and Control*, vol. 31, pp. 6–15, 2017. (IF: 4.9; CiteScore: 11.5; Citations: 10)

21. M. Al Bataineh, Z. Al-qudah, and A. Al-Zaben, "Iterative sequential Monte Carlo algorithm for motif discovery," *IET Signal Processing*, vol. 10, no. 5, pp. 504–513, 2016. (IF: 1.4; CiteScore: 3.0; Citations: 5)

22. Z. Al-Qudah, M. Alrwashdeh, L. Al-Hawary, and M. Al Bataineh, "On the capacity of a relay network with orthogonal components," *AEU–International Journal of Electronics and Communications*, vol. 70, no. 5, pp. 636–642, 2016. (IF: 3.2; CiteScore: 6.7; Citations: 4)

23. A. Al-Zaben, M. Al Bataineh, and S. Al-Refaie, "Temperature compensation of fiber Bragg gratings manometry catheter using Kalman filter," *International Journal of Pharmaceutical, Medical and Biological Sciences*, vol. 5, pp. 12–16, 2016. (IF: 0.98; Citations: 3)

24. K. M. Gharaibeh, H. Kaylani, N. Murphy, et al., including M. F. Al Bataineh, "A masters programme in telecommunications management – demand-based curriculum design," *European Journal of Engineering Education*, vol. 40, no. 3, pp. 267–284, 2015. (IF: 2.8; CiteScore: 8.1; Citations: 2)

25. Z. Al-qudah and M. Al Bataineh, "Cognitive interference channel: Achievable rate region and power allocation," *IET Communications*, vol. 9, no. 2, pp. 249–257, 2015. (IF: 1.6; CiteScore: 4.4; Citations: 5)

26. Z. Al-qudah, M. Al Bataineh, and W. Abu Shehab, "On optimal power allocation for Gaussian broadcast channel," *Innovative Systems Design and Engineering*, vol. 7, no. 6, pp. 1–7, 2016.

27. M. F. Al Bataineh and Z. J. Al-Qudah, "Bayesian classification of ribosome binding sites in prokaryotic genome sequences: A communications theory approach," *International Journal of Bioscience, Biochemistry and Bioinformatics*, vol. 7, no. 3, pp. 133–142, Jul. 2017. (Citations: 1)

6.4 Journal Publications at Illinois Institute of Technology (IIT)

28. M. A. Bataineh, L. Huang, M. Alonso, N. Menhart, and G. E. Atkin, "Analysis of gene translation using a communications theory approach," *Advances in Experimental Medicine and Biology*, vol. 680, pp. 387–397, 2010. (IF: 3.65; CiteScore: 4.5; Citations: 9)

6.5 Conference Publications at United Arab Emirates University (UAEU)

29. M. Al Bataineh, D. I. Abu-Abdoun, S. Al-Shihabi, and K. Muhammad, "A comparative analysis of computational approaches for gene detection," in *Proceedings of the 2025 International Conference on Biomedical Engineering and Technology (ICBET)*, 2025.

30. M. F. Al Bataineh, "Enhanced detection and localization of zinc finger proteins using advanced neural network techniques," in *Proceedings of the 2024 14th International Conference on Biomedical Engineering and Technology (ICBET)*, 2024, pp. 1–4. (Citations: 1)

31. M. F. Al Bataineh, "Communications theory-inspired algorithms for detecting protein-coding regions in prokaryotic genomes: A comparative study," in *Proceedings of the 2023 13th International Conference on Biomedical Engineering and Technology (ICBET)*, 2023, pp. 51–55.

6.6 Conference Publications at Yarmouk University (YU)

32. M. Al Bataineh, "Identification of coding regions in prokaryotic DNA sequences using Bayesian classification," in *International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO)*, Springer, 2020, pp. 3–14. (Citations: 1)

33. M. Al Bataineh, L. Huang, and G. E. Atkin, "Transcription factor binding site detection algorithm using distance metrics based on a position frequency matrix concept," in *IWBBIO 2014 Proceedings*, 2014, pp. 715–726. (Citations: 1)

34. M. Al Bataineh, L. Huang, and G. Atkin, "TFBS detection algorithm using distance metrics based on center of mass and polyphase mapping," in *2012 7th International Symposium on Health Informatics and Bioinformatics*, IEEE, 2012, pp. 37–40. (Citations: 4)

35. A. Al-Zaben, M. Al Bataineh, and S. Al-Refaie, "Temperature compensation of fiber Bragg gratings manometry catheter using Kalman filter," in *Proceedings of the 2016 International Conference on Biomedical Engineering and Technology*, Singapore, 2016.

