Tayebeh Bahreini

Research interests

- ✓ Edge computing
- ✓ Cloud computing
- ✓ Distributed systems
- ✓ Approximation algorithms
- ✓ Parallel computing
- ✓ Electric vehicle routing and charging
- ✓ Game theory
- ✓ Internet of Things (IoT)

Education

Ph.D. in Computer Science, Wayne State University — Detroit, MI (2015 – present)
GPA: 4/4
Dissertation: *Resource Management in Edge Computing Systems*
Advisor: Dr. Daniel Grosu

M.Sc. in Computer Engineering, Shahed University — Tehran, Iran (2014)
GPA: 18.10/20
Thesis: *Scheduling Quantum Circuits in Ion Trap*

B.Sc. in Computer Science, University of Isfahan — Isfahan, Iran (2009)
GPA: 15.10/20
Thesis: *An Emotion Recognition System for Persian Texts*

Honors

Selected to participate in the **Rising Stars in Electrical Engineering and Computer Science Workshop** at the University of California, Berkeley — 2020

Scholarship to attend ACM Richard Tapia Celebration of Diversity in Computing Conference — 2020

Selected to participate in the **8th Heidelberg Laureate Forum** — 2020

Ralph H. Kummler Distinguished Achievement Award in Graduate Student Research - Wayne State University — 2020

Outstanding Graduate Research Assistant Award - Wayne State University — 2020

Summer Dissertation Award - Wayne State University — 2020

Selected as one of the **"Top 10 Women in Edge"** - Edge Computing World — 2019

Finalist, "Edge Woman of the Year 2019 Award" - Edge Computing World — 2019

National Center for Women & **IT Collegiate Award** - National Center for Women & IT — 2019

NSF Student Travel Grant - ACM/IEEE SEC 2018 — 2018

NSF Student Travel Grant - ACM/IEEE SEC 2017 — 2017

Scholarship to attend ACM HPDC 2017 - HPDC — 2017

Scholarship to attend IPDPS 2017 PhD Forum - IPDPS — 2017

Outstanding Graduate Teaching Assistant Award - Wayne State University — 2017

Best Poster Award at MICWIC 2017 - Michigan State University — 2017

Scholarship to attend Grace Hopper Celebration of Women in Computing - GHC — 2016

Scholarship to attend CRA-W Grad Cohort - CRA-W — 2016

Thomas C. Rumble University Graduate Fellowship - Wayne State University — 2015

Ranked first among the graduate students in the Computer Engineering Department - Shahed University — 2014

Journal Articles

J1. Efficient Algorithms for Placement of Multi-Component Applications in Mobile Edge Computing
T. Bahreini and D. Grosu
IEEE Transactions on Cloud Computing, 2021. (accepted)
http://doi.ieeecomputersociety.org/10.1109/TCC.2020.3038626

J2. A Parallel Randomized Approximation Algorithm for the Non-Preemptive Single Machine Scheduling Problem
H. Badri, T. Bahreini, and D. Grosu
Computers & Operations Research, Vol. 130, Art. 105238, June 2021.

J3. Energy-Aware Application Placement in Mobile Edge Computing: A Stochastic Optimization Approach
H. Badri, T. Bahreini, D. Grosu, and K. Yang.
IEEE Transactions on Parallel and Distributed Systems, vol. 31, no. 4, pp. 909-922, April 2020.

J4. An MINLP Model for Scheduling and Placement of Quantum Circuits with a Heuristic Solution Approach
T. Bahreini and N. Mohammadzadeh
ACM Journal on Emerging Technologies in Computing Systems, vol. 12, no. 3, pp. 29:1-29:20, September 2015.

J5. Optimal ILP-based Approach for Gate Location Assignment and Scheduling in Quantum Circuits
N. Mohammadzadeh, T. Bahreini, and H. Badri
Modelling and Simulation in Engineering, vol. 2014, Article ID 571374, 8 pages, 2014.

Journal Papers Under Review

J6. Mechanisms for Resource Allocation and Pricing in Mobile Edge Computing Systems
T. Bahreini, H. Badri, and D. Grosu
IEEE Transactions on Parallel and Distributed Systems (under review; result of first round of review: major revision).

