Faculty C.V.

1. Name and date of birth

Mohammed El-Abd. April 2nd, 1976.

2. Academic Rank

Professor of Computer Engineering.

3. Degrees

a) PhD, ECE Department, University of Waterloo (UW), Canada. Cooperative Models of Particle Swarm Optimizers. 2018.
b) M.Sc., Computer Engineering Department, Ain Shams University, Egypt. Obstacle Avoidance in Robot Motion Planning. 2003.
c) B.Eng., Computer Engineering Department, Ain Shams University, Egypt. Intel Microcontroller-based Board with Applications. 1998.

4. Service at this Institution

a) Professor of Computer Engineering (Oct. 2022 – Present).
b) Associate Professor of Computer Engineering (Feb. 2016 – Sept. 2022).
c) Assistant Professor of Computer Engineering (Jan. 2010 – Jan. 2016).

5. Professional Experience

a) Assistant Professor of Computer Engineering, Ain Shams University, Egypt (Jan. 2009 – December 2010).

6. Consulting Experience

NA.

7. Professional Registration

a) Egyptian Syndicate of Engineers.

8. Publications

a) Refereed Journals.
    i. Ali Kelkawi, **Mohammed El-Abd**, and Imtiaz Ahmad. "GPU-based Cooperative Coevolution for Large Scale Global Optimization". Accepted for publication in Neural Computing and Applications, Springer, 2022.
    ii. Iyad Abu Doush, Mohammed Azmi Al-Betar, Mohammed A. Awadalla, Zaid Abdi Alkareem Alyasseri, Sharif Naser Makhadmeh, and **Mohammed El-Abd**. "Island Neighboring Heuristics Harmony Search Algorithm for Flow Shop Scheduling with Blocking". Swarm and Evolutionary Computation, Elsevier, vol. 74, 101127, 2022.
    iii. Bahareh Etaati, Amin Abdollahi Dehkordi, Ali Sadollah, **Mohammed El-Abd**, and Mehdi Neshat. "A Comparative State-of-the-art Constrained Meta-heuristics framework for Truss Optimisation on Shape and Sizing". In Mathematical Problems in Engineering, Article ID 6078986, Hindawi, 2022.

iv. Palwasha W. Shaikh, **Mohammed El-Abd**, Mounib Khanafer, and Kaizhou Gao. "A Review on Swarm Intelligence and Evolutionary Algorithms for Solving the Traffic Signal Control Problem". In the IEEE Transactions on Intelligent Transportation Systems, vol. 23, issue 1, pp. 48-63, 2022.
v. Rehab Ali Ibrahim, Mohamed Abd Elaziz, Ahmed A. Ewees, **Mohammed El-Abd**, and Songfeng Lu. "New Feature Selection Paradigm Based on Hyper-heuristic Technique". In Applied Mathematical Modelling, Elsevier, vol. 98, pp. 14-37, 2021.
vi. Iyad Abu Doush, **Mohammed El-Abd**, Abdelaziz Hammouri, and Mohammad Qasem Bataineh. "The effect of different stopping criteria on multi-objective optimization algorithms". In Neural Computing and Applications, Springer, 2021. https://link.springer.com/article/10.1007/s00521-021-05805-1
vii. Issam Damaj, **Mohammed El-Abd**, Ashley Ater-Kranov, Jennifer DeBoer. "Guest Editorial Special Issue on Project-Based, Senior Design, and Capstone Courses in Engineering Education". IEEE Transactions on Education, vol. 63, no. 2, pp. 79-81, 2020.
viii. Ahmed Hassanein, **Mohammed El-Abd**, Issam Damaj, and Haseeb Ur Rehman. "Parallel Hardware for Random Grouping Brain Storm Optimization Algorithms using FPGAs". Microprocessors and Microsystems, vol. 74, 103005, Elsevier, 2020.
ix. Issam Damaj, Mohammed El-Shafei, **Mohammed El-Abd**, and Mehmet Emin Aydin. "An Analysis Framework for High-Speed Hardware Particle Swarm Optimization". Microprocessors and Microsystems, vol. 72, 102949, Elsevier, 2020.
x. **Mohammed El-Abd**. "Global-best Brain Storm Optimization Algorithm". In Swarm and Evolutionary Computation, Elsevier, vol. 37, pp. 27-44, 2017.
xi. **Mohammed El-Abd**. "Preparation of Engineering Students for Capstone Design Experience through a Microprocessors Course". In the International Journal of Engineering Pedagogy (iJEP), vol. 7, no. 4, pp. 91-101, 2017.
xii. **Mohammed El-Abd**. "A Review of Embedded Systems Education in the Arduino Age: Lessons Learned and Future Directions". In the International Journal of Engineering Pedagogy (iJEP), vol. 7, no. 2, pp. 79-93, 2017.

