CURRICULUM VITAE

Qanita Bani Baker

BRIEF

Dr. Qanita Bani Baker is an Associate Professor of Computer Science at Jordan University of Science and Technology (JUST) and the Vice Dean for the Faculty Of Computer and Information Technology at Jordan University of Science and Technology with more than 16 years of experience in teaching, training, and doing research. She was awarded a scholarship to pursue a Ph.D. at Utah State University, USA and she got her Ph.D. in 2015. Dr. Baker has worked at JUST since 2015. She has taught more than 17 different courses at all levels (from 0-level courses to 700-level advanced graduate-level courses). The courses include Programming Languages, object-oriented, data structures algorithms, artificial intelligence, and machine learning, including many advanced-level courses. Dr.Baker also has supervised students' innovation through graduation projects and Master theses. Her research interests include Problem Optimization, Artificial Intelligence, Machine Learning, Data Science, Computational Biology, Health Informatics, and capacity-building of Computer science education. Dr. Baker is currently conducting several studies in Artificial Intelligence and Machine Learning for Health, optimizing bioinformatics' tools, and analyzing biomedical big data. Dr.Baker has co-authored many technical papers in specialized peer-reviewed international journals and conferences.

EDUCATION

- Ph.D., Computer Science. Utah State University, Logan, UT. 2015.

- M.S., Computer Science. Jordan University of Science and Technology, Irbid, Jordan. 2007.

- B.S., Computer Science. Jordan University of Science and Technology, Irbid, Jordan. 2004.

Professional Experience

- Vice Dean, CIT, Jordan University of Science and Technology, Irbid, Jordan.
  Sep 2023- now

- Associate professor
  Department of Computer Science, Jordan University of Science and Technology, Irbid, Jordan.
  Sep 2020- now

- Assistant Professor
  Department of Computer Science, Jordan University of Science and Technology, Irbid, Jordan.
  Sep 2015- Sep 2020

- Dean Assistant, Student Affairs Deanship,
  Jordan University of Science and Technology (JUST), Irbid, Jordan Faculty of Computer and Information Technology, 2018 – 2020

- Research Assistant & Teaching Assistant
  Computer Science. Utah State University, Logan, UT.
  2011-2015.

- Full time Lecturer
  Department of Computer Science. Jordan University of Science and Technology, Irbid, Jordan.
  2007-2011.

- Research Assistant & Teaching Assistant
  Department of Computer Science, Jordan University of Science and Technology, Irbid, Jordan
  2004- 2007

RESEARCH INTERESTS

- Artificial Intelligence and Machine Learning

- Artificial Intelligence and Machine Learning applications

- Medical Images and Bio-image Analysis

- Bioinformatics and Computational Biology

- Health Informatics

- Sensor Technology, Security

- Optimization

PUBLICATION

DISSERTATION/THESIS

- Bani Baker, Qanita, "Computational Modeling to Study Disease Development: Applications to Breast Cancer and an in vitro Model of Macular Degeneration" (2015). All Graduate Theses and Dissertations. Paper 4409.
  `http://digitalcommons.usu.edu/etd/4409`

- Developing Middleware Mechanisms to Support Energy-Efficient Wireless Sensor Networks. Qanita BaniBaker, Ayad Salhieh. Thesis submitted in partial fulfillment of the requirements for the degree of M.Sc. in Computer Science .At The Faculty of Graduate Studies Jordan University of Science and Technology. May 2007.

PUBLICATIONS IN PEER REVIEW JOURNALS / CONFERENCES

- Bani Baker, Qanita, Ruba A. Al-Hussien, and Mahmoud Al-Ayyoub. "Accelerating Multiple Sequence Alignments Using Parallel Computing." Computation 12, no. 2 (2024): 32.

- Bani Baker, Qanita, Nour Alqudah, Tibra Alsmadi, and Rasha Awawdeh. "Image-Based Arabic Sign Language Recognition System Using Transfer Deep Learning Models." Applied Computational Intelligence and Soft Computing 2023, no. 1 (2023): 5195007.

