# Ziad A. Al-Sharif, Ph.D.

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## Education

- **18-December 2009**
  **Doctor of Philosophy** in Computer Science
  Department of Computer Science, University of Idaho, Moscow, ID, 83844, USA
  Dissertation Title:  "*An Extensible Debugging Architecture Based on a Hybrid Debugging Framework*"
  Advisor: Dr. Clinton L. Jeffery
  GPA: 4.0 out of 4.0

- **17-August 2005**
  **Master of Science** in Computer Science
  Department of Computer Science, New Mexico State University, Las Cruces, NM, 88001, USA
  Thesis Title: "*A High Level Audio Communications API for the Unicon Language*"
  Advisor: Dr. Clinton L. Jeffery
  GPA: 3.559 out of 4.0

- **12-February 2000**
  **Bachelor of Science** in Computer Science
  Department of Computer Science, AL al-Bayt University, Al Mafraq, Jordan
  GPA: 81.15% (very good)
  Ranked second among my peers in the graduation ceremony of 2000
  Outstanding student scholarship, Ministry of Higher Education and Scientific Research, Jordan, September 1996 to June 1999.

# Research Interests

## 1. Cybersecurity & Digital Forensics

*Selected Publications:*

- **Ziad A. Al-Sharif**, Mohammed I. Al-Saleh, Luay Alawneh, Yaser Jararweh and Brij Gupta; "Live Forensics of Software Attacks on Cyber Physical Systems", Accepted for publication in the Journal of Future Generation Computer Systems (FGCS), Special Issue on Security and Privacy in Cyber Physical Systems, Submitted on December 31, 2017, revised on May 5, 2018, Accepted on July 14, **2018**.

- **Ziad A. Al-Sharif**, Attaa Y. Al-Khalee, Mohammed I. Al-Saleh & Mahmoud A. Al-Ayyoub, "Carving and Clustering Files in RAM for Memory Forensics," In the *Far East Journal of Electronics and Communications* (FJEC), Vol. 18, No. 5 (July **2018**), pp. 695-722. (was *Indexed by Scopus Q2 at submission time)*

- Mohammed I. Al-Saleh, Fatima M. AbuHjeela & **Ziad A. Al-Sharif**. "Investigating the Detection Capabilities of Antiviruses under Concurrent Attacks," In the International Journal of Information Security (IJIS), Springer, August **2014**. (*Indexed by **ISI**: SCIE & Scopus Q1&2,* IF *1.297*)

- Mohammed I. Al-Saleh & **Ziad A. Al-Sharif**, "Utilizing Data Lifetime of TCP Buffers in Digital Forensics: Empirical Study," Digital Investigation Journal, Elsevier, **2012**. (*Indexed by **ISI**: SCIE & Scopus Q2;* IF *1.211*).

## 2. Software Engineering: including Testing, Debugging & Monitoring (techniques, tools & frameworks)

*Selected Publications:*

- **Ziad Al-Sharif**, Clinton L. Jeffery & Mahmoud H. Said, "The Use of Dynamic Temporal Assertions for Debugging," published in Embedded Software Verification and Debugging, Springer, the "Embedded Systems" series, ISBN 978-1-4614-2265-5, **2017**.

- **Ziad A. Al-Sharif**, Yaser Jararweh, Ahmad Al-Dahoud, & Luay Alawneh, "ACCRS: Autonomic Based Cloud Computing Resource Scaling," *to be published by the Cluster Computing, Article in Press, First Online: 21 November **2016**. (**Indexed** by ISI: SCIE & Scopus Q2,* IF *1.514*)

- **Ziad A. Al-Sharif**, Clinton L. Jeffery & Mahmoud H. Said, "Debugging with Dynamic Temporal Assertions," In the IEEE International Symposium on Software Reliability Engineering Workshops (ISSREW), Nov. **2014**.

- Raed Shatnawi and **Ziad Al-Sharif**, "A guided oversampling technique to improve the prediction of software fault-proneness for imbalanced data," Inter. Journal of Knowledge Engineering and Data Mining, 01/**2012**.

- **Ziad A. Al-Sharif** & Clinton Jeffery, "An Extensible Source-Level Debugger," ACM SAC **2009**.

## 3. Educational Collaborative Virtual Environments (*3D Game like Environments*)

*Selected Publications:*

- Hani Bani-Salameh, Jafar Al-Gharaibeh, Clinton Jeffery & **Ziad A. Al-Sharif**, "Collaborative Education in a Virtual Learning Environment," published in the International Journal of Business Information Systems *(IJBIS)*, **2017**. (*Indexed by Scopus: Q2*)

- Hani Bani-Salameh, Clinton Jeffery, **Ziad A. Al-Sharif** & Iyad Abu Doush, "Integrating Collaborative Program Development and Debugging within a Virtual Environment," CRIWG 2008. Omaha, NE, USA. Lecture Notes in Computer Science, vol. 5411. Springer-Verlag, pp. 107-120. September 14-18, **2008**.

