

Fadi A. Zaraket

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<http://research-fadi.aub.edu.lb/>

SUMMARY This is an extended CV to apply for promotion to the *non-tenure-track* associate professor rank at the American University of Beirut (AUB).

I have been at AUB since Feb 2009. My research spans the (1) *automated correctness* and (2) *information extraction* areas. I teach programming and computer engineering courses. My PhD is from UT Austin. My Master's and Bachelor's degrees are from AUB. I worked in the industry for a dozen years at IBM, Sun Microsystems, and Santa Cruz Operations.

My application is accessible online at <http://research-fadi.aub.edu.lb/promotion>.

RESEARCH *Automated correctness*

INTERESTS

- model checking programs and logic systems
- correction by construction using synthesis techniques
- specification based testing and coverage metrics
- static and dynamic analysis of computing systems

Information extraction from Arabic and medical documents

- entity and relational entity extraction
- computational linguistics and morphological analysis of Arabic
- cross document analysis

EDUCATION **University of Texas at Austin**, Austin, Texas USA

Ph.D., Electrical & Computer Engineering, Sep. 03–Dec. 07

- Thesis: Program Analysis with Boolean Logic Solvers
- Adviser: Professor Adnan Aziz, received his Ph.D. from Berkeley
- Co-adviser: Professor Sarfraz Khurshid, received his Ph.D. at MIT
- GPA: 4.00

American University of Beirut, Beirut, Lebanon

M.E. (Feb 01), B.E (Oct 92–Jun 96) Comp. & Comm. Engineering

- Thesis: Optimal Fusion and Objective Comparison of Edge Detectors
- Adviser: Professor Adnan Al-Alaoui

BOOK
CHAPTER

- [B1] A. Alawieh, Z. Sabra, A. Nokkari, A. El-Assaad, S. Mondello, **F. A. Zaraket**, B. Fadlallah, and F. H. Kobeissy. “Bioinformatics approach to understanding interacting pathways in neuropsychiatric disorders”. In: *Clinical Bioinformatics*. link: [online](#). Springer-Human Press, 2014.

JOURNALS

J8–J12 under
review

- [J1] K. Fawwaz, **F. A. Zaraket**, W. Masri, and H. Harkous. “PBCOV: a property-based coverage criterion”. In: *Software Quality Journal (SQJ)* (Feb. 2015). link: [online](#).
- [J2] Ali Alawieh, Mohammed Sabra, Zahraa Sabra, Stephen Tomlinson, and **F. A. Zaraket**. “Molecular Architecture of Spinal Cord Injury Protein Interaction Network”. In: *PLOS One* 10 (8 Aug. 2015). F.A.Z. is the corresponding author. links: [online](#), [pdf](#).
- [J3] Ali Alawieh, Mohammed Sabra, Zahraa Sabra, Stephen Tomlinson, and **F. A. Zaraket**. “A Rich-Club Organization in Brain Ischemia Protein Interaction Network”. In: *Scientific reports* (2015). F.A.Z. is the corresponding author. links: [online](#), [pdf](#).