- Baker, Qanita Bani, Enas Khwaileh, Marwa Alharbi, and Yaser Jararweh. "Lung Cancer Survival Time Prediction Using Machine Learning and Deep Learning Techniques." In 2023 Fourth International Conference on Intelligent Data Science Technologies and Applications (IDSTA), pp. 35-42. IEEE, 2023.

- Baker, Qanita Bani, Safa Swedat, and Kefah Aleesa. "Automatic Disease Diagnosis System Using Deep Q-Network Reinforcement Learning." In 2023 14th International Conference on Information and Communication Systems (ICICS), pp. 1-6. IEEE, 2023.

- Bani Baker, Qanita, and Moayyad F. Alajlouni. "Comparative Analysis of Feature Selection Techniques with Metaheuristic Grasshopper Optimization Algorithm." In International Conference on Emerging Trends and Applications in Artificial Intelligence, pp. 159-169. Cham: Springer Nature Switzerland, 2023.

- Hammad, Mahmoud M., Sajeda Banat, Qanita Bani Baker, Mohammed Al-refai, and Baraa Abudhais. "A COMPREHENSIVE STUDY OF CLOUD, FOG, AND EDGE COMPUTING TECHNOLOGIES FOR HEALTHCARE IoT SYSTEMS." Authorea Preprints (2023).

- Ismail, Q., Massadeh, M. and Baker, Q.B., 2022, December. Predicting COVID-19 Related Tweets Using Ensemble of Transformers Models. In 2022 IEEE/ACS 19th International Conference on Computer Systems and Applications (AICCSA) (pp. 1-7). IEEE.

- Towards enhancing the user experience of ChIP-Seq data analysis web tools. M Hammad, QB Baker, M Al-Smadi, W Alrashdan International Journal of Electrical & Computer Engineering (2088-8708) 12 (5) 2022

- Forecasting epidemic diseases with Arabic Twitter data and WHO reports using machine learning techniques QB Baker, F Shatnawi, S Rawashdeh Bulletin of Electrical Engineering and Informatics 11 (2), 738-749 1 2022

- Molecular docking and molecular dynamics simulation S Singh, QB Baker, DB Singh Bioinformatics, 291-304 2 2022

- Sentimental Analysis for Studying and Analyzing the Spreading of COVID-19 from Twitter Data QB Baker, AA Aqouleh, O Altiti 2021 Eighth International Conference on Social Network Analysis, Management ... 2021

- Impact of COVID-19 Pandemic on Students' Mental Health: A Case Study of Jordanian Universities QBB Maryam Nuser, Wesam Al-Rashdan, Journal of Education and Community Health 2 2021

- Al-Smadi, Mohammed, Mahmoud Hammad, Qanita Bani Baker, Saja Khaled Tawalbeh, and Sa'ad A. Al-Zboon. "Transfer deep learning approach for detecting coronavirus disease in X-ray images." International Journal of Electrical & Computer Engineering (2088-8708) 11, no. 6 (2021).

- Alasal, Sanaa Abu, Mohammad Alsmirat, Asma Al-Mnayyis, and Mahmoud Al-Ayyoub. "Improving radiologists' and orthopedists' QoE in diagnosing lumbar disk herniation using 3D modeling." International Journal of Electrical & Computer Engineering (2088-8708) 11, no. 5 (2021).

- Qanita Bani Baker. "Evaluation of Histopathological Images Segmentation Techniques for Breast Cancer Detection." In 2021 12th International Conference on Information and Communication Systems (ICICS), pp. 134-139. IEEE, 2021.

- Al-Smadi, Mohammed, Mahmoud Hammad, Qanita Bani Baker, and Sa'ad A. Al-Zboon. "A transfer learning with deep neural network approach for diabetic retinopathy classification." International Journal of Electrical & Computer Engineering (2088-8708) 11, no. 4 (2021).

- Baker, Qanita Bani, Maram Gharaibeh, and Yara Al-Harahsheh. "Predicting Lung Cancer Survival Time Using Deep Learning Techniques." In 2021 12th International Conference on Information and Communication Systems (ICICS), pp. 177-181. IEEE, 2021.