J7. VECMAN: A Framework for Energy-Aware Resource Management in Vehicular Edge Computing Systems
T. Bahreini, M. Brocanelli, and D. Grosu
IEEE Transactions on Mobile Computing (under review; result of first round of review: major revision).

J8. Parallel Shifting Bottleneck Algorithms for Flow Shop Scheduling
H. Badri, T. Bahreini, and D. Grosu
IEEE Systems Journal (under review).

Refereed Conference Papers

C1. An Efficient Algorithm for Routing and Recharging of Electric Vehicles
T. Bahreini, N. Fisher, and D. Grosu
Proc. of **The 14th Annual International Conference on Combinatorial Optimization and Applications (COCOA 2020)**, virtual conference, December 11-13, 2020.

C2. Risk-Aware Application Placement in Mobile Edge Computing Systems: A Learning-based Optimization Approach
H. Badri, T. Bahreini, D. Grosu, and K. Yang
Proc. of **The IEEE International Conference on Edge Computing (IEEE EDGE 2020)**, virtual conference, October 19-23, 2020.

C3. Energy-Aware Resource Management in Vehicular Edge Computing Systems
T. Bahreini, M. Brocanelli, and D. Grosu
Proc. of **The IEEE International Conference on Cloud Engineering (IC2E 2020)**, pp. 49-58, Sydney, Australia, April 21-24, 2020.

C4. Energy-Aware Capacity Provisioning and Resource Allocation in Mobile Edge Computing Systems
T. Bahreini, H. Badri, and D. Grosu
Proc. of **The International Conference on Edge Computing (EDGE 2019)**, pp. 31-45, San Diego, CA, June 25-30, 2019.

C5. Energy-Aware Speculative Execution in Vehicular Edge Computing Systems
T. Bahreini, M. Brocanelli, and D. Grosu
Proc. of **The 2nd ACM EuroSys International Workshop on Edge Systems, Analytics and Networking (EdgeSys 2019)**, pp. 18-23, Dresden, Germany, March 25, 2019.

C6. An Envy-Free Auction Mechanism for Resource Allocation in Edge Computing Systems
T. Bahreini, H. Badri, and D. Grosu
Proc. of **The Third ACM/IEEE Symposium on Edge Computing (SEC 2018)**, pp. 313-322, Bellevue, WA, October 25-27, 2018.

C7. A Sample Average Approximation-Based Parallel Algorithm for Application Placement in Edge Computing Systems
H. Badri, T. Bahreini, D. Grosu, and K.Yang
Proc. of **The IEEE International Conference on Cloud Engineering (IC2E 2018)**, pp. 198-203, Orlando, FL, April 17-20, 2018.

C8. Efficient Placement of Multi-Component Applications in Edge Computing Systems
T. Bahreini and D. Grosu
Proc. of **The Second ACM/IEEE Symposium on Edge Computing (SEC 2017)**, pp. 5:1-5:11, San Jose, CA, October 12-14, 2017.

Papers Under Preparation

1. Electric Vehicle Routing and Charging with Heterogeneous Prices
T. Bahreini, N. Fisher, and D. Grosu
IEEE Transactions on Intelligent Transportation Systems.

2. Risk-Aware Application Offloading in MEC Systems
H. Badri, T. Bahreini, and D. Grosu
IEEE Transactions on Parallel and Distributed Systems.

3. Mobile Edge Computing Network Design: A Stochastic Optimization Approach
H. Badri, T.H. Hejazi, T. Bahreini, and D. Grosu
IEEE International Conference on Fog and Edge Computing.

Posters/Presentations

P1. VECMAN: A Framework for Energy-Aware Resource Management in VEC Systems
T. Bahreini
Rising Stars in Electrical Engineering and Computer Science 2020 Workshop at the University of California, Berkeley, virtual conference, November 9-10, 2020.

P2. Resource Management in Edge Computing Systems
T. Bahreini
ACM Richard Tapia Celebration of Diversity in Computing Conference (Tapia 2020), Doctoral Consortium, virtual conference, September 16-18, 2020.

P3. Energy-Aware Speculative Execution in Vehicular Edge Computing Systems
T. Bahreini, M. Brocanelli, and D. Grosu
The 2nd Metro Detroit Workshop on Connected and Autonomous Driving (MetroCAD 2019), Detroit, MI, March 1, 2019.

