Curriculum Vitae

Mohammed H.S. Helal
(Mohammad Hikmat Said Hilal)

Assistant Professor of Distributed AI
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Research interests:

Evolutionary Algorithms, Neural Networks, Distributed Algorithms, Data mining, Software Engineering, Photovoltaics.

Personal Information:

Birthday: *Nablus, West Bank, Palestine Dec. 30th 1985.*
ID number: *Palestinian, (No. 91056072 1)*
Taiwanese ARC number: *OC30015515*
Nationality: *Palestinian, (Passport No.: 4651035, issued, Jan. 21, 2019)*
Jordanian, (Passport No.: T1011465)
Address: Al-Ghadeer, Birzeit, Ramallah.
Alquds Street, Qalqilya.

High School:

Studied at As-Sa'dia Secondary School Grades 7th (1997/8) through 12th(2002/3) General Secondary School Certificate: *Qalqilya, Palestine (General Grade 92.6%)*.

B.Sc. Studies:

Computer Engineering, College of Engineering, An-Najah National University, Nablus, West Bank, Palestine.
Date of Enrollment: 2003.
Date of graduation: June 2008
Grade: Very Good (GPA higher than 3.2/4.0)

M.Sc. Studies:

M.Sc. Software Engineering, School of Electrical and Electronic Engineering, Universiti Sians Malaysia, Penang, Malaysia.
Date of Enrollment: 2009.
Graduation date: 20 June 2013
Minor: Software Testing

Thesis with title "P2R – A Pairwise Testing Strategy Supporting Execution Resumption" has been submitted to Institute of Postgraduate Studies/Universiti Sains Malaysia in February 2013. Thesis defense has been performed between in June 2013.

Ph.D. Studies:

Ph.D. at Distributed Computing Systems Lab, Electrical Engineering and Computer Science, EECS, National Chiao Tung University, Hsinchu, Taiwan.
Date of Enrollment: 2015.
Graduation date: July 2019
Research topic: Distributed Computing Systems' Laboratory has been working on various distributed algorithms and applications. During my study at NCTU, I have used various evolutionary algorithms, such as Genetic Algorithm and Swarm-Based Intelligence. The algorithms have been hired to solve some practical optimization problems such as job scheduling, resource allocation, textile cut order planning. The main research project undertaken during my study was experimenting on efficiency and applicability of distributed evolutionary algorithms working on multiple Google Cloud Compute Engines as well as Single Chip Computers connected with 4G network.

Thesis with title "P2P-Based Distributed Evolutionary Algorithms to Solve WTA and Functioning Over Noisy 4G Network"

Awards and Scholarships:

- Award of Outstanding Students, NCTU: National Chiao Tung University awards its most outstanding students with a semester-wise scholarship what includes financial support as well as tuition weavers. The scholarship is awarded for one semester and student's performance throughout the semester decides whether it is to be renewed. I have been awarded this scholarship throughout my entire study time at NCTU, from day of entry till day of graduation.
- Research funding from Ministry of Science and Technology (MOST), Republic of China (Taiwan): I have been awarded a research funding for my project (project ID: 106-2623-E-009-001-D) during my Ph.D. studies.
- Best Paper Award from ICOCSIM conference at Bandung, Indonesia: during my Masters study, I have been awarded for a paper submitted at the conference in 2012.

Publications:

- (recently accepted) Naceur Selmane, Ali Cheknane, Hikmat S. Hilal, Mohammed H.S. Helal, Fakhreddin Khamloul, " Cost-saving and performance-enhancement of CuInGaSe solar cells by adding CuZnSnSe as a second absorber", *Solar Energy.*

- Zyoud, A., Nassar, I.M., Salman, M. et al. "Nano-ZnO film photocatalysts in bench-scale continuous-flow mineralization of olive mill waste contaminants in water". *Int. J. Environ. Sci. Technol*. 2021.DOI: 10.1007/s13762-021-03291-5

- Hikmat S. Hilal, Ahed Zyoud, Mohammad H.S. Hilal, Heba Bsharat, Heba Nassar, Ali Cheknane,"Charge transfer catalysis at solid/liquid interface in photoelectrochemical processes: Enhancement of polycrystalline film electrode stability and performance", *Solar Energy*, 2020, vol. 197, pp. 443-454. DOI: 10.1016/j.solener.2020.01.026.