- [J4] A. Alawieh, Zahraa Sabra, Abdul Rahman Bizri, Christopher Davies, Roger White, and **F. A. Zaraket**. “A computational model to monitor and predict trends in bacterial resistance”. In: *Journal of Global Antimicrobial Resistance* (June 2015). F.A.Z. is the corresponding author. link: [online](#).
- [J5] **F. A. Zaraket**, M. Olleik, and A. Yassine. “Skill-based Framework for Optimal Software Project Selection and Resource Allocation”. In: *European Journal of Operational Research (EJOR)* (Apr. 2014). link: [online](#).
- [J6] A. Alawieh, **F. A. Zaraket**, Jian-Liang Li, A. Nokkari, M. Razafsha, B. Fadlallah, S. Mondello, R. Boustany, and F. Kobeissy. “Systems Biology, Bioinformatics and Biomarkers in Neuropsychiatry”. In: *Frontiers Journal in Systems Biology* (2012). review paper. link: [pdf](#).
- [J7] Jad Makhlouta and **F. A. Zaraket**. “Arabic Temporal Entity Extraction using Morphological Analysis”. In: *International journal of computational linguistics and applications* (June 2012). link: [pdf](#).
- [J8] **F. A. Zaraket** and Mohamad Nouredine. “Model Checking Software with First Order Logic Specifications using AIG Solvers”. In: *Transactions on Software Engineering* (2014-). [under review](#) after a “major revision” decision. links: [revised](#), [arxiv](#).
- [J9] Rawad Abou Assi, Wes Masri, and **F. A. Zaraket**. “UCov: A User-Defined Coverage Criterion for Test Case Intent Verification”. In: *Software Testing, Verification and Reliability* (2015-). [under review](#) links: [arxiv](#), [revised](#),
- [J10] **F. A. Zaraket**, Mohamad Jaber, Mohamad Nouredine, and Ylie’s Falcone. “From High-Level Modeling Towards Efficient and Trustworthy Circuits”. In: *Software Tools for Technology Transfer (STTT)* (2015). [under review](#). originally submitted March 2015. link: [arxiv](#).
- [J11] **F. A. Zaraket**, Ameen Jaber, and Jad Makhlouta. “Sarf: Efficient and Application Customizable Arabic Morphological Analyzer”. In: *Natural Language Engineering (NLE)* (2015). [under review](#). revise and resubmit. originally submitted Feb 2015. [pdf](#).
- [J12] **F. A. Zaraket** and Ameen Jaber. “MERF: Morphology-based Entity and Relational Entity Extraction Framework for Arabic”. In: *Language Resources and Evaluation (LRE)* (2014). [under review](#). originally submitted June 2014. [web pdf](#).

CONFERENCES

C17-C20
before AUB

C1-C9
automated
correctness

C10-C14
information
extraction

- [C1] M. Safieddine, **F. A. Zaraket**, R. Kanjand A. Elzein, and W. Rosner. “Methodology for Separation of Design Concerns Using Conservative RTL Flipflop Inference”. In: *DVCon*. link: [pdf](#). San Jose, CA, Mar. 2015.
- [C2] Maya H. Safieddine, Rouwaida Kanj, **F. A. Zaraket**, Ali S. Elzein, and Mohamad Jaber. “Separation of concerns for hardware components of embedded systems in BIP”. In: *International Symposium on Quality Electronic Design, ISQED*. links: [doi](#), [pdf](#). Mar. 2015.
- [C3] S. Bliudze, M. Jaber, M. Nouredine, and **F. A. Zaraket**. “Reduction and Abstraction Techniques for BIP”. In: *Formal Aspects on Component Software (FACS)*. link: [online](#). Bertinoro, Italy, Sept. 2014.
- [C4] P. C. Attie, S. Bensalem, M. Bozga, M. Jaber, J. Sifakis, and **F. A. Zaraket**. “An Abstract Framework for Deadlock Prevention in BIP”. In: *FMOODS/FORTE*. link: [online](#). Florence, Italy, June 2013.
- [C5] E. Shaccour, **F. A. Zaraket**, and W. Masri. “Coverage Specification for Test Case Intent Preservation in Regression Suites”. In: *Regression Workshop, International Conference on Software Testing, Verification and Validation (ICSTW)*. link: [online](#). Mar. 2013.

