DALIA MOHAMED SOBHY

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OBJECTIVE

To make the best use of my technical expertise in software engineering, machine learning, and cloud-related aspects in a research-based career; hence to acquire and apply advanced knowledge in a particular field (e.g. healthcare-related fields).

EDUCATION

2015-2019	University of Birmingham, Computer Science Department, Birmingham, UK
	Ph.D. in Computer Science
2010-2013	Arab Academy for Science and Technology (AAST), Computer Engineering, Alexandria, Egypt
	Masters of Science in Computer Engineering, straight As in courses
	Excellent results for dissertation; feedback from examiner indicated my argument vas very persuasive
2004–2009	AAST, Computer Engineering Department, Alexandria, Egypt
	Bachelor of Engineering, Awarded Gold medal as the top ranked candidate (*first*) in the graduating class
2001-2004	International Secondary School (AAST)
	IGCSE Program

PROFESSIONAL/RESEARCH EXPERIENCE

07/2019-Present   **Lecturer, Computer Engineering, AAST, Alexandria, Egypt**
- Teaching and tutoring various courses including Software engineering and programming (C, Java, Discrete Math, and Cloud Computing).
- Developing various group projects with the students, linking the technology-oriented aspects with real life needs.
- Registering and providing academic guidance for the students
- Performing some educational quality-related aspects.

09/2009–Present   **Teacher Assistant, Computer Engineering, AAST, Alexandria, Egypt**
- Teaching and tutoring various courses including Software engineering and programming (C, C#, and Java).
- Developing various group projects with the students, linking the technology-oriented aspects with real life needs.
- Registering and providing academic guidance for the students
- Performing some educational quality-related aspects.

06/2019   **International Software Architecture PhD School (iSAPS), Leiden, Netherlands**
- Explored the new techniques in software architecture and engineering
- Discussed challenges facing software architects through an industrial case study
- Learnt how to work with a team to solve industrial problems.

04/2018   **International Software Architecture PhD School (iSAPS), Leiden, Netherlands**
- Explored the new techniques in software architecture
- Discussed challenges facing software architects through an industrial case study
- Learnt how to work with a team to solve industrial problems.

07/2017   **AI Summer School, Microsoft Research, Cambridge, England**

- Explored the new techniques in AI
- Learnt how to give and write a research paper/talk

07/2016   **IoT Summer School, Microsoft Research, Kazan, Russia**
- Explored the tactics and practical skills to develop an IoT application
- Worked quickly and efficiently, within a team, under pressure to build an IoT application in few days
- Established a good rapport with the summer school attendees, although I was the only Egyptian woman in a total of 60 Russian and Greek students.

02/2002-01/2013   **Events Organizer, International Conference Organization and Management Co., Egypt**
- Achieved recognition for customer service in one of the prominent and biggest conferences, which has more than 5000 attendees.
- Used tactic and diplomacy to ensure the exhibitors satisfaction was maintained.
- Managed to lead the exhibitors team, which were responsible of dealing with about 50 national and multi-national companies.

01/2007-01/2009   **Web Developer, Paradigm Solutions**, Alexandria, Egypt
- Quickly learnt to design and develop web applications for companies using ASP.NET and C#.
- Developed a relational database, using SQLSever, and implemented billing computation using SQL for a subscriber network of over 1000 customers. This database implementation is employed to date as it allows for faster data access, better fault tolerance, and improved data management.

01/07/08-12/08/08   **Summer Intern, Informatics Department, Emden/Leer University, Emden, Germany**
- Performed a thorough research about a new approach called "Neurath Composition Framework" using program code templates (pct) in Java.
- Learnt the necessary skills to write a thesis, appreciate the value of team work and research, and the importance of hard work and perseverance.

15/07/07-15/08/08   **Software Developer, Integrated Solutions for Ports Co, Alexandria, Egypt**
- Explored relational databases using MySQL and designed a prototype using java web applications.

COMPUTER SKILLS

Operating Systems: Windows XP/8, Linux variants, Unix, and MacOSX
Languages: ASP.NET, C#, Java, C, PHP, Visual Basic, HTML, JavaScript, XML, UML, Matlab, etc.
Database and Client/Server Technologies: Oracle (SQL), MSSQL, MySQL, Apache and Microsoft IIS
Software Tools: Matlab, MS Visual Studio, NetBeans, Eclipse, Matlab, NetBeans (Automatic Code generation using UML), XILINIX, Visio, SmartDraw, Texmaker (Latex generator), MS Office, etc.

PUBLICATIONS AND SELECTED PROJECTS

July 2022   **Continuous and Proactive Software Architecture Evaluation: An IoT case**
- Provided the first investigation of whether and how time series forecasting can be used to successfully forecast the future benefit of architecture decisions.
- Provide the first proactive approach to continuous software architecture evaluation, when supported by simulated instances of the system-to-be. The approach uses the power of forecasting analytics to complement design-time decisions by considering not only the past, but also the future potentials of architecture decisions.
- Provided a detailed analysis of when and why the proposed approach can help to better inform architecture decisions.
- Provided experimental guidelines aiding architects on how to tune the proposed approach.