- A. H. Zyoud, D. H. Abdelhadi, M. H. S. Helal, S. H. Zyoud, H. Bsharat, S. M. Abu-Alrob, N. Sabli, N. Qamhieh, A. R. Hajamohideen, and H. S. Hilal, "Enhancement of electrochemically deposited pristine CdTe film electrode photoelectrochemical characteristics by annealing temperature and cooling rate," *Optik, vol. 197,* p. 163220, Nov. 2019. DOI :10.1016/J.IJLEO.2019.163220

- Hikmat S. Hilal, Ahed Zyoud, Mohammed H.S. Helal, Heba Bsharat, Hamza H. Helal, Cheknane Ali, "Effects of annealing temperature and cooling rate on photo-electrochemical performance of pristine polycrystalline metal-chalcogenide film electrodes", *Solar Energy*, vol. 183, 2019. Pp. 704-715, DOI: 10.1016/j.solener.2019.03.028.

- Hilal, Hikmat S., Ahed H. Zyoud, Khaled Murtada, Nour Nayef, Mohammed H.S. Helal, Naser Qamhieh and AbdulRaziq HajiMohideed. "Combined electrochemical-chemical bath deposited metal selenide nano-film electrodes with high photo-electrochemical characteristics." *5th International Conference on Renewable Energy: Generation and Applications (ICREGA)* (2018): 140-142.

- Ahed Zyoud, Khaled Murtada, Hansang Kwon, Hyun-Jong Choi, Tae Woo Kim, Mohammed H.S. Helal, Maryam Faroun, Heba Bsharat, DaeHoon Park, Hikmat S. Hilal. "Copper selenide film electrodes prepared by combined electrochemical/chemical bath depositions with high photo-electrochemical conversion efficiency and stability". *Solid State Sciences*, 2018, DOI: 10.1016/j.solidstatesciences.2017.11.013

- Ahed Zyoud, Suhaib Al-Yamani, Heba Bsharat, Mohammed H. Helal, Hansang Kwon, Daehoon Park, Hikmat S. Hilal, "Recycled polycrystalline CdS film electrodes with enhanced photo-electrochemical characteristics," *Materials Science in Semiconductor Processing*, vol. 74, 2018, pp. 277-283, DOI:

10.1016/j.mssp.2017.10.045.

- M. H. S. Helal, C. Fan, D. Liu and S. Yuan, "Peer-to-Peer Based Parallel Genetic Algorithm," *2017 International Conference on Information, Communication and Engineering (ICICE)*, Xiamen, 2017, pp. 535-538. doi: 10.1109/ICICE.2017.8478917

- M. H. S. Helal, D. Liu and S. Yuan, "Using Google's Compute Engine Service Pricing as a Reference for Comparison Between Master-Slave and Island Model-Based Fully Distributed Genetic Algorithm," *2017 International Conference on Information, Communication and Engineering (ICICE)*, Xiamen, 2017, pp. 468-471. doi: 10.1109/ICICE.2017.8479229.

- A. Zyoud, R. S. AlKerm, R. S. Alkerm, D. H. Abdelhadi, DaeHoon Park, M. H.S. Helal, G. Campet, R. W. Muthaffar, H. Kwon, H. S. Hilal "Enhanced PEC characteristics of pre-annealed CuS film electrodes by metalloporphyrin/polymer matrices", *Solar Energy Materials and Solar Cells*. 2015, pp. 144. DOI: 10.1016/j.solmat.2015.09.034

- Ahed Zyoud, Nour N. Abdul-Rahman, Guy Campet, DaeHoon Park, Hansang Kwon, Tae Woo Kim, Hyun-Jong Choi, Mohammed H.S. Helal, Hikmat S. Hilal, "Enhanced PEC characteristics for CdSe polycrystalline film electrodes prepared by combined electrochemical/chemical bath depositions," *Journal of Electroanalytical Chemistry*, vol. 774, 2016, pp. 7-13, ISSN 1572-6657, DOI: 10.1016/j.jelechem.2016.04.048.

