Haitham Seada

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Current position

2018-Present *Postdoctoral Research Associate*
Department of Pathology Laboratory Medicine, Brown University

Areas of specialization

Multiobjective Optimization • Evolutionary Algorithms • Evacuation Planning • Point-to-point Optimization • Bi-level Optimization • Mixed Integer Linear Programming • Neuroevolution

Appointments held

2017-2018 Postdoctoral Research Associate, Michigan State University, USA
2016-2017 Research Assistant, Michigan State University, USA
2016-2016 Teaching Assistant, Michigan State University, USA
2009-2013 Assistant Lecturer, Zagazig University, Egypt
2005-2009 Teaching Assistant, Zagazig University, Egypt
2006-2013 Freelance S/W Developer, Egypt
2006-2013 Part-time Java Instructor, Egypt

Education

2017 PhD in Computer Science, Michigan State University, USA
2009 MSc in Computer Science (Bioinformatics), Zagazig University Egypt
2005 BSc in Computer Science, Zagazig University, Egypt

Grants, honors & awards

2012 Egyptian *Fulbright* Missions Program (EFMP) grant, The Binational Fulbright Commission in Egypt

Selected Technical Skills

Java • Matlab • Python • C++ • C# • MySQL • Hadoop

Research & scientific activity

Peer-reviewed publications

2017 **Seada, H.**; Abouhawwash, M; Deb, K., "Multi-Phase Balance of Diversity and Convergence in Multiobjective Optimization", *IEEE Transactions on Evolutionary Computation*, 2017 (under review)

2017 Hadka, D.; Salazar, Z.; Reed, P.; **Seada, H.**; Deb, K., "Real World Diagnostic Benchmarking for Modern Many-Objective Evolutionary Algorithms", *IEEE Transactions on Evolutionary Computation*, 2017 (under review)

2017 Deb, K.; Abouhawwash, M.; **Seada, H.**, "A Computationally Fast Convergence Measure and Implementation for Single, Multiple and Many-Objective Optimization", *IEEE Transactions on Emerging Topics in Computational Intelligence*, 2017. (in press)

2017 **Seada, H.**; Abouhawwash M.; Deb K., "Towards a Better Balance of Diversity and Convergence in NSGA-III: First Results.", *International Conference on Evolutionary Multi-Criterion Optimization.* Springer, Cham, 2017.

2017 Kousa, Y.A.; Mansour, T.A.; **Seada, H.**, Matoo, S.; Schutte, B.C., "Shared molecular networks in orofacial and neural tube development.", *Birth defects research*, no.109(2), pp.169-179, 2017

2016 **Seada, H.**; Abouhawwash, M.; Deb, K., "Towards a Better Diversity of Evolutionary Multi-Criterion Optimization Algorithms using Local Searches." *Proceedings of the 2016 on Genetic and Evolutionary Computation Conference Companion*, ACM, 2016.

2016 Abouhawwash, M.; **Seada, H.**; Deb, K., "Towards Faster Convergence of Evolutionary Multi-Criterion Optimization Algorithms using Karush-Kuhn-Tucker Optimality Based Local Search", *Computers & Operations Research*, 2016

2015 **Seada, H.**; Deb, K., "A Unified Evolutionary Optimization Procedure for Single, Multiple, and Many Objectives," *IEEE Transactions on Evolutionary Computation*, no.99, pp.1-1

2015 **Seada, H.**; Deb, K., "Effect of selection operator on NSGA-III in single, multi, and many-objective optimization", *IEEE Congress on Evolutionary Computation (CEC)*, pp.2915-2922, 25-28 May 2015

2015 **Seada, H.**; Deb, K., "U-NSGA-III: A Unified Evolutionary Optimization Procedure for Single, Multiple, and Many Objectives: Proof-of-Principle Results", *8th Conference on Evolutionary Multiobjective Optimization*, 2015, Portugal.