b) Conferences
i. Nada Nabeeh, Mai Gaafar, Ahmed Abdelmonem, Mohamed Abdel-Basset, Karam Sallam, **Mohammed El-Abd**, and Ali Mohamed. "A Neutrosophic Evaluation Model for Blockchain Technology in Supply Chain Management". In the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), pp. 1-8, 2022.
ii. Nada Nabeeh, Ahmed Abdelmonem, Mai Gaafar, Karam Sallam, Mohamed Abdel-Basset, **Mohammed El-Abd**, and Ali Mohamed. "A Comparative Analysis for Hybrid Methodology using Neutrosophic theory with MCDM for Manufacture Selection". In the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), pp. 1-8, 2022.
iii. Karam Sallam, Mohamed Abdel-Basset, **Mohammed El-Abd**, and Ali Mohamed. "IMODEII: an Improved IMODE algorithm based on the Reinforcement Learning". In the IEEE Congress on Evolutionary Computation (CEC), pp. 1-8, 2022.

iv. Iyad Abu Doush, Mohammed Azmi Al-Betar, Mohammed A. Awadallah, Abdelaziz I. Hammouri, and **Mohammed El-Abd**. "Island-based Modified Harmony Search Algorithm with Neighboring Heuristics Methods for Flow Shop Scheduling with Blocking". In the IEEE Symposium Series on Computational Intelligence (SSCI), pp. 976-982, 2020.
v. Miao Zheng, Yushikazu Fukuyama, **Mohammed El-Abd**, Tatsuya Iizaka, and Tetsuro Matsui. "Overall Optimization of Smart City by Multi-population Global-best Brain Storm Optimization using Cooperative Coevolution". In the IEEE Congress on Evolutionary Computation (CEC), pp. 1-7, 2020.
vi. Mounib Khanafer and **Mohammed El-Abd**. "Stimulating Research Projects Through Teaching a Course on the Internet of Things". In the IEEE Global Engineering Education Conference (EDUCON), pp. 1758-1763, 2020.
vii. **Mohammed El-Abd**, Kunjie Yu, and Shelei Ge. "Parameters Identification of Photovoltaic Cell and Module using LSHADE". In the 12th International Conference on Advanced Computational Intelligence, pp. 189-193, 2020.
viii. Batool Hassan, Yara Al-Qurashy, Shahed Al-Moussa, Youssef Al-Sahaf, and **Mohammed El-Abd**. "V-Lab: The Virtual Electric Machines Laboratory". In the IEEE Global Engineering Education Conference (EDUCON), pp. 72-77, 2020.
ix. Mohamed Abd Elaziz, Songfeng Lu, Diego Oliva, and **Mohammed El-Abd**. "Improved Moth-Flame Optimization Based on Opposition-Based Learning for Feature Selection". In the IEEE Symposium Series on Computational Intelligence (SSCI), pp. 3017-3024, 2019.
x. Junfeng Chen, Yuhao Wang, Xingsi Xue, Shi Cheng and **Mohammed El-Abd**. "Cooperative Co-evolutionary Metaheuristics for Solving Large-Scale TSP Art Project". In the IEEE Symposium Series on Computational Intelligence (SSCI), pp. 2706-2713, 2019.
xi. Mayuko Sato, Yushikazu Fukuyama, **Mohammed El-Abd**, Tatsuya Iizaka, and Tetsuro Matsui. "Total Optimization of Energy Networks in Smart City by Cooperative Coevolution using Global-best Brain Storm Optimization". In the IEEE Congress on Evolutionary Computation (CEC), pp. 681-688, 2019.
xii. Hanan Hiba, **Mohammed El-Abd**, and Shahryar Rahnamayan. "Improving SHADE with Center-based Mutation for Large-scale Optimization". In the IEEE Congress on Evolutionary Computation (CEC), pp. 1533-1540, 2019.
xiii. **Mohammed El-Abd**. "Gaussian Bare-Bones Brain Storm Optimization Algorithm". In the IEEE Congress on Evolutionary Computation (CEC), pp. 227-233, 2019.
xiv. Mounib Khanafer and **Mohammed El-Abd**. "Guidelines for Teaching an Introductory Course on the Internet of Things". In the IEEE Global Engineering Education Conference (EDUCON), pp. 1488-1492, 2019.
xv. Iyad Abu Doush, Mohammad Qasem Bataineh, and **Mohammed El-Abd**. "On Different Stopping Criteria for Multi-Objective Harmony Search Algorithms". In the 3rd International Conference on Intelligent Systems, Metaheuristics & Swarm Intelligence (ISMSI), pp. 30-34, 2019.
xvi. **Mohammed El-Abd**. "Balancing Low-Level vs. High-Level Programming Knowledge in an Undergraduate Microprocessors Course". In the IEEE Global Engineering Education Conference (EDUCON), pp. 274-281, 2018.