6.7 Conference Publications at Illinois Institute of Technology (IIT)

36. L. Huang, M. Al Bataineh, A. F. Acedo, G. Atkin, X. Deng, and W. Zhang, "Identification of transcriptional promoter sequence based on statistical filter bank model," in *2010 IEEE International Conference on Electro/Information Technology*, 2010, pp. 1–5.

37. M. Al Bataineh, L. Huang, A. F. Acedo, G. Atkin, and N. Menhart, "An augmented block code model for protein translation using free energy based distance decoders," in *2010 IEEE International Conference on Electro/Information Technology*, 2010, pp. 1–6.

38. L. Huang, M. Al Bataineh, G. E. Atkin, et al., "Identification of transcription factor binding sites based on the chi-square distance of a probabilistic vector model," in *2009 International Conference on Future BioMedical Information Engineering (FBIE)*, 2009, pp. 73–76. (Citations: 5)

39. M. A. Bataineh, M. Alonso, L. Huang, G. E. Atkin, and N. Menhart, "Effect of mutations on the detection of translational signals based on a communications theory approach," in *2009 IEEE EMBS Annual International Conference*, 2009, pp. 3853–3856. (Citations: 3)

40. L. Huang, M. A. Bataineh, G. E. Atkin, S. Wang, and W. Zhang, "A novel gene detection method based on period-3 property," in *2009 IEEE EMBS Annual International Conference*, 2009, pp. 3857–3860. (Citations: 9)

41. M. Al Bataineh, L. Huang, I. Muhamed, N. Menhart, and G. E. Atkin, "Gene expression analysis using communications, coding and information theory based models," in *BIOCOMP 2009 Proceedings*, 2009, pp. 181–185. (Citations: 9)

42. M. Al Bataineh, M. Alonso, G. E. Atkin, S. Wang, and W. Zhang, "An optimized ribosome binding model using communication theory concepts," in *BIOCOMP 2007 Proceedings*, 2007, pp. 345–348. (Citations: 7)

43. M. Al Bataineh, M. Alonso, S. Wang, W. Zhang, and G. Atkin, "Ribosome binding model using a codebook and exponential metric," in *2007 IEEE International Conference on Electro/Information Technology*, 2007, pp. 438–442. (Citations: 9)

6.8 Book Chapters

44. M. Al Bataineh, L. Huang, M. Alonso, N. Menhart, and G. E. Atkin, "Analysis of gene translation using a communications theory approach," in *Advances in Computational Biology (Lecture Notes in Computer Science, LNCS)*, Springer, 2010, pp. 387–397. (IF: 3.65; CiteScore: 4.5; Citations: 9)

6.9 Doctoral Dissertation

45. M. Al Bataineh, *Analysis of Genomic Translation Using a Communications Theory Approach*, Ph.D. Dissertation, Illinois Institute of Technology, Chicago, IL, USA, 2010. (ProQuest ID: 3435813; Citations: 4)

7 RESEARCH FUNDING & GRANTS

7.1 Active and Completed Grants

Table 1: Research Grants Portfolio

Period	Project Title	Role	Funding	Status
2023-2025	Gene and Regulatory Sequence Identification using Communications Theory	PI	367,000 AED	Completed
2025-2026	Offline Assistive System with Stereo Vision for Visually Impaired	Supervisor	40,000 AED	Ongoing
2024-2025	Innovative Sight-Assist Glasses with CNN-LSTM	Supervisor	40,000 AED	Completed
Feb-May 2023	Assistive Smart Glasses for Visually Impaired	Supervisor	31,820 AED	Completed
2007-2008	Genomic Translation Analysis (IIT)	RA	$25,000+	Completed
Total Secured Funding:				**470,000+ AED**

7.2 Pending Grant Proposals

- UPAR Proposal: "Modular Assistive System with Stereo Vision" - 348,000 AED (Under Review)
- AUA-UAEU Joint Proposal: "Hybrid AI-DSP Framework for Gene Detection" - 500,000 AED (Under Review)