P4. Risk-based Optimization of Resource Provisioning in Mobile Edge Computing
H. Badri, T. Bahreini, and D. Grosu
The Third ACM/IEEE Symposium on Edge Computing (SEC 2018), Bellevue, WA, October 25-27, 2018

P5. Multi-stage Stochastic Programming for Service Placement in Edge Computing Systems
H. Badri, T. Bahreini, D. Grosu, and K. Yang
The Second ACM/IEEE Symposium on Edge Computing (SEC 2017), San Jose, CA, October 12-14, 2017.

P6. Efficient Placement of Multi-Component Services in Edge Computing Systems
T. Bahreini and D. Grosu
ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC 2017), Washington DC, June 26-30, 2017.

P7. Efficient Placement of Multi-Component Services in Edge Computing Systems
T. Bahreini and D. Grosu
The 31st IEEE International Parallel & Distributed Processing Symposium (IPDPS 2017), PhD Forum, Orlando, FL, May 29 - June 2, 2017.

P8. A Heuristic Algorithm for Multi-Component Application Placement in Edge Computing
T. Bahreini and D. Grosu
The 6th biennial Michigan Celebration of Women in Computing (MICWIC 2017), Michigan State University, Lansing, MI, 31 March 31 - April 1, 2017.
*** Best Poster Award**

P9. Heuristic Algorithms for Coflow Scheduling in Data Centers
T. Bahreini and D. Grosu
The Grace Hopper Celebration of Women in Computing Conference (GHC 2016), Poster Session, Houston, TX, October 3-6, 2016.

Teaching Experience

- **Instructor:** CSC2200-Computer Science II, Wayne State University, Spring/Summer 2018.
- **Instructor:** CSC3110-Algorithm Design and Analysis, Wayne State University, Spring/Summer 2017.
- **Instructor:** CSC2201-Computer Science II Lab, Wayne State University, Fall 2016, Winter 2017, Fall 2017, Spring/Summer 2018, Fall 2018, Winter 2019.
- **Teaching Assistant:** CSC6220-Parallel Computing I: Programming, Fall 2016, Fall 2017, Fall 2018, and Fall 2019.
- **Teaching Assistant:** CSC7220-Parallel Computing II: Algorithms and Applications, Winter 2017, Winter 2018, Winter 2019, and Winter 2020.
- **Grader:** CSC6220-Parallel Computing I: Programming, Fall 2020.

Employment

5/2021 - 8/2021	**IBM T.J. Watson Research Center** *Research Summer Internship*
8/2015 - Present	**Wayne State University** *Teaching Assistant*
8/2019 - 5/2020	**Wayne State University** *Research Assistant*, NSF grant IIS-1724227: "Autonomous Battery Operating System (ABOS): An Adaptive and Comprehensive Approach to Efficient, Safe, and Secure Battery System Management"

Professional Service

- **Reviewer**
  - IEEE Transactions on Cloud Computing
  - IEEE Transactions on Mobile Computing
  - IEEE Transactions on Sustainable Computing
  - IEEE Transactions on Parallel and Distributed Systems
  - 5th IEEE International Conference on Fog and Edge Computing (ICFEC 2021)
  - IEEE International Conference on Cloud Computing (IEEE CLOUD 2020)
  - International Symposium on Parallel and Distributed Computing (ISPDC 2019)
  - IEEE International Conference on Cloud Computing (IEEE CLOUD 2019)
  - IEEE International Conference on Edge Computing (IEEE EDGE 2019)
  - 3rd IEEE International Conference on Fog and Edge Computing (ICFEC 2019)
  - 15th IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA 2017)
  - IEEE International Conference on Edge Computing (IEEE EDGE 2018)
  - IEEE International Conference on Cloud Computing (IEEE CLOUD 2017)
  - 17th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP 2017)

Professional Affiliation

- ACM (Association for Computing Machinery)
- ACM-W (Association for Computing Machinery-Women)
- IEEE (Institute of Electrical and Electronics Engineers)
- IEEE Computer Society
- INFORMS (Institute for Operations Research and the Management Sciences)