Zakarea M. ALSHARA

Last updated: January, 2023

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EDUCATION

Ph.D.   Software Engineering, University of Montpellier/LIRMM, France, 2016

   Dissertation: *Migrating large object-oriented software to component-based one*

   Supervised by Prof. Christophe Dony.

M. Sc.   Computer Science, Jordan University of Science and Technology, Jordan, 2013

   Dissertation: *TeachCloud : A cloud computing educational toolkit*

   Supervised by Dr. Yaser Jararweh.

B. Sc.   Computer Science, Albalqa Applied University, Jordan, 2007

PROFESSIONAL EXPERIENCE

PROFESSIONAL APPOINTMENTS

- Jordan University of Science and Technology, Assistant Professor, Department of Software Engineering, September 2018 - present.
  - Prepared assignments, quizzes, exams, lectures, and lab activities for courses fresh each semester.
  - Evaluated hundreds of students over eight semesters.
  - Designed the syllabus, course structure, and focus for two graduate-level courses.
  - Redesigned the coursework and lectures of existing courses.
  - Supervised graduate and undergraduate students.

- Jordan University of Science and Technology, Deputy Director, Information Technology and Communication Center, September 2022 - present.
  - Assisted in the planning, development, and management of new automated information systems and enhancements to existing automated systems at JUST.
  - Preparing test campaigns.
  - Develop a model to preserve QoS and SLA.
  - R&D to address the challenges created by the introduction of new technologies.
  - Develops and maintains relationships with service consumers and service providers.

- Berger-Levrault, Research and Development, Senior Researcher, September 2017 - June 2018.
  - Develop transformation models to transform legacy services into modern ones.

  - Co-Supervised PhD students.

  - Solve technical problems and challenges.

- IMT Atlantique, Post-Doctoral , ASCOLA Research Group/Inria Research Centres, CoMe4ACloud
  funded project, September 2016 - September 2017.
  - Develop a novel generic modelling language which is extensible to all XaaS cloud-computing
    layers.

  - Design of generic analysis and planning phases for an Autonomic Managers.

  - Synchronization of the real running (and distributed) system with the models used in the
    Autonomic Managers.

  - published a journal paper in Future Generation Computer Systems and a conference paper
    that got the best paper award of CLOSER 2017.

- University of Montpellier, Graduate Teaching Assistant, Pavement and geotechnical research
  laboratory, June 2014 - June 2016
  - Teaching Unit Advanced Mobile Programming and Connected Objects for master students.

  - Teaching Mobile Programming (HMIN324M) for master students in Computer Science
    specializing in Intelligent Processing Systems.

  - Teaching Mobile Programming in Android (HMIN205) for master students.

  - Teaching Distributed Architectures (HMIN210) for master students.

- LIRMM/CNRS, France, Senior researcher, MAREL team , June 2013 - September 2016
  - Worked on various research and technical problems related to Re-engineering and recovering
    component and service software architectures from legacy object-oriented applications.

  - Developed automation tools for reverse engineering and transforming/refactoring object-oriented
    code to component-based ones.

  - contributes novel model-driven engineering models for transforming object-oriented applications
    into component-based ones.

  - Participate in many talks, presentations, and visits.

- OTS Inc., Mobile Team Leader, Jordan, February 2010- June 2013.
  - Responsible for managing and steering a team of +25 developers.

  - Organizing the work and communicating between team members.

  - Managing the day-to-day activities of the team.

- – Motivating the team to achieve organizational goals and conducting training of them to maximize their potential.

  – Empowering team members with skills to improve their confidence, product knowledge, and communication skills.

- Maysalward, Mobile Game developer, Jordan, July 2007- February 2010.
  - – Responsible for developing many mobile games over many smartphone platforms.

  – Collaborate with an international team to build a mobile game physics engine.

  – Attending many events organized by different smartphone manufacturers like Samsung, Nokia, Google, and BlackBerry.

  – Develop many innovative games AIs.

- Jordan University of Science and Technology, Teaching Assistant, Computer Science Department, September 2010 - June 2012.
  - – Trained undergraduate students on new technologies, including cloud-computing services and platforms.

  – Taught students how to use Weka (machine learning software in Java) to train Latin and non-Latin encoding texts.

  – Helped in designing the lab component of several courses including operating systems and object-oriented.

VISITING APPOINTMENTS

- Invitation to the CMS/CERN collaboration board meeting, Geneva, Switzerland, two weeks, 2019.

- Presentation on "Towards Recovering the Software Architecture of Component-based Systems", LGI2P seminar, École des mines d'Alès, France, February 2015.