- [C6] J. Farjo, R. Abou Assi, W. Masri, and **F. A. Zaraket**. “Does Principal Component Analysis Improve Cluster-Based Analysis?” In: *Regression Workshop, International Conference on Software Testing, Verification and Validation (ICSTW)*. link: online. Mar. 2013.
- [C7] **F. A. Zaraket**, W. Masri, M. Adam, D. Hammoud, R. Hamzeh, R. Farhat, E. Khamissi, and J. Noujaim. “GUICOP: Specification-Based GUI Testing”. In: *DEFECTS, International Conference on Software Testing, Verification and Validation (ICSTW)*. link: online. Apr. 2012.
- [C8] W. Masri, R. Abou-Assi, **F. A. Zaraket**, and N. Fatairi. “Enhancing Fault Localization via Multivariate Visualization”. In: *International Conference on Software Testing, Verification and Validation (ICST)*. link: online. Apr. 2012.
- [C9] **F. A. Zaraket**, M. Nouredine, M. Sabra, and A. Jaber. “Portable Parallel Programs using Architecture-aware Libraries”. In: *ACM 27th Symposium on Applied Computing (SAC)*. link: online. Trento, Mar. 2012.
- [C10] Ali Alawieh, Zahraa Sabra, Mohammed Sabra, and **F. A. Zaraket**. “Novel Bioinformatics Approach Reveals Pathogenic Mechanisms in Cerebral Ischemia - A Step towards Pre-clinical Stroke Information Management System”. In: *International Stroke Conference*. Poster session. link: online. Nashville TN, Feb. 2015.
- [C11] **F. A. Zaraket** and Ameen Jaber. “MATAr: Morphology-based Tagger for Arabic”. In: *The 10th ACS/IEEE International conference on computer systems and applications (AICCSA)*. link: pdf. May 2013.
- [C12] **F. A. Zaraket** and Jad Makhoulta. “Arabic Morphological Analyzer with Agglutinative Affix Morphemes and Fusional Concatenation Rules”. In: *COLING 2012: Demonstration Papers*. link: pdf. Dec. 2012.
- [C13] Jad Makhoulta and **F. A. Zaraket**. “Arabic Cross-Document NLP for the Hadith and Biography Literature”. In: *Florida artificial intelligence research society, Applied natural language processing track (FLAIRS-ANLP)*. link: pdf. May 2012.
- [C14] Jad Makhoulta, Hamza Harkous, and **F. A. Zaraket**. “Arabic Entity Graph Extraction using Morphology, Finite State Machines, and Graph Transformations”. In: *13th International Conference on Intelligent Text Processing and Computational Linguistics (CICLing)*. Lecture notes in computer sciences (LNCS). links: doi pdf. Mar. 2012.
- [C15] R. El-Jurdi, G. Sayegh, H. Salami, I. Abou-Faycal, and **F. A. Zaraket**. “Minimum Power Broadcast Trees Subject to Interference”. In: *ISWCS*. link: online. Oct. 2014.
- [C16] S. Batlouni, H. Karaki, **F. A. Zaraket**, and F. A. Karameh. “Mathifier: Speech Recognition of Math Equations”. In: *IEEE International Conference on Electronics Circuits and Systems (ICECS)*. link pdf. Beirut, Dec. 2011.
- [C17] Fadi A. Zaraket, John Pape, Adnan Aziz, Magarida Jacome, and Sarfraz Khurshid. “Global Optimization of Compositional Systems”. In: *Formal Methods in Computer Aided Design (FMCAD)*. link: doi. 2007.
- [C18] **F. A. Zaraket**, Adnan Aziz, and Sarfraz Khurshid. “Sequential circuits for program analysis”. In: *Automated Software Engineering*. link: online. Nov. 2007.
- [C19] Fadi Zaraket, Adnan Aziz, and Sarfraz Khurshid. “Sequential Circuits for Relational Analysis”. In: *International Conference on Software Engineering*. link: online. May 2007.
- [C20] F. Zaraket, J. Baumgartner, and A. Aziz. “Scalable Compositional Minimization via Static Analysis”. In: *Computer-Aided Design*. link: online. Nov. 2005.

PATENTS

P8-P10 before
AUB

- [P1] A. Alawieh, Z. Sabra, and **F. A. Zaraket**. “Literature-based Mining of Proteomics Data Applied to Alzheimers Disease”. Pat. NA. application sent by MUSC in agreement with AUB office of grants and contracts. 2014.
- [P2] A. El-zein and **F. A. Zaraket** — **originating author**. “Co-optimization of embedded systems utilizing symbolic execution”. Pat. 8,234,604. July 2012.
- [P3] J. Baumgartner, A. El-Zein, V. Paruthi, and **F. A. Zaraket** — **originating author**. “Sequential encoding for relational analysis (SERA) of a software model”. Pat. 8,141,