- A. Zyoud, R. S. Al-Kerm, R. S. Al-Kerm, W. Mansur, M. H.S. Helal, D. Park, G. Campet, N. Sabli, H. S. Hilal, "High PEC conversion efficiencies from CuSe film electrodes modified with metalloporphyrin/polyethylene matrices", *Electrochimica Acta*. 2015, pp. 147 :472-479. DOI: 10.1016/j.electacta.2015.05.125

- M. H.S. Helal and K. Z. Zamli, "P2R – A Pairwise Testing Strategy Supporting Execution Resumption" *in Proceedings of the International Conference on Computational Science and Information Management (ICOCSIM),* Bandung, Indonesia, 2012, pp. 239-250, (**Awarded Best Paper Award**)

Research Skills and Activities:

Since I began with my postgraduate studies, I have been paying tremendous effort to acquire the skills needed to excel in academic and research professions. Here is a list of skills and activities I am prepared to undertake:

- Lecturing activities: I have lecture a wide variety of courses after my M.Sc. studies at Palestine Technical University, the courses I have lectured were related to various topics in Computer Engineering fields, hardware

and software. For example, computer architecture and network security. A list of courses that I have lectured are mentioned in Employment section later in this CV.

Beside the courses that I have already lectured, I have also taken a variety of advanced courses during my Ph.D. studies that helped me acquire skills to provide quality education to my students. for example, I have taken advanced courses like: advanced computer architecture, distributed computing, advanced computer networks, memory system design.

- Graduate Student and Graduation Project Supervision: NCTU university adopts a policy to prepare its Ph.D. students for supervising graduate students, this is done by giving Ph.D. students the responsibility to co-supervise M.Sc. students in their labs. During my Ph.D., I have been given responsibility to help my adviser by supervising M.Sc. students in my lab. My activities included reviewing students' progress, evaluating research results, experiment design, reviewing research papers and theses, and writing research papers.

  During my lecturing activities are Palestine Technical University, I have co-supervised a graduation project. According to that university, part time lecturers do not supervise graduation projects, however, I have co-supervised the students in order to acquire the experience that helps me in my future academic career.
- Proposal Writing and Submission: during my academic life, I have written many research proposals and research papers, this helped me acquire report-writing skills necessary to accomplish my Ph.D. study as well as receive funding for my research.
- **Reviewer for Journal of the Chinese Institute of Engineering**: I have been reviewing for the mentioned international journal even during my studies in Taiwan. I have reviewed up to 10 research papers for the journal.

Proposed Teaching Activities:

I have acquired the skills and knowledge to teach the following courses:

- Bachelor level courses:

  - Computer programming: Python, C++, C#, Java, Network Programming, Assembly
  - Network security
  - Microprocessor based systems
  - Computer Architecture
  - Digital Design
  - Advanced courses in Algorithms
  - Computer Networks: programming, design and fundamentals
  - Memory Systems: organization and design
  - Distributed Computing Systems
  - Artificial Intelligence

- Software Engineering
- Software Testing and Evaluation

- Masters and Ph.D. level courses:
  - Data Sciences
  - Network Security
  - Advanced Computer Architectures
  - Advanced Digital Design
  - Advanced courses Algorithms
  - Artificial Intelligence
  - Local Area Networks
  - Distributed Algorithms
- Postgraduate student supervision:
  During my studies, I have acquired the knowledge and skills (listed in the previous section) to supervise postgraduate students in various fields, especially in AI, Algorithms, Multi-Objective Algorithms, Evolutionary Algorithms and Distributed Algorithms.