GRANTS AND FUNDS

- **Principal Investigator/Team leader**, CMS/CERN Induction Project, around $30,000 for students' summer school and other paid services, 2020 - present

- **Principal Investigator**, "The Compact Muon Solenoid Data Curation", ($10,000), 2021-2023.

- **Co-Principal Investigator** , "Analysis preservation infrastructure task and requirements.", ($10,500), 2021-2023.

- **Co-Principal Investigator**, "Determination and Enforcement of the Component-Based Architecture for the Object-Oriented Java Software Systems", ($12,694), 2019-2022.

AWARDS & HONORS

- PhD scholarship, Erasmus Mundus, Dunia Beam program, 2013.

- Postdoc position in the context of the Atlanstic2020 CoMe4ACloud project, France, 2017.

- Best Paper Award, The 7th International Conference on Cloud Computing and Services Science (CLOSER 2017),04/2017.

- Cooperation institute acceptance decision, CMS/CERN, Switzerland, 2019.

SCHOLARLY ACCOMPLISHMENTS

RESEARCH JOURNAL PUBLICATIONS

1. **Zakarea Alshara**, Anas Shatnawi, Hamzah Eyal-Salman, Abdelhak-Djamel Seriai, and Moad Shatnawi, ”PI-Link: A Ground-Truth Dataset of Links Between Pull-Requests and Issues in GitHub,” vol. 11, pp. 697-710, 2023. *IEEE Access.*
   doi:10.1109/ACCESS.2022.3232982

2. **Zakarea Alshara**, Anas Shatnawi, Hamzah Eyal-Salman, and Abdelhak-Djamel Seriai, ”ML-Augmented Automation for Recovering Links between Pull-Requests and Issues on GitHub.” *IEEE Access*
   doi:10.1109/ACCESS.2023.3236392

3. Mahmoud M. Almazari, Eyad Taqieddin, Ahmed S. Shatnawi, and **Zakarea AlShara**. 2022. “An Evaluation of the RSA Private Keys and the Presence of Weak Keys” *Journal of Discrete Mathematical Sciences Cryptography*, 2022, *Taylor Francis.* (Accepted on April 2022)

4. Hamzah Eyal-Salman, **Zakarea Alshara**, and Abdelhak-Djamel Seriai. Automatic Identification of Similar Pull-Requests in GitHub’s Repositories Using Machine Learning. *Information* 2022.
   doi:10.3390/info13020073

5. Maad Shatnawi, Anas Shatnawi, **Zakarea AlShara**, and Ghaith Husari. 2022. “Symptoms-based fuzzy-logic approach for COVID-19 diagnosis” *International Journal of Advanced Computer Science and Applications.*
   doi:10.14569/IJACSA.2021.0120457

6. **Zakarea AlShara**, Frederico Alvares, Hugo Bruneliere, Jonathan Lejeune, Charles Prud’Homme, and Thomas Ledoux. “CoMe4ACloud: An end-to-end framework for autonomic Cloud systems” *Future Generation Computer Systems* (2018): 339-354.
   doi:10.1016/j.future.2018.03.039

7. Anas Shatnawi, Abdelhak-Djamel Seriai, Houari Sahraoui, **Zakarea Alshara**. “ Reverse engineering reusable software components from object-oriented APIs” *Journal of Systems and Software* (2016): 442-460.
   doi:10.1016/j.jss.2016.06.101

8. Yaser Jararweh, Moath Jarrah, Mazen kharbutli, **Zakarea Alshara**, Mohammed Noraden Alsaleh, Mahmoud Al-Ayyoub. "CloudExp: A comprehensive cloud computing experimental framework." *Simulation Modelling Practice and Theory.* 2014
doi:10.1016/j.simpat.2014.09.003

9. Yaser Jararweh, **Zakarea Alshara**, Moath Jarrah, Mazen Kharbutli and Mohammad N. Alsaleh. "TeachCloud: a cloud computing educational toolkit." *International Journal of Cloud ComputingVol.* (2013).
doi:10.1504/IJCC.2013.055269.

10. **Zakarea Al-Shara**. 'Migrating Object Oriented Applications into Component-Based ones." *HAL thesis.* (2016).
tel-01816975

CONFERENCE PUBLICATIONS

11. **Zakarea Alshara**, Anas Shatnawi, Yaser Jararweh. "NIV-Detector: An Automated Approach for Detecting Next-Intent Security Vulnerability in Android Applications" *The Ninth International Conference on Software Defined Systems (SDS-2022)*, Paris, France.