- Baker, Qanita Bani, Dalya Faraj, and Alanoud Alguzo. "Forecasting Dengue Fever Using Machine Learning Regression Techniques." In 2021 12th International Conference on Information and Communication Systems (ICICS), pp. 157-163. IEEE, 2021.

- Ibrahim, Anwar, Amneh Ibrahim Al-Rababah, and **Qanita Bani Baker**. "Integrating virtual reality technology into architecture education: the case of architectural history courses." Open House International (2021).

- **Qanita Bani Baker**, and Maryam S. Nuser. "Design Bioinformatics Curriculum Guidelines: Perspectives." Your Passport to a Career in Bioinformatics (2021): 91.

- Alasal, Sanaa Abu, Mohammad Alsmirat, **Qanita Bani Baker**, and Shadi Alzu'bi. "Lumbar disk 3D modeling from limited number of MRI axial slices." International Journal of Electrical and Computer Engineering 10, no. 4 (2020): 4101.

- Hammad, Mahmoud M., Mohammad Al-Smadi, **Qanita Bani Baker**, Nour Al-khdour, Mutaz Bni Younes, and Enas Khwaileh. "Question to Question Similarity Analysis Using Morphological, Syntactic, Semantic, and Lexical Features." Journal of Universal Computer Science 26, no. 6 (2020): 671-697.

- **Qanita Bani Baker**, Mahmoud Hammad, Wesam Al-Rashdan, Yaser Jararweh, Mohammad AL-Smadi, Mohammad Al-Zinati: Comprehensive Comparison of Cloud-Based NGS Data Analysis and Alignment Tools. DOI:10.1016/j.imu.2020.100296 https://www.sciencedirect.com/science/article/pii/S2352914819303673

- Obeidat, Rand, Izzat Alsmadi, **Qanita Bani Baker**, and Laith Obeidat. "Can Users Search Trends Predict People Scares or Disease Breakout? An Examination of Infectious Skin Diseases in the United States." Infectious Diseases: Research and Treatment 13 (2020): 1178633720928356.

- **Qanita Bani Baker**, Maryam S Nuser: Bioinformatics in Jordan: Status, challenges, and future directions. PLoS Computational Biology 09/2019; 15(9).,
DOI:10.1371/journal.pcbi.1007202
https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1007202

- Alasal, Sanaa Abu, Mohammad Alsmirat, **Qanita Bani Baker**, and Shadi Alzu'bi. "Lumbar disk 3D modeling from limited number of MRI axial slices." International Journal of Electrical and Computer Engineering 10, no. 4 (2020): 4101.

- **Qanita Bani Baker**, Mohammad A. Alsmirat, Khaled Balhaf, Mohammed A. Shehab: Accelerating white blood cells image segmentation using GPUs. Concurrency and Computation Practice and Experience 01/2019;, DOI:10.1002/cpe.5133 https://onlinelibrary.wiley.com/doi/abs/10.1002/cpe.5133

- **Qanita Bani Baker**, Gregory J. Podgorski, Elizabeth Vargis, Nicholas S. Flann: A computational study of VEGF production by patterned retinal epithelial cell colonies as a model for neovascular macular degeneration. Journal of Biological Engineering 12/2017; 11(1)., DOI:10.1186/s13036-017-0063-6
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5540422/

- **Qanita Bani Baker**, Manar K Al-Bataineh: Genetic Algorithm for Optimizing Global Alignment of Protein-Protein Interaction Network. 2019 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB); 07/2019, DOI:10.1109/CIBCB.2019.8791492. https://ieeexplore.ieee.org/abstract/document/8791492/

- Muneer Yassein, Ismail Hmeidi, Haneen Shehadeh, Waed Yaseen, Esra'a Masadeh, Wail Mardini, Yaser Khamayseh, **Qanita Bani Baker**: Performance Evaluation of "Dynamic Double Trickle Timer Algorithm" in RPL for Internet of Things (IoT). 4th International Conference on Internet of Things, Big Data and Security; 01/2019, DOI:10.5220/0007780004300437. https://www.scitepress.org/PublicationsDetail.aspx?ID=1IOiLIxFMks=&t=1