xvii. Mennatallah Ibrahim, Mark Riad, and **Mohammed El-Abd**. "RoadEye – The Intelligent Transportation System". In the 14th ACS/IEEE International Conference on Computer Systems and Applications, AICCSA, pp. 21-22, 2017. **(Best Poster Award)**.

xviii. Ahmed Bitar, Aliaa Jamal, Hesham Sultan, Nour Alkandari, and **Mohammed El-Abd**. "Medical Drones System for Amusement Parks". In the 14th ACS/IEEE International Conference on Computer Systems and Applications, AICCSA, pp. 19-20, 2017.

xix. Abeer Imdoukh, Ahmed Shaker, Aya Al-Toukhy, Darin Kablaoui, and **Mohammed El-Abd**. "Semi-Autonomous Indoor Firefighting UAV". In the 18th International Conference on Advanced Robotics, ICAR, pp. 310-315, 2017.

xx. Amr Lotfy, Ahmed Abdul-Basset, Omar Abbas, and **Mohammed El-Abd**. "Ambient Intelligence in Automated Houses". In the 9th IEEE GCC Conference and Exhibition, pp. 1107-1022, 2017.

xxi. Fatemah Taqi, Fatima Al-Langawi, Heba Abdulraheem, and **Mohammed El-Abd**. "A Cherry-Tomato Harvesting Robot". In the 18th International Conference on Advanced Robotics, ICAR, pp. 463-468, 2017.

xxii. Marwa Sharawi and **Mohammed El-Abd**. "A Cooperative Co-evolutionary LSHADE Algorithm for Large-Scale Global Optimization". In the IEEE Symposium Series on Computational Intelligence (SSCI), pp. 777-784, 2017.

xxiii. Iyad Abu Doush, Mohammad Qasem Bataineh, and **Mohammed El-Abd**. "The Hybrid Framework for Multi-objective Evolutionary Optimization Based On Harmony Search Algorithm". In: Mizera-Pietraszko J., Pichappan P., Mohamed L. (eds) Lecture Notes in Real-Time Intelligent Systems. RTIS 2017. Advances in Intelligent Systems and Computing, Springer, vol 756, pp. 134-142, 2017.

xxiv. **Mohammed El-Abd**. "Cooperative Co-evolution using The Brain Storm Optimization Algorithm". In the IEEE Symposium Series on Computational Intelligence (SSCI), pp. 1-7, 2016.

xxv. **Mohammed El-Abd**. "Cooperative Co-evolution using LSHADE with Restarts For The CEC15 Benchmarks". In the IEEE Congress on Evolutionary Computation (CEC), pp. 4810–4814, 2016. **(Ranked #2 in the CEC16 Competition – CEC15 Benchmarks)**.

xxvi. **Mohammed El-Abd**. "Brain Storm Optimization Algorithm with Re-initialized Ideas and Adaptive Step Size". In the IEEE Congress on Evolutionary Computation (CEC), pp. 2682–2686, 2016.

xxvii. **Mohammed El-Abd**. "How Course Projects can Successfully Prepare Engineering Students for Capstone Design Projects". In the IEEE Global Engineering Education Conference (EDUCON), pp. 746-750, 2016.

xxviii. Muhammad Haq, Adnan Merish, and **Mohammed El-Abd**. "A Smart City Model Implementation". In the IEEE Canadian Conference on Electrical and Computer Engineering, CCECE, pp. 599-604, 2016.

xxix. Asraa Al-Wazzan, Farah Al-Ali, Rawan Al-Farhan, and **Mohammed El-Abd**. "Tour-Guide Robot". In the Second IEEE International Conference on Industrial Informatics and Computer Systems, CIICS, pp. 1-5, 2016.

xxx. Ahmed Mandy, Hassan Qazweeni, Mohammed Noureddine, Talal Al-Radhwan, and **Mohammed El-Abd**. "Pet Smart House". In the Second

IEEE International Conference on Industrial Informatics and Computer Systems, CIICS, pp. 1-5, 2016.