12. Anas Shatnawi, Hudhaifa Shatnawi, Mohamed Aymen Saied, **Zakarea Al Shara**, Houari Sahraoui, and Abdelhak Seriai. "Identifying software components from object-oriented APIs based on dynamic analysis." *In Proceedings of the 26th Conference on Program Comprehension (ICPC '18).*, Association for Computing Machinery, New York, NY, USA, 189–199.
doi:10.1145/3196321.3196349.
"A model-based architecture for autonomic and heterogeneous cloud systems." In CLOSER 2018-8h International Conference on Cloud Computing and Services Science, vol. 1, pp. 201-212. 2018.

13. Bruneliere, Hugo, **Zakarea AlShara**, Frederico Alvares, Jonathan Lejeune, and Thomas Ledoux. "A model-based architecture for autonomic and heterogeneous cloud systems." *In CLOSER 2018-8h International Conference on Cloud Computing and Services Science*, vol. 1, pp. 201-212. 2018.
doi:10.1109/ACIT53391.2021.9677273.

14. **Zakarea Alshara**, Abdelhak-Djamel Seriai, Chouki Tibermacine, Hinde Lilia Bouziane, Christophe Dony, Anas Shatnawi. "Materializing Architecture Recovered from Object-Oriented Source Code in Component-Based Languages." *ECSA 2016: Software Architecture*, pp 309–325. Springer International Publishing.
doi:10.1007/978-3-319-48992-6$_2$3.

15. **Zakarea Alshara**, Abdelhak-Djamel Seriai, Chouki Tibermacine, Hinde Lilia Bouziane, Christophe Dony, and Anas Shatnawi. "Migrating large object-oriented Applications into component-based ones: instantiation and inheritance transformation." *In Proceedings of the 2015 ACM SIGPLAN International Conference on Generative Programming: Concepts and Experiences (GPCE 2015).*, Association for Computing Machinery, New York, NY, USA, 55–64.
doi:10.1145/2814204.2814223.

16. Anas Shatnawi, Abdelhak Seriai, Houari Sahraoui, **Zakarea Al-Shara**. "Mining Software Components from Object-Oriented APIs." *International Conference on Software Reuse (ICSR 2015: Software Reuse for Dynamic Systems in the Cloud and Beyond)*, pp 330–347. doi:10.1007/978-3-319-14130-5.

17. Yaser Jararweh, **Zakarea Alshara**, Moath Jarrah, Mazen Kharbutli and Mohammad N. Alsaleh. "TeachCloud: a cloud computing educational toolkit." *ICA CON 2012* doi:10.1504/IJCC.2013.055269.

PUBLICATIONS SUBMITTED

18. Ahmed S. Shatnawi, Mahmoud M. Almazari, **Zakarea AlShara**, Eyad Taqieddin, and Dheya Mustafa "RSA Cryptanalysis with Exact Fermat Bound Using the Role of Integer Sequences Factorization" *Submitted to Journal of Cryptographic Engineering on 27 Feb 2022.*

19. **Zakarea Alshara**, Muhammad Abbas, Alessio Ferrari, Anas Shatnawi. "Are Similar Issues have Similar Pull-Request?" *To be submitted to Journal of System and Software (JSS) on 28 Feb 2023.*

20. **Zakarea Alshara**, Anas Shatnawi, Yaser Jararweh. "NIV-Solver: A Tool for Automatically Detecting and Refactoring NIV Smells" *To be submitted to Cluster Computing (Special Issues) on March 2023.*

GRADUATE STUDENT SUPERVISION

Ph. D.

- There are **NO** Ph. D. programs offered by the Faculty of Computer & Information Technology at JUST.

MASTER'S

- Currently supervising the M.S. thesis research of one student.

- Obadah Shatnawi, *A Parameterized Approach for Analyzing Source Code Variability in Cloned Java Software Variants.* Graduated June 2020.

- Suojod Al-sheyab, *Security Experimental Framework for Autonomous Vehicles.* Graduated January 2023.

UNDERGRADUATE

- Academic advisor for +5 groups per semester at the Software Engineering Department. 2018-present.

- Supervised/co-supervised many senior projects for about 60 students and served as a member of a project examination committee for over 30 senior projects.