- Clinton Jeffery, Omar El-Khatib, **Ziad A. Al-Sharif**, and Naomi Martinez, "Programming Language Support for Collaborative Virtual Environments," CASA **2005**.

# Professional Experience

- **October 2018 – *Present*:**
  *Associate Professor*, Department of Software Engineering, Jordan University of Science & Technology (JUST). Courses include Programming Languages, Data Structures and Algorithms, Software Engineering, Software Design, Software Testing, Software Security and Advanced Operating Systems.

- **February 2010 – September 2018:**
  *Assistant Professor*, Department of Software Engineering, Jordan University of Science & Technology (JUST).

- **January 2007 – December 2009:**
  *Research Assistant*, Department of Computer Science, University of Idaho, Moscow, Idaho, USA.
  (*Researching program execution monitoring and program debugging as a member of the Unicon Project, advisor Dr. Clinton Jeffery*).

- **August 2004 - December 2006:**
  *Research Assistant*, New Mexico State University, Las Cruces, New Mexico, USA.
  (*Researching collaborative virtual environments, programming languages, virtual machines, and Audio/VoIP API support for the Unicon language, advisor Dr. Clinton Jeffery*).

- **August 2004 – December 2006:**
  *Teacher Assistant*, New Mexico State University, Las Cruces, New Mexico, USA.

- **September 2000 – January 2003:**
  *Assistant Lecturer* of Computer Science, Department of Computer Science, Jordan University of Sci. & Tech., Jordan.

## Teaching Experience at the University of Idaho (*Fall 2009*)

- Introduction to Problem Solving & Programming Using C++ (*CS 112*)

## Teaching Experience at JUST University (*Spring 2010 to Present*)

- **Master Level Courses**

  1. Advanced Operating Systems (*CS 775*)

- **Undergraduate Level Courses**

  o **Computer Security**

    1. Computer and Network Security (*CS 484*)
    2. Software Security (*SE431*)

  o **Software Engineering**

    1. Software Testing (*SE 430*)
    2. Software Architecture & Design (*SE 322, Architectural and Design Patterns*)
    3. Software Engineering for Web Applications (*SE 432, Java EE: Servlets, JSP, and the MVC Model* )
    4. Fundamentals of Software Engineering (*CIS 310 & SE 230*)

  o **Programming Techniques and Languages**

    1. Emerging Computer Systems (*CS 475*, C/C++ programming under Linux with *pthreads*, *MPI* and *CUDA*)
    2. Client/Server Programming using Java(SE 471)
    3. Data Structures and Algorithms using C++ (*CS 211*)
    4. Introduction to OO Programming using C++ (*CS 112*)
    5. Visual Programming Using C# (*CS 310 & SE 410*)
    6. Java Programming (*SE 210*)
    7. Special Topics in Software Engineering (SE 495, *Python*)

## Supervisor / Co-Supervisor for the following Master Thesis (*in the CS Dept. at JUST*)

- August 2019: "A Memory Forensic Framework for Applications," by **Ethar Qawasmeh**
- August 2015: "Carving and Clustering Documents in PDF Formats for Digital Forensics," by **Attaa Al-Khaleel**
- August 2013: "Autonomic Cloud Computing Resources Scaling," by **Ahmad Ali Al-Dahoud**
- May 2013:    "Bypassing the Antivirus On-Access Scanner's Thresholds," by **Fatima AbuHjeela**

## Curriculum and Course Developments

1. Curriculum Development for the BSc program in Software Engineering at JUST.
   (*Revised in 2014-2015 based on ACM/IEEE standard*)
2. Curriculum Development for the MSc in Software Engineering
3. Designing the Fundamentals of Software Engineering course
4. Designing the Software Engineering Lab 2  course
5. Designing the Software Design & Architecture course
6. Designing the Software Testing course

## Services to the Department, Faculty, and University:

1. **Representative** of the CIT Faculty in the University Council (*academic year: 2018-2019*)
2. **Representative** of the Software Engineering Department in the Dean's Council (*three academic years*)
3. **Accreditation Committee**: Department vision, mission, objectives, and outcomes (ABET & IET)
4. **Curriculum Committee**: Software Engineering Department (*several times: chair & member*)
5. **Research Committee**: Software Engineering Department (*several times: chair & member*)
6. **Promotion/Appointment Committee**: Software Engineering Department (*several times: chair & member*)
7. **Students' Affair Committee**: Faculty of Computer and Information Technology (*one time: member*)
8. **Chair of the Software Engineering Department** for two consecutive years (09/2013 -09/2015)
9. **Vice Director** of the Computer Information Center (CIS) from 02/2013 to 09/2013