8 TEACHING EXCELLENCE

8.1 Teaching Performance

Overall Student Evaluation Average: 4.52/5.0 (Exceeds Departmental Average of 4.43)
Teaching Load: 22-27 credit hours annually
Faculty Evaluation Rating: Excellent (2020-2022 cycle)

8.2 Courses Taught at UAEU

- ECOM 320 - Probability and Random Processes
- ELEC 360 - Signals and Systems
- ELEC 380 - Analytical Methods for EE

- ECOM 561 - Information Theory and Coding
- ELEC 551 - Digital Image Processing
- ELEC 644 - Artificial Neural Networks (Graduate)
- ELEC 585/590 - Graduation Projects

8.3 Courses Taught at Yarmouk University (YU)

- BME 152 - Introduction to Engineering
- CME 312 - Signals and Systems
- CME 314 - Probability and Random Processes
- CME 452 - Digital Communications
- CME 456 - Communications Systems
- CME 612 - Digital Signal Processing
- CME 616 - Information Theory and Coding

8.4 Teaching Innovation

- **Technology Integration:** iPad-based interactive lectures, recorded sessions, MS Teams integration, and NotebookLM for lecture support
- **Faculty Development:** Completed Faculty Teaching Academy Program (FTAP) with Constructivist Learning Theory implementation
- **Digital Leadership:** Digital Liaison for Educational Technology (2025)
- **Quality Assurance:** Scheduled Quality Matters certification (September 2025)
- **Resource Sharing:** YouTube channel with 400+ educational videos, 10.8K subscribers

9 SERVICE & LEADERSHIP

9.1 Current Leadership Roles

- **Chair, Department Travel Committee** (2024-2025)
- **Digital Liaison, College of Engineering** (2025)
- **Organizing Committee Administrator, IEEE BioCAS 2025**
- **Technical Program Committee Member, IEEE AICT 2025**
- **Academic Advisor** for 39+ undergraduate students

9.2 Committee Service at UAEU

- ECE Department Assessment Committee (2021-2025)
- Faculty/Instructor Performance Evaluation Committee (2024-2025)
- Grade Appeal Committee (2025)
- Fact-Finding Committee on Academic Integrity (2024)
- Smart Learning Operational Committee (SLOC)
- Biomedical Engineering Program Development Committee

9.3 Previous Leadership Experience

- **Department Head,** Telecommunications Engineering, Yarmouk University (2018-2020)
- **Chair, ABET Accreditation Committee,** Yarmouk University
- **Tempus Project Workgroup Leader,** 1 million Euro EU grant for curriculum modernization

9.4 Professional Service

- **Editorial Service:** Reviewer for IEEE Access, PLOS ONE, Emirates Journal for Engineering Research
- **Conference Leadership:** Session Chair for ICBET 2023, IWBBIO 2014
- **Professional Memberships:** IEEE, IEEE Communications Society, Jordan Engineers Association, AAAEA
- National Tempus Day Workshop, University of Jordan (Jan 2011)
- New Faculty Members Workshop, Yarmouk University Faculty Development Center (2011)
- Bridging the Gap Between Engineering Curricula and Industry Needs (Yarmouk University, 2011)
- Development of Telecommunications Engineering Curricula—An Industrial Perspective (Amman, Oct 2011)

10 AWARDS & HONORS

10.1 Academic Excellence Awards

- **Outstanding Academic Achievement Award,** Ph.D. degree, Illinois Institute of Technology (2010)
- **Outstanding Academic Achievement Award,** M.S. degree, Illinois Institute of Technology (2006)
- **First Position,** ECE Poster Competition, Illinois Institute of Technology (2007)
- **Who's Who Among Students,** American Universities and Colleges (2006)
- **Undergraduate Academic Achievement,** Yarmouk University (1997–2003)

10.2 Scholarships & Fellowships

- **Arab American Association of Engineers and Architects (AAAEA) College Scholarship** (2008, 2010)
- **Research Assistantship,** Illinois Institute of Technology (2006–2010)
- **Scholarship for Graduate Studies,** M.S. and Ph.D. at Illinois Institute of Technology (2004–2009), sponsored by Yarmouk University, Jordan

10.3 Teaching Recognition

- **Excellent Rating,** Faculty Evaluation, UAEU (2020–2022)
- **Outstanding Field Training Award,** Egyptian Telephone Company (2001)
- **Consistent Student Evaluations:** 4.52/5.0 average across all courses