PRESENTATIONS

- "NIV-Detector: An Automated Approach for Detecting Next-Intent Security Vulnerability in Android Applications", *The Ninth International Conference on Software Defined Systems (SDS-2022), Paris, France, 2022.* • **Invited talk**

- "Presentation for CMS/CERN membership", 125th Meeting of the CMS Collaboration Board, Geneva, Switzerland, 2019-2022. • **Invited talk**

- "Materializing Architecture Recovered from Object-Oriented Source Code in Component-Based Languages", *ECSA 2016, Copenhagen, Denmark, 2016.* • **Invited talk**

- "Migrating large object-oriented Applications into component-based ones: instantiation and inheritance transformation.", *International Conference on Software Reuse (ICSR 2015), Pittsburgh, Pennsylvania, United States, 2015* • **Invited talk**

- "Seminaires LGI2P.", *Collaboration between research teams in Europe, France* • **Invited talk**s

- "Mining Software Components from Object-Oriented APIs.", *14th International Conference on Generative Programming: Concepts Experience (ICSR'15), Miami, Florida, United States, 2015.* **Attending**

SERVICE AND PROFESSIONAL ACTIVITIES

NATIONAL AND INTERNATIONAL PROFESSIONAL ACTIVITIES

- Chair on SECEI 2020: The International Symposium on Software Engineering for Cloud, Edge and Internet of Things Systems, Paris, France, 2020.

- Chair on ICICS2020 (The 11th International Conference on Information and Communication Systems), track chair (Track4: Software and web Engineering), Irbid, Jordan, 2020.

- PC member on :
  - AICCSA 2018: 15th ACS/IEEE International Conference on Computer Systems and Applications, Track 10: Advances in Software Engineering, Aqaba, Jordan, 2018.

  - AICCSA 2019: 16th ACS/IEEE International Conference on Computer Systems and Applications, Track 10: Advances in Software Engineering, Abu Dhabi, UAE, 2019.

  - ICICS 2019: The 10th International Conference on Information and Communication Systems, Track 2: Security, privacy, and digital forensics, Track 6: Software and web Engineering, Irbid, Jordan, 2019.

  - ICICS2020 The 11th International Conference on Information and Communication Systems, Track2: Security, privacy, digital forensics and blockchain, Irbid, Jordan, 2020.

  - ICICS 2021 (The Twelfth International Conference on Information and Communication Systems), Software and Web Engineering, Valencia, Spain, 2021.

- ICICS2022 The 13th International Conference on Information and Communication Systems, (Track 5: Software and web Engineering), Irbid, Jordan, 2022.

- Served as reviewer for many top-tier journals:
  - The Journal of Systems and Software (JSS).

  - Information and Software Technology (IST).

  - International Journal of Software Engineering and Knowledge Engineering.

  - The Computer Journal- COMPJ.

  - Journal of Cloud Computing.

COMMUNITY SERVICE

- Implemented and contributed many open-source projects and tools:
  - **CoMe4ACloud** a constraints and model engineering for autonomic cloud computing and provides an end-to-end solution for autonomic Cloud services.

  - **TeachCloud** an educational and experimental toolkit for cloud computing.

  - **Transformation tool** transform object-oriented dependencies into component-based ones.

  - **Holodeck Game Engine** a cross-platform game engine used to build portable games for different environments (JavaME, Android, BlackBerry, GWT, JavaFX, Desktop and Web).

  - **Weka (Arabic version)** update weka to support Arabic data sets and results.

- Offered free courses at JUST for undergraduate students, 2019-2021.

UNIVERSITY SERVICE

- The head of the committee of Industry Liaison, 2022.

- Team leader of CMS/CERN Induction Project, 2020 - present.

- Supervised and recommended elected students in Summer Student Programme/CERN, 2020 - present.

COLLEGE AND DEPARTMENT SERVICE

- Council member of Students' Affairs Committee, 2019.

- Council member of Initiative and Creativity Committee, 2019.

- Served on MS thesis defence committees of:
  - ruba Al-sheyab, Multiple Sequence Alignment using Parallel Programming, January 2019.

– Obadah Shatnawi, A Parameterized Approach For Analyzing Source Code Variability In Cloned Java Software Variants, June, 2020.

– Suojod Al-sheyab, Security Experimental Framework for Autonomous Vehicles, January 2023.

- Chair, The Scientific Research Committee, 2018 - 2021.

- Chair, Recruitment and Promotion Committee, 2022.

- Member, International Accreditation Commission, 2019-present.

TEACHING ACTIVITIES

Teaching courses at JUST:

1. Mobile Application Development (SE 410).
2. Java Programming (SE 210).
3. Software Engineering for Web Application (SE 432).
4. Software Security (SE 431).
5. Software Testing (SE 430).
6. System Analysis and Design (SE 320).

In addition, from 2013 until 2016 I have taught or helped in many courses for master students while at the University of Montpellier:

1. Mobile Programming (HMIN324M).
2. Mobile Programming in Android (HMIN205).
3. Distributed Architectures (HMIN210).
4. Special Topics on Unit Advanced Mobile Programming and Connected Objects).