## TPC Member in Professional Conferences
   *I have been serving as a professional program committee member of the  following conferences:*

- Serving as TPC Member for the 16th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2019), August 19-21, 2019, Halifax, Canada. *Conference Website*: http://cs-conferences.acadiau.ca/mobispc-19/

- Serving as TPC Member for the 4th, 5th, 8th, 9th and 10th International Conference on Information and Communication Systems (ICICS 2013, 2014, 2017, 2018 and 2019), Irbid, Jordan.
   ICICS 2018: Session Chair for the *Software and Web Engineering: Practices and Applications* (Track 5)
   ICICS *is Technically Cosponsored by IEEE, Conference Website*: http://www.just.edu.jo/icics2018/

- Serving as TPC Member for the 15th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2018), *Conference Website*: http://www.aiccsa.net/AICCSA2018/home

## Reviewer for Professional Journals
   *I have been serving as a professional reviewer for the following journals:*

- **Digital Investigation**
   *published by Elsevier*, link: http://www.journals.elsevier.com/digital-investigation/

- **Cluster Computing**
   *published by Springer*, link:http://link.springer.com/journal/10586

- **Journal of Computer Science (JCS)**
   *published by Science Publications*, link: http://thescipub.com/journals/jcs/

- **International Journal of Electronic Security and Digital Forensics (IJESDF)**
   *published by Inderscience*, link: http://www.inderscience.com/jhome.php?jcode=ijesdf

- **International Journal of Reliability and Safety (IJRS)**
   *published by Inderscience*, link: https://www.inderscience.com/jhome.php?jcode=ijrs

### Administrative Positions

- **February 2013- September 2013:**
  **Vice Director** of the Computer and Information Center (CIC) at Jordan University of Science & Technology.

- **September 2013- September 2015:**
  **Chair** of the Software Engineering Department at Jordan University of Science & Technology.

# Publications

## Peer Reviewed Journal Articles

1. **Ziad A. Al-Sharif**, Mohammed I. Al-Saleh, Yaser Jararweh, Luay Alawneh and Ahmed S. Shatnawi; "The Effects of Platforms and Languages on the Memory Footprint of the Executable Program: A Memory Forensic Approach", In The Special Issue of J.UCS entitled "Recent Advances in Detection, Investigation and Mitigation of Cyber Crimes". Submitted on December 22, 2018, revised on May 28, 2019, Accepted on July 9, 2019, published in Vol. 25, No. 9, on 28/9/**2019**.

2. **Ziad A. Al-Sharif**, Mohammed I. Al-Saleh, Luay Alawneh, Yaser Jararweh and Brij Gupta; "Live Forensics of Software Attacks on Cyber Physical Systems", *Accepted for publication in* the Journal of Future Generation Computer Systems (FGCS*), Special Issue on Security and Privacy in Cyber Physical Systems*, Submitted on December 31, 2017, revised on May 5, 2018, Accepted on July 14, **2018**.

3. **Ziad A. Al-Sharif**, Attaa Y. Al-Khalee, Mohammed I. Al-Saleh & Mahmoud A. Al-Ayyoub, "Carving and Clustering Files in RAM for Memory Forensics," In the *Far East Journal of Electronics and Communications* (FJEC), Vol. 18, No. 5 (July **2018**), pp. 695-722. (*When the paper was submitted and accepted, SJR ranking was indicating that FJEC is indexed by Scopus and ranked Q2*)

4. **Ziad A. Al-Sharif**, Yaser Jararweh, Ahmad Al-Dahoud, & Luay Alawneh, "ACCRS: Autonomic Based Cloud Computing Resource Scaling," *In Cluster Computing,* Volume 20, Issue 3, September **2017***, pp 2479–2488*, (*Indexed by ISI: Science Citation Index Expanded,* IF *1.514 and Scopus Q2*)

5. Hani Bani-Salameh, Jafar Al-Gharaibeh, Clinton Jeffery, & **Ziad A. Al-Sharif**, "Collaborative Education in a Virtual Learning Environment", *In the International Journal of Business Information Systems (IJBIS)*, Vol. 25, No. 4, **2017**, pp.474 – 489. (*Indexed by Scopus: Q2*)