April 2021   **Evaluation of Software Architectures under Uncertainty: A Systematic Literature Review**
- Provided a novel systematic literature review for software architecture

evaluation approaches under uncertainty which may implicitly or explicitly adopt continuous approaches.
- Provide a set of guidelines for the elements needed to develop and conduct a continuous architecture evaluation approach.
- We provide insights regarding open challenges, which will pave the way for future research.
- We conclude that there is a lack of systematic guidance on how continuous architecture evaluation can be realized or conducted and few examples of their application.

January 2020	**Run-time evaluation of architectures: A case study of diversification in IoT – (Journal of Systems and Software, Elsevier)**

- Used machine learning and optimization approaches to evaluate the options of diversity in design by looking at the trade-offs between the cost and long-term value of different architectural strategies under uncertainty.
- Used a case study to demonstrate how decision makers and architects can evaluate the software architecture of an IoT application using a diversified cost-value approach

July 2019	**Continuous Evaluation Framework for software architectures: an IoT case – (School of Computer Science, University of Birmingham)**

- Proposed an architecture-centric model, which is built on a well-established software architecture method, CBAM. We have envisioned diversification into the design as a case for handling uncertainties. The focus is on how we can determine the long-term value of diversified architecture options. For that, the design-time approach uses options theory to evaluate and justify the employment of architecture diversified options over time.
- Proposed a *novel* reactive run-time architecture evaluation method, suited for systems that exhibit uncertainty and dynamism in their operation. The method uses machine learning and cost-benefit analysis at run-time to continuously profile the architecture decisions for their added value that trace back to the design decisions.
- Proposed a *proactive* run-time architecture evaluation approach that provides continuous learning as built-in mechanisms for proactive evaluation that complement the reactive one. The approach shows how proactive approaches leveraging the time series forecasting analytics can fundamentally guide the continuous evaluation of software architectures and influence the outcome of the decisions
- Used a case study to demonstrate how decision makers and architects can evaluate the software architecture of an IoT application using a continuous evaluation framework.

November 2016	**Diversifying software architecture for Sustainability: A value-based perspective – (European Conference of Software Architecture (ECSA 2016), Springer)**

- Used real options theory to evaluate the options of diversity in design by looking at the trade-offs between the cost and long-term value of different architectural strategies under uncertainty.
- Used a case study to demonstrate how decision makers and architects can reason about sustainability using a diversified cost-value approach

December 2012	**MedCloud: Healthcare Cloud Computing system** – (2012 International Conference for Internet Technology and Secured Transactions, IEEE, 2012)

- Designed and developed a PaaS named "MedCloud", which examines the impact of cloud computing on improving healthcare services.
- This research details the architectural design for a cloud-based EMR system that utilizes and integrates services from Hadoop's ecosystem in conjunction with HIPAA privacy and security rules.
- A scalable platform is proposed for developers to use in application development and Restlet, a web portal, is presented to users, to access the MedCloud system.

June 2009	**EasyGo (final graduation project)**

- Developed a GPS (Global Positioning System) software, which helps the end-user to locate his current position easily as well as show the nearby attractions from a specific position in a list.
- Learnt how to research, develop a new software using C# and Virtual Earth maps, and also the basics of Software Engineering.

LEADERSHIP, PROFESSIONAL ACTIVITIES AND AWARDS

- Reviewed IEEE Software Journal and JSS (ElSevier Journal of Software and Systems) manuscripts (2019, 2020, 2021)
- Sub-Reviewed manuscripts in IEEE Services and Computing Conference (2018)
- WIE (Women in Engineering) Past Chair
- Past IEEE Board member
- Past IEEE Computer Society member
- Past Member in IEEE Technical Committee
- Volunteer in LEO-yacht club (2004-2008)
- Volunteer in Entract (2004-2006)
- Basketball trainer to handicapped in Sporting club (2004-2006)
- Team participation in Robo-adventure competition (a robots' competition) (May 2007)
- Participant in the local ACM competition (2007)
- Organized the IEEE annual Student Professional awareness venture *"Leading your career, Leading your society"* in BibAlex (2006, 2007,2008)
- Organized WIE conference "*Life on a chip"* May 2007
- Attended five career conferences
- Past Student Member of IEEE, ACM, HAM Radio Society, SWE and WICS.

COURSES TAKEN

- Oracle 10g: SQL Fundamentals
- Programming with C# .Net
- Developing Microsoft .Net Applications for Windows
- English Conversation in the American Center
- Upper Intermediate level of English in the American Center
- IELTS
- Toefl Local and International