- **Qanita Bani Baker**, Toqa' Abu Zaitoun, Sajda Banat, Eman Eaydat, Mohammad Alsmirat: Automated Detection of Benign and Malignant in Breast Histopathology Images. 2018 IEEE/ACS 15th International Conference on Computer Systems and Applications (AICCSA); 10/2018, DOI:10.1109/AICCSA.2018.8612799. `https://ieeexplore.ieee.org/document/8612799/`

- **Qanita Bani Baker**, Wesam Al-Rashdan, Yaser Jararweh: Cloud-Based Tools for Next-Generation Sequencing Data Analysis. 2018 Fifth International Conference on Social Networks Analysis, Management and Security (SNAMS); 10/2018, DOI:10.1109/SNAMS.2018.8554515. `https://ieeexplore.ieee.org/iel7/8536820/8554420/08554515.pdf`

- Sanaa Abu Alasal, Mohammad Alsmirat, **Qanita Bani Baker**, Yaser Jararweh: Improving Passive 3D Model Reconstruction using Image Enhancement. 2018 6th International Conference on Multimedia Computing and Systems (ICMCS); 05/2018, DOI:10.1109/ICMCS.2018.8525977. `https://ieeexplore.ieee.org/document/8525977`

- Ruba A Al-Hussien, **Qanita Bani Baker**, Mahmoud Al-Ayyoub: Fast Exact Sequence Alignment Using Parallel Computing. 9th International Conference on Information and Communication Systems (ICICS); 04/2018, DOI:10.1109/IACS.2018.8355464 `https://ieeexplore.ieee.org/document/8355464`

- **Qanita Bani baker**, Khaled Balhaf: Exploiting GPUs to Accelerate White Blood cells Segmentation in Microscopic Blood Images. 2017 8th International Conference on Information and Communication Systems (ICICS); 04/2017, DOI:10.1109/IACS.2017.7921960. `http://ieeexplore.ieee.org/document/7921960/`

- **Qanita Bani baker**, Gregory J. Podgorski, Christopher D. Johnson, Elizabeth Vargis, Nicholas S. Flann: Bridging the Multiscale Gap: Identifying Cellular Parameters from Multicellular Data. CIBCB 2015; 08/2015, DOI:10.1109/CIBCB.2015.7300323

- **Qanita Bani Baker**, Nicholas S. Flann, Soonjo Kwon, Gregory J. Podgorski, Ahmadreza Ghaffarizadeh: A 3D agent-based model of the transition from ductal carcinoma in situ to invasion. Institute of Biological Engineering 2014 Annual Conference, lexington ky; 03/2014. `https://ieeexplore.ieee.org/document/7300323`

- **Qanita Bani Baker**, Nicholas S. Flann, Soonjo Kwon, Gregory J. Podgorski, Ahmadreza, Ghaffarizadeh: Agent-based model for breast tissue culture development in vitro. Institute of Biological Engineering 2014 Annual Conference, lexington ky; 03/2014 `http://www.ibe.org/2014-annual-conference`

- **Qanita Bani baker** : An Agent-based Model of Ductal Carcinoma in situ (DCIS) and its Validation in a Tissue-engineered Model of DCIS. Institute of Biological Engineering 2013 Annual Conference; Raleigh, NC ; 03/2013 `http://www.ibe.org/2013-annual-conference`

POSTER

- **Qanita Bani Baker**, Ahmadreza Ghaffarizadeh, Soonjo Kwon, Gregory J. Podgorski and Nicholas S. Flann. Interaction of Stroma and Tumor Growth in Ductal Carcinoma in Situ Metastasis. An agent based model. Short Course. USC. Los Anglos. USA. (Oct.21 2013)

- **Qanita Bani Baker**, Ahmadreza Ghaffarizadeh, Soonjo Kwon, Gregory J. Podgorski and Nicholas S. Flann. Interaction of Stroma and Tumor Growth in Ductal Carcinoma in Situ Metastasis. Utah state university tenth annual celebration of faculty and student research at Utah State University. Logan. USA (Apr. 4-11, 2014).