11 CONFERENCE PRESENTATIONS & INVITED TALKS

11.1 Recent Conference Presentations

- "Enhanced detection and localization of zinc finger proteins using advanced neural network techniques," ICBET 2024
- "Communications theory-inspired algorithms for detecting protein-coding regions," ICBET 2023
- Session Chair, "Medical Imaging and Biomedical Image Processing," ICBET 2023, Tokyo, Japan

11.2 Invited Presentations

- **Plenary Speaker,** "Youth & Future Technologies," HTU 2018 Conference
- **"Exponential Thinking and Disruptive Innovations,"** Multiple university presentations - Available on YouTube
- **Singularity University Summit,** Berlin, Germany (2017) - Available on YouTube

12 SUPERVISION & MENTORSHIP

12.1 Thesis Supervision

Completed Master's Theses (Yarmouk University):

1. Dima F. Turki, "The Capacity of a Gaussian Broadcast Channel Using Relays" (2019)
2. Laith M. Al-Hawari, "Capacity of Parallel Relay Channel with Orthogonal Components" (2015)
3. Monther Alrawashdeh, "Capacity of Cascade Relay Channel with Orthogonal Components" (2015)
4. Bassam M. Alrawashdeh, "Canny Edge Detection Enhancement by Scale Multiplication" (2013)
5. Ali T. Alzawahreh, "Enhanced Image Segmentation Algorithms" (2013)

12.2 Current PhD Committee Participation

- Member, PhD Advisory Committee for Rola Abdallah – Electrical Engineering: Communications
- Member, PhD Prospectus Exam Committee for Hanan Abdelmotagally – AI and ML in Cyber-Physical Systems

12.3 Student Projects & Mentorship

- **Current Graduation Projects:** Supervising multiple GP I and GP II projects
- **SURE Plus Grant Students:** Mentoring undergraduate researchers in computer vision and assistive technologies
- **Innovation Competition:** Organized INNOSPARK Award 2025, fostering student innovation and entrepreneurship

13 TECHNICAL SKILLS & COMPETENCES

13.1 Programming & Software

- **Programming:** Python, C++, MATLAB
- **Simulation Tools:** NS-2, SIMULINK
- **Documentation:** LaTeX, Microsoft Office Suite
- **Operating Systems:** Windows, UNIX, Linux
- **Laboratory Equipment:** Oscilloscopes, Spectrum Analyzers, Function Generators

- **Machine Learning:** TensorFlow, PyTorch, Scikit-learn

13.2 Research Methodologies

- Communications Theory and Signal Processing
- Machine Learning and Artificial Intelligence
- Bioinformatics and Computational Biology
- Statistical Analysis and Optimization
- Experimental Design and Data Analysis

14 PROFESSIONAL DEVELOPMENT

14.1 Recent Training & Certifications

- **Faculty Teaching Academy Program (FTAP)** - Constructivist Learning Theory Implementation
- **Quality Matters Certification** - "Applying the QM Rubric" (Scheduled September 2025)
- **AI in Higher Education Workshop** - University-wide professional development (March 2025)
- National Tempus Day Workshop, University of Jordan (Jan 2011)
- New Faculty Members Workshop, Yarmouk University Faculty Development Center (2011)
- Bridging the Gap Between Engineering Curricula and Industry Needs (Yarmouk University, 2011)
- Development of Telecommunications Engineering Curricula—An Industrial Perspective (Amman, Oct 2011)

14.2 International Workshops & Programs

- Course Development Workshop, Dublin City University (2012)
- EU Educational System Awareness Program, Queen Mary University, London (2011)
- Erasmus Plus Teaching Exchange, University of Deusto, Spain
- Industry-Academia Bridge Workshops (Multiple)

15 LANGUAGES & PERSONAL INFORMATION

15.1 Language Proficiency

- **Arabic:** Native Speaker
- **English:** Proficient (Reading, Writing, Speaking)

15.2 Personal Details

- **Date of Birth:** February 13, 1979
- **Nationality:** Jordanian
- **Driving Licenses:** Jordan, UAE, USA
- **Family Status:** Married

16 REFERENCES

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This curriculum vitae represents a comprehensive overview of my academic and professional journey. For additional details or supporting documentation, please feel free to contact me.

Updated: September 2025