c) Technical Reports
   i. Kaizhou Gao and **Mohammed El-Abd**. "Competition on Urban Traffic Signal Control Problems". AUK Technical Report, 2022. https://dspace.auk.edu.kw/handle/11675/8718

d) Books Chapters
   i. Marwa Sharawi, Mohammadreza Gholami, and **Mohammed El-Abd**. "Brain Storm Optimization Algorithm". In the Handbook of AI-based Metaheuristics, 1st edition, CRC Press, Taylor and Francis, 2021.
   ii. Seham Elsayed, **Mohammed El-Abd**, and Karam Sallam. "Enhancing the Local Search Ability of the Brain Storm Optimization Algorithm by Covariance Matrix Adaptation". In Brain Storm Optimization Algorithms: Concepts, Principles and Applications, pp. 105 – 122, 2020.

9. Membership in Professional Societies

a) Certified ABET Program Evaluator (PEV), 2022.
b) IEEE.
c) IEEE Computational Intelligence Society (CIS), 2004 – Present.
d) IEEE Robotics and Automation Society (RAS), 2011 – 2015.
e) Internet Society, 2018 – Present.
f) ACM, 2020 – Present.

10. Patents, Honors and awards

a) Named among top 2% of researchers in Artificial Intelligence as per the Stanford University – Elsevier list: https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000918
b) Top reviewer on Publons in:
   i. Cross-Field and Computer Science, September 2019.
   ii. Engineering and Computer Science, September 2018.
c) KFAS Scientific Mission Award:
   i. IEEE CEC, New Zealand, Summer'19. Amount: KD 1600.
d) AUK Most Supportive Faculty Award, 2013-2014.
e) AUK-Dartmouth Fellowship. Research Proposal Title: Implementation of Evolutionary Algorithms on Graphic Processing Units, 2012.
f) Professional Development Awards held at AUK to present at international conferences:
   i. IEEE SSCI, Canberra, Australia, Fall'20. Amount: KD 100. (Online Presentation).
   ii. International Conference on Intelligent Systems, Metaheuristics & Swarm Intelligence (ISMSI), Male, Maldives, Spring'19. Amount: KD 600.
   iii. IEEE SSCI, Hawaii, USA, Fall'17. Amount: KD 1000.
   iv. IEEE SSCI, Athens, Greese, Fall'16. Amount: KD 800.
   v. IEEE EDUCON, Abu Dhabi, UAE, Spring'16. Amount: KD 600.
   vi. IEEE CEC, Sendai, Japan, Spring'15. Amount: KD 1000.
   vii. IEEE SSCI, Orlando, USA, Fall'14. Amount: KD 1000.
   viii. IEEE CEC, Cancún, Mexico, Summer'13. Amount: KD 1000.
   ix. IEEE CEC, Brisbane, Australia, Summer'12. Amount: KD 1000.

x. GECCO, Dublin, Ireland, Summer'11. Amount: KD 800.
xi. IEEE CEC, Barcelona, Spain, Summer'10. Amount: KD 800.

g) Engineering Graduate Scholarship: Spring'06, Winter'06, Fall'05.
h) Egyptian Ministry of Higher Education Universities Grant, for distinction in undergraduate studies: Fall 1997, 1996, 1995, 1994.

11. Courses taught

a) Academic Courses

i. **Core Courses:**
1. Microprocessors and Interfacing.
2. Microprocessors and Interfacing Laboratory.
3. Engineering Economics.
4. Introduction to Operating Systems.
5. Computer Organization and Architecture.
6. Electric Circuits.
7. Electronics.
8. Embedded System Design.
9. Digital Logic Design.
10. MATLAB Programming.
11. Senior Design Capstone I and II Coordinator.

ii. **Electives:**
1. Introduction of Soft Computing.
2. Internet-of-Things.
3. Advanced Programming for Engineers.
4. Artificial Intelligence.

iii. **Other courses:**
1. Statistics.
2. Information Systems.

b) Intensive professional short courses
NA

c) Community Service courses
NA

12. Other Duties

a) AUK Duties/Administration
i. **Associate Dean**, College of Engineering and Applied Sciences (CEAS), 2019 – Present.
ii. **Chair**, CEAS Curriculum and Assessment Committee, 2020 – Present.
iii. **Member**, CEAS Advisory Board, 2020 – 2022.
iv. **Member**, CEAS Resource Management and Planning Committee, 2020 – 2022.
v. **Member**, CEAS Accreditation Committee, 2020 – 2022.
vi. **Member**, CEAS Research Forum Committee, 2020 – 2022.
vii. **Member**, Academic Policies and Procedures Committee, 2019 – 2021.