6. Mohammed I. Al-Saleh, Fatima M. AbuHjeela, and **Ziad A. Al-Sharif**. "Investigating the Detection Capabilities of Antiviruses under Concurrent Attacks". *International Journal of Information Security* (IJIS), Springer, Vol. 14, Issue 4, August **2014**, pp 387–396. (*Indexed by ISI: Science Citation Index Expanded and Scopus Q1&2; IF 1.297*)

7. Mohammed I. Al-Saleh and **Ziad A. Al-Sharif**. "Utilizing Data Lifetime of TCP Buffers in Digital Forensics: Empirical Study". *Digital Investigation Journal*, Elsevier, Vol 9, Issue 2, November **2012**, pp. 119-124. (*Indexed by ISI: Science Citation Index Expanded and Scopus Q2; IF 1.211*)

8. Raed Shatnawi and **Ziad Al-Sharif**, "A guided oversampling technique to improve the prediction of software fault-proneness for imbalanced data". *Int. J. of Knowledge Engineering and Data Mining* 01/**2012**; 2(2/3):200 - 214. DOI: 10.1504/IJKEDM.2012.051241. (*Listed by Ulrich*)

9. **Ziad Al-Sharif** and Clinton Jeffery, 2010. "UDB: An Agent-Oriented Source-Level Debugger". The *International Journal of Software Engineering* (IJSE), Vol. 3, No. 1, January **2010**. (*Listed by Ulrich*).

## Book Chapter

1. **Ziad A. Al-Sharif**, Clinton L. Jeffery, and Mahmoud H. Said, "The Use of Dynamic Temporal Assertions for Debugging," In *Embedded Software Verification and Debugging*, ISBN 978-1-4614-2265-5, published by Springer New York under the "Embedded Systems" Series, **2017**, pp. 47-65.

## Peer Reviewed Conference Papers

1. Amro Abuabdo and **Ziad A. Al-Sharif**, "Virtualization vs. Containerization: Towards A Multi-threaded Performance Evaluation Approach," TO BE PUBLISHED In Proceedings of The 16th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2019), November 3rd - 7th, **2019**, Abu Dhabi, UAE.

2. Hafed Zarzour, **Ziad A. Al-Sharif** and Yaser Jararweh, "RecDNNing: A Recommender System Using Deep Neural Network with User and Item Embedding," In Proceedings of The 10th International Conference on Information & Communication Systems (ICICS'19), June 11th – 13th, **2019**, Irbid, Jordan.

3. Mohammed I. Al-Saleh, **Ziad A. Al-Sharif** and Luay Alawneh, "Network Reconnaissance Investigation: A Memory Forensics Approach," In Proceedings of The 10th International Conference on Information & Communication Systems (ICICS'19), June 11th – 13th, **2019**, Irbid, Jordan.

4. Hafed Zarzour, **Ziad A. Al-Sharif**, Mahmoud Al-Ayyoub and Yaser Jararweh, "A New Collaborative Filtering Recommendation Algorithm Based on Dimensionality Reduction and Clustering Techniques," In Proceedings of The 9th International Conference on Information & Communication Systems (ICICS'18), April 3rd – 5th, **2018**, Irbid, Jordan.

5. **Ziad A. Al-Sharif**, Mohammed I. Al-Saleh and Luay Alawneh, "Towards the Memory Forensics of OO Languages," In Proceedings of The 8th International Conference on Information, Intelligence, Systems and Applications (IISA 2017), Aug. 28-30, **2017**, Larnaca, Cyprus, (IISA proceedings will be published by IEEE).

6. Luay Alawneh, Mohmoud Said and Ziad **A. Al-Sharif**, "Towards Hierarchical Cooperative Analytics Architecture in Law Enforcement Agencies," to be published in the 8th International Conference on Information, Intelligence, Systems and Applications (IISA 2017), Aug. 28-30, **2017**, Larnaca, Cyprus, (IISA proceedings will be published by IEEE).

7. **Ziad A. Al-Sharif**, Hasan Bagci, Toqa' Abu Zaitoun and Aseel Asad, "Towards the Memory Forensics of MS Word Documents," to be published in the 8th International Symposium on Cybersecurity, In Proceedings of the ITNG 2017, April 10-12, **2017**, Las Vegas, Nevada, USA, (ITNG proceedings will be published in the Springer Series: Advances in Intelligent Systems and Computing)

8. **Ziad A. Al-Sharif**, "Utilizing Program's Execution Data for Digital Forensics," *The Third International Conference on Digital Security and Forensics (DigitalSec2016)*, Kuala Lumpur, Malaysia, the Asia Pacific University of Technology and Innovation (APU). September 6-8, **2016**, pp. 12-19.