2009 El-Henawy, I.; Kamal, A.; Al-Shishiny, H.; **Seada, H.**, "A Central-3-Residues-Based clustering approach for studying the effect of hydrophobicity on protein backbone angles", *Egyptian Computer Science Journal*, Volume 32, Issue 1, May 2009

Book Chapters

2018 **Seada, Haitham** and Deb, Kalyanmoy, *"Non-dominated Sorting Based Multi/Many Objective Optimization: Two Decades of Research and Application"*, Editorial Book Volume in "Multi-Objective Optimization: Evolutionary to Hybrid Framework", Springer Nature Singapore Pte Ltd. (in press)

As peer reviewer

IEEE Transaction for Evolutionary Computation • Swarm and Evolutionary Computation • Expert Systems with applications • IEEE World Congress on Computational Intelligence (WCCI) • International Conference on Evolutionary Multi-Criterion Optimization (EMO)

Talks & Volunteer Work

2015-Present Peer reviewer in top scientific journals (IEEE transaction for Evolutionary Computation, Swarm and Evolutionary Computation, Expert Systems with application) and conferences (WCCI, EMO)

2014-Present Representing Egypt in the "African Tea Time" organized by the African Studies Center at Michigan State University

2010-2011 Online Content Creator with a diverse set of 34 technical tutorials.
https://www.youtube.com/user/ooohaithamooo/videos
https://vimeo.com/channels/egjug/videos

2007-2012 Frequent Speaker at the events organized by the Egyptian Java Users Group (EGJUG) and the "Media Center of the South" to promote technology awareness in rural areas, Egypt

Teaching

2016 Introduction to Programming in Python, *Michigan State University*
2012 Computational Intelligence, *Zagazig University*
2011-2012 Formal Languages, *Zagazig University*
2011-2012 Socket Programming in Java, *Zagazig University*
2011-2012 Artificial Intelligence, *Zagazig University*
2011 Game Programming, *Zagazig University*
2010 JavaME, *C-Cell Academy*
2010 Selected Topics in JavaSE & JavaME, *JELECOM*
2009,2012 Operating System + Introduction to Linux, *Zagazig University*
2009 JavaSE level I, *HI-Q Academy*
2009,2010 JavaSE (level I + level II) + JavaEE (level I + level II), *C-Cell Academy*
2008,2011 JavaSE level I + JavaSE level II, *EMAK Academy*
2008 Oracle ADF JSF Components, *EMAK Academy*
2007 JavaSE level I + level II, *SESCO institute*
2007 C# level I, *ICT-Egypt*
2007 Object Oriented Programming, *Zagazig University*
2007 Data Structures, *Zagazig University*
2006-2009 Introduction to C++, *Zagazig University*
2006 JavaSE level I, *ITG-Cairo*
2006-2009 Compiler construction using Java & JavaCC, *Zagazig University*
2006-2007 Socket Programming using C#, *Zagazig University*
2005 Introduction to C# programming, *Zagazig University*

Service to the profession (selected projects)

KKTPM Calculator – An *Open-Source* Karush Kuhn Tucker Proximity Measure calculator. Supports XML-based inputs and symbolic mathematical function evaluations.
Unified NSGA-III – An *Open-Source* implementation of our published many-objective optimization algorithm. (work in progress)
Tex2Math – An extensible *Open Source* API for parsing and evaluating mathematical expressions. The library supports a wide range of operators. It also allows for a great deal of flexibility on the user's side. (distributed as a part of the KKTPM Calculator)
Automatic Timetabler – A Simulated Annealing (SA) based application for schools/university timetabling optimization. The application produces full timetables in different formats satisfying a highly-conflicting set of hard and soft constraints.
Multilingual Chatterbox – Pluggable/Customizable Chatting service with major emphasis on Arabic support and content filtration.
CDC SCORM editor – SCORM course editor for handheld devices. (SCORM is a standard electronic format used in e-learning)
ORION – An early social network mobile client for CLDC devices. The application includes a

photo gallery, RSS feeds reader, e-mail client, Advertisement utility and a Remote Desktop Control system. *(funded by ICT-Egypt)*

Instant Desktop Arabic Text Search Engine – An *instant* text-retrieval application for small sized textual data. This application combines text stemming and normalization with hashing techniques to create a constant-complexity non-exact-matching search engine in Arabic text.

Land-use allocation using gene expression programming (GEP) – An application that uses GEP to optimize cost and compactness in mid-scale land-use allocation problems. *(Compatible with Map Objects API from ESRI).*