b) Service to the Profession

i. **Associate Editor**, Swarm and Evolutionary Computation (Elsevier) – (2016 – Present).
ii. **Guest Editor**, special issue on "Data Analysis and Modeling for Complex Swarm Intelligence Systems". Discrete Dynamics in Nature and Society, Hindawi, 2022.
iii. **Guest Editor**, special issue on "Project-Based, Senior Design, and Capstone Courses in Engineering Education". IEEE Transactions on Education, 2018.
iv. **Founding Chair**, IEEE Symposium on Cooperative Metaheuristics (SCM), IEEE Symposium on Computation Intelligence (2019 – 2022).
v. **Special Session Organizer:**
    1. "Swarm Intelligence and Evolutionary Algorithms for Optimization and Scheduling Problems in Smart Cities". IEEE Congress on Evolutionary Computation (IEEE-CEC), Kraków, Poland, Summer 2021.
    2. "Open Hardware Technologies in Engineering Education (OpenHWEE'21)". In the IEEE Global Engineering Education Conference (EDUCON), Vienna, Austria, 2021.
    3. "Cooperative Evolutionary Computation". IEEE Congress on Evolutionary Computation (IEEE-CEC), Wellington, New Zealand, Summer 2019.

13. Research

a) **Mohammed El-Abd** and Ghulam Hussain. "Development of a Simulation Package for The Electric Machines Laboratory". AUK. Research Initiation. Spring 2021. Amount: KD 2452.
b) **Mohammed El-Abd**. "Brain Storm Optimization Hardware Implementation using FPGAs". AUK. Research Completion. Fall 2018. Amount: KD 500.
c) **Mohammed El-Abd** and Issam Damaj. "Brain Storm Optimization Hardware Implementation using FPGAs". AUK. Research Initiation. Spring 2018. Amount: KD 500.
d) **Mohammed El-Abd** and Issam Damaj. "Particle Swarm Optimization using High-Performance Graphics Processors and FPGAs". AUK. Research Completion. Spring 2017. Amount: KD 500.
e) **Mohammed El-Abd** and Issam Damaj. "Particle Swarm Optimization using High-Performance Graphics Processors and FPGAs". AUK. Research Initiation. Spring 2016. Amount: KD 500.

14. Participation in Specific Programs

a) Workshop on "Teaching for Future Skills". AUK, September 2022.
b) Workshop on "Rethinking Assessment". AUK, December 2021.
c) Forum on "The Future of Scientific Research in the GCC". AUK Representative. April 2021.
d) Workshop on "Getting Your Research Noticed: From Keeping Track to Keeping Score in Academic Publishing". AUK, March 2021.
e) Workshop on "Class Assessment Techniques: Quick Strategies for Checking the Cognitive and Emotional Pulse of Your Class". AUK, February 2020.
f) Workshop by the Institute for Development Excellence and Assessment Leadership (IDEAL), Baltimore, USA, August 2018.

g) Workshop on "Active and Reflective Learning", AUK, 2018.
h) Forum on "The Future of Scientific Research in the GCC". AUK Representative. April 2021.
i) Workshop on "Getting Your Research Noticed: From Keeping Track to Keeping Score in Academic Publishing". AUK, March 2021.
j) Workshop on "Class Assessment Techniques: Quick Strategies for Checking the Cognitive and Emotional Pulse of Your Class". AUK, February 2020.
k) Workshop by the Institute for Development Excellence and Assessment Leadership (IDEAL), Baltimore, USA, August 2018.
l) Workshop on "Active and Reflective Learning", AUK, 2018.
m) Forum on "Smart Cities", Public Authority for Applied Education and Training (PAAET), Kuwait, 2017.
n) Workshop on "Leadership on a Strategic Level", Kuwait University, 2016.
o) Workshop on "Instructional Models and Strategies for Peer Observation", Kuwait University, 2016.
p) Workshop on "Assessment of Student Learning", Kuwait University, 2016.
q) Workshop on "Integrating and Assessing Professional and Leadership Elements in the Engineering Curriculum", EDUCON, Abu Dhabi, 2016.
r) Workshop on "Smart University: Concepts, Components, Systems and Technology", EDUCON, Abu Dhabi, 2016.

15. Links

https://scholar.google.com/citations?user=RNZf8pYAAAAJ&hl=en
https://www.webofscience.com/wos/author/record/1287321
https://orcid.org/0000-0003-0938-8542
https://www.scopus.com/authid/detail.uri?authorId=8840690400
https://dblp.uni-trier.de/pers/hd/e/El=Abd:Mohammed