- **Qanita Bani Baker** Interaction of Stroma and Tumor Growth in Ductal Carcinoma in Situ Metastasis: A 2D Agent-Based Modeling. SBI Science and Technology Review Winter Meeting. Utah State University Eccles Conference Center. (Feb.12, 2014)

- **Qanita Bani Baker**Developing in Silico Model to Study The Effect of Retinal Pigment Epithelial Cell Patch Size. USU Jan 6 2015

HONORS AND AWARDS

- Scholarship from Jordan University of Science and Technology to study PhD in computer science at Utah state university. August 2011

- Travel award from USC (university of Southern California) to attend the Short Course and participate in the poster session. October 2013

- Travel award from USU (Utah state university) to attend Raleigh. North Carolina. (March. 6-8, 2013)

- Wining poster award among the graduated students in Utah State University CS department. Fall 2013.

- Wining poster award among the graduated students in Utah State University CS department. Spring 2014.

- USU Pinnacle Honor Society.

- USU Golden Key Society.

PROFESSIONAL ACTIVITIES

- U.S.-Jordanian University Cooperation Network (UCN),JUST focal point for the UCN link

- Facilitators at Research, Education, and Advocacy for Community Health (REACH),link

- Journal Reviewer Board Member:

    PLOS ONE

    Scientific Reports

-IEEE/ACM Transactions on Computational Biology and Bioinformatics

-Health Informatics Journal

-Journal of Information Science

-Jordan Journal of Biological Sciences

-Computers in Biology and Medicine

-Arabian Journal for Science and Engineering

- Track chair and PC member in: CloudTech'17, CloudTech'18, ICICS2017, ICICS2016, ICICS2016

- GHC Poster Session Committee

- Curriculum committee in CS Department in JUST

- Promotion/appointment committee in CS Department, JUST

- Quality Assurance committee in CS Department , JUST

- ABET accreditation committee

- University Committee, JUST

- Member in AFCEA International association

- Member in the Commission on Education and Communication — IUCN

TRAINING AND WORKSHOP

- Training Workshop entitled "Quality of Online Courses- Applying the Quality Matters Rubric " held from 17/12/2019 to 19/12/2019. JUST.

- Training Workshop entitled " Online Learning Design " held from 09/12/2019 to 12/12/2019. JUST

- Training Workshop entitled " Problem-Based Learning " held from 18/03/2019 to 20/03/2019. JUST

- Case study development and Integration Workshop, March, 2018, France. Erasmus+ project.

- EHR + eLearning content Training workshop - Jordan, 16-17/8/2017. Amman, Jordan. Erasmus+ project.

- Training Workshop entitled " Teaching Methods & Learning Styles " held from 22/02/2017 to 23/02/2017. JUST

- International Teacher Assistance workshop nov-2011(USU,UT,USA)

- The International Visitor Leadership Program (IVLP)

- Attendance in the 23rd Annual Conference on Distance Teaching And Learning ACADEMY FOR EDUCATIONAL DEVELOPMENT. August, 2007 .Monona Terrace Convention Center. Madison, Wisconsin, U.S.A.

- International Computer Driving License certification/issued by the UNESCO Cairo office.

- Three (3) months in JUST computer center to learn Oracle.2003.

- World-links certificate/worlds linked organization (160 hours).

- Computer maintenance courses and certification/Al- shark center (84 hours).

- English conservation Certification/ from oxford center (32 hours).

- online training courses/ HKJ -Ministry Of Education and ESP(100 hours).

- Teaching methods / HKJ -Ministry Of Education(60 hours).

MASTER STUDENTS

SOME MASTER STUDENTS SUPERVISED

- Haneen Shehadeh, with a thesis entitled: "Adaptive and Fair Route Update Algorithm for Low Power and Lossy Networks in the Internet of Things ". 2019

- Ruba Al-Hussien, with a thesis entitled:"Multiple Sequence Alignment Using Parallel Computing". 2019

- Yousef Shatnawi, with a thesis entitled: "Particle Swarm Algorithm: Enhanced Version and Application for Multiple Sequence Alignment". 2019.