Practical Training:

I completed my practical training in the laboratories and offices of the known company "Computer and Communications Systems" (CCS). Their contact details are: Computer & Communications Systems, P.O Box 1015, Ramallah, West Bank, Palestine. Tel: +970-2-2408046 , Fax: +970-2-2408045 –Website: www.ccs-pal.com email: info@ccs-pal.com

Languages:

1. **Arabic :** mother tongue
2. **English:** has been my first language for more than 10 years
3. **Chinese**: basic conversations.
4. **Bahasa Melayu:** basic conversations.

Employment:

- Lecturer at Birzeit University, Department of Electrical and Computer Engineering. I've been lecturing Computer Networks and Microprocessor-based systems as well as their labs. I've also supervised graduation project introduction and projects.
  Semester: academic year 2020/2021

- Part-time lecturer at Arab American University, College of postgraduate studies at Reihan campus. M.Sc. level Cybercrime course.
  Semester: Spring, 2020.

- Part-time lecturer at Birzeit University, Department of Electrical and Computer Engineering. Lectured computer networks for two semesters.
  Semesters: Spring and Summer course 2020

- Part-time lecturer at Najah National University, Department of Computer Network and Information Security (network security lab), and at Computer Science Apprenticeship Program (discrete math).
  Semester: Spring, 2020.

- Lecturer at Palestine Technical University, College of Engineering, Department of Computer Engineering
  Date of enrollment: September, 2013
  Until 2015, left for Taiwan to do my Ph.D.
  Lictured courses:
  - Computer Programming using C++
  - Network Programming
  - Advanced Digital Circuit Design
  - Network Security
  - Distributed Systems, Java Language
  - Visual Programming using C# Language
  - Computer Architecture
  - Microprocessors and Assembly Programming.

- Computer System Administrator (for 8 months, between 2008 and 2009), at IMEC, Qalqilya, West Bank, Palestine.
  Tel. No. 09-2945507

  My activities included:
  1. Computer system and network administration
  2. Graphics Design
  3. Power tool design & development
  4. Product quality inspection
  5. Transformers and generators quality testing

Voluntary Activities:

1. Teaching assistant, AMIDEAST English Language Orientation Courses, (English Access) ,Qalqilia District, West Bank, Palestinian Authorities
2. Serving in an Ambulance in West Bank in semester breaks during Bachelor study.

Travel Abroad:

1. 1988/89 Mississippi State, USA, studied in the preschool system (1 Year).
2. 1989/1990 Raleigh, North Carolina, USA, studied at the school system (1 year)
3. 1993/94 Golden Colorado, USA, studied at the school system (two years)
4. Saudi Arabia, 2000, Visit.
5. Malaysia, 2009 to 2013.

6. Taiwan, 2015 until 2019.

Hobbies:

1. Reading and correspondence.
2. Sports.
3. Music.

List of Referees:

1. Prof. Shyan-Ming Yuan (my advisor during my Ph.D. studies), Department of Computer Science, National Chiao Tung University, Hsinchu, Taiwan.
   Phone number: 03-5712121 # 56631
   Email: smyuan@cs.nctu.edu.tw
2. Dr. Kamal Zuhairi (my advisor during my Masters studies), School of Electrical and Electronic Engineering, UMP, Pahang, Malaysia
   Phone Number: +60129306049
   Email: kamalz@ump.edu.my
3. Engineer Bilal Masri, General manager, IMEC, Qalqilia, West Bank, Palestinian Authority. Tel. 09-20946888 Fax 09-2944082.
4. Dr. Luai Malhis, Head, Department of Computer Engineering, College of Engineering, An-Najah N. University, P.O. Box 7, Nablus, West Bank, Palestine, E-mail address: malhis@najah.edu
5. Eng. Adel Juaidi, College of Engineering, An-Najah N. University, P.O. Box 7, Nablus, West Bank, Palestine, E-mail address: adel_juaidi@yahoo.com
6. Mr. Maher Abu Baker, College of Information Technology, An-Najah N. University, P.O. Box 7, Nablus, West Bank, Palestine, E-mail address: abubaker@najah.edu
7. Dr. Sameer Matar, Department of Mathematics, College of Mathematics, An-Najah N. University, P.O. Box 7, Nablus, West Bank, Palestine, E-mail address: smatar@najah.edu