9. Ahmad Al-Dahoud, **Ziad A. Al-Sharif**, Luay Alawneh and Yaser Jararweh, "Autonomic Cloud Computing Resource Scaling*", In the 4th International IBM Cloud Academy Conference (ICACON 2016)*, University of Alberta, Edmonton, Canada, June 2-3, **2016**.

10. Amjad Nusayr and **Ziad A. Al-Sharif**, "The Denotational Semantics of a Pre-Woven language", *In the 7th IEEE International Conference on Information and Communication Systems (ICICS)*, Irbid, Jordan, Apr. 5-7, **2016**, pp. 286-291.

11. **Ziad A. Al-Sharif**, Dana N. Odeh, and Mohammed I. Al-Saleh. "Towards Carving PDF Files in the Main Memory". *The International Technology Management Conference* (ITMC2015) Mevlana University, Turkey, May 26-28, **2015**. pp. 24-32.

12. **Ziad A. Al-Sharif**, Clinton L. Jeffery, and Mahmoud H. Said, "Debugging with Dynamic Temporal Assertions," IEEE International Symposium on Software Reliability Engineering Workshops (ISSREW), Naples, Italy, 3-6 November **2014**. pp. 257-262.

13. Mohammed I. Al-Saleh and **Ziad A. Al-Sharif**. "RAM Forensics against Cyber Crimes Involving Files." *The Second International Conference on Cyber Security*, Cyber Peacefare and Digital Forensic (CyberSec2013), Kuala Lumpur, Malaysia, **2013**. pp. 189-197.

14. **Ziad Al-Sharif** and Clinton Jeffery, 2009. "Language Support for Event-Based Debugging." In *Proceedings of the 21st International Conference on Software Engineering and Knowledge Engineering* (SEKE 2009), Boston, July 1-3, **2009**. pp. 392-399. (Acceptance rate 38%).

15. **Ziad Al-Sharif** and Clinton Jeffery, 2009. "A Multi-Agent Debugging Extension Architecture." In *Proceedings of the 21st International Conference on Software Engineering and Knowledge Engineering* (SEKE 2009), Boston, July 1-3, **2009**. pp. 194-199.

16. **Ziad Al-Sharif** and Clinton Jeffery, 2009. "An Agent Oriented Source-level Debugger on Top of a Monitoring Framework." In *Proceedings of the Sixth International Conference on Information Technology: New Generations* (ITNG), IEEE Computer Society. (Las Vegas, Nevada, April 27 - 29, **2009**. pp. 241-247. (Acceptance rate 29%).

17. **Ziad Al-Sharif** and Clinton Jeffery, 2009. "An Extensible Source-Level Debugger." In *Proceedings of the 2009 ACM Symposium on Applied Computing* (Honolulu, Hawaii, March 9-12). SAC **2009**. pp. 543-544. (a 2-page abstract with poster).

18. Hani Bani-Salameh, Clinton Jeffery, **Ziad A. Al-Sharif**, and Iyad Abu Doush. 2008. "Integrating Collaborative Program Development and Debugging within a Virtual Environment." In *Groupware: Design, Implementation, and Use: 14th International Workshop, CRIWG 2008*. Lecture Notes in Computer Science, vol. 5411. Springer-Verlag, *Omaha, NE, USA. September 14-18, 2008*. pp. 107-120.

19. **Ziad Al-Sharif** and Clinton Jeffery, 2006. "Adding High Level VoIP Facilities to the Unicon Language." In *Proceedings of the Third International Conference on Information Technology: New Generations* (ITNG), IEEE Computer Society, April 10 - 12, **2006**, pp.524-529.

20. Clinton Jeffery, Omar El-Khatib, **Ziad Al-Sharif**, and Naomi Martinez, 2005. "Programming Language Support for Collaborative Virtual Environments." In *Proceedings of the International Conference on Computer Animation and Social Agents* (CASA **2005**).

## Dissertations and Theses

1. **Ziad A. Al-Sharif**, "An Extensible Debugging Architecture Based on a Hybrid Debugging Framework," *Ph.D. Dissertation*, Department of Computer Science, University of Idaho, Moscow, ID, 83844. December **2009**.

2. **Ziad A. Al-Sharif**, "A High Level Audio Communications API for the Unicon Language," *Master Thesis*, Department of Computer Science, New Mexico State University, Las Cruces, NM,88001, August **2005**.

## Technical Reports

1. **Ziad A. Al-Sharif**, "Debugging with UDB 2.0: User Guide and Reference Manual."
   *Unicon Technical Report #10b*, http://unicon.org/utr/utr10.html.  December **2009**.

# References

*** References are available upon request ***