- Sanaa Abu Alasal, with a thesis entitled: "Inter-Vertebral Disc Herniation Diagnosis from Three-Dimensional Model's Geometrical Features". 2018.

- Khaled Balhaf, with a thesis entitled: :Accelerating White Blood Cells Image Segmentation Using GPU. 2018

- Nada Ghaniam, with a thesis entitled: "Agent Based Validation Based on Histological Images in Ductal Carcinoma in situ." 2017.

Some Thesis Committees - Member

- Zain Mahmoud Jaradat. DETECTING PARAPHRASE AND SEMANTIC SIMILARITY IN ARABIC TWEETS. 2016

- Fatimah Abdallah Al-alem. THE IMPACT OF IMAGE COMPRESSION ON FINGERPRINT IDENTIFICATION ALGORITHMS. 2016

- Bashar Bassam Talafha. USING DEEP NEURAL NETWORKS FOR ASPECT-BASED SENTIMENT ANALYSIS. 2017

- Ghadeer Al-Bdour. COMPARATIVE STUDY BETWEEN DEEP LEARNING FRAME-WORKS USING MULTIPLE BENCHMARK DATASETS. 2017

COURSES TAUGHT

At JUST/JORDAN

- ADVANCED ALGORITHMS

- ADVANCED ARTIFICIAL INTELLIGENCE

- ANALYSIS AND DESIGN OF ALGORITHMS

- ARTIFICIAL INTELLIGENCE

- COMPUTATIONAL BIOLOGY

- COMPUTATIONAL BIOLOGY (LAB)

- DATA STRUCTURES AND ALGORITHMS

- DATA STRUCTURES

- FUNDAMENTALS OF BIOINFORMATICS

- INTRODUCTION TO PROGRAMMING

- INTRODUCTION TO BIOINFORMATICS

- INTRODUCTION TO INFORMATION TECHNOLOGY

- INTRODUCTION TO PROGRAMMING

- PROGRAMMING IN C++

- PROGRAMMING LAB

- SELECTED PROGRAMMING LANGUAGE

- SELECTED PROGRAMMING LANGUAGES (FOR NON-COMPUTER SCIENCE INFORMATION STUDENTS)

- SELECTED TOPICS IN COMPUTER SCIENCE

- SEMINAR IN ADVANCED COMPUTER SCIENCE

COURSES TAUGHT AND WORKING AS TEACHING ASSISTANCE AT USU/USA

- Su15, Sp2012, Fa2011 (CS 5050 - Advanced Algorithms):

  Study of algorithms and their analysis, including design by induction, algorithms involving sequences and sets, graph algorithms, geometric algorithms, algebraic algorithms, reductions, NP-completeness, and parallel algorithms.

- Sp15 (CS 6670 - Advanced Bioinformatics): Focuses on the various advanced algorithms and models used in bioinformatics applications. Opportunities and needs for improvement of such algorithms are discussed in the context of current and future problems in bioinformatics.

- Fa 13, Fa14 (CS 5600 - Intelligent Systems): Introduction to artificial intelligence topics, including software agent design, informed search, heuristics, inference (logical and probabilistic), knowledge representation, game playing, planning, machine learning, philosophy, and ethics.

- Sp13 (Bioinformatics I) Introduction to tools and techniques used in the study of bioinformatics, genomics, and computational biology. Explores usage of these tools and techniques for storage, retrieval (mining), processing, visualization, and analysis of biological information.

PERSONAL SKILLS AND COMPETENCES

- Communication skills, teamwork and ability to work under pressure for long hours. Have the potential of learning new programming languages and technologies. Have the spirit of proficiency and creativity. Fast learner, enthusiastic, dedicated, organized, clear and logical thinker, motivated, and reliable. Ability to work as a programming Languages Instructor and applications trainer.

- LANGUAGES: Arabic (Fluent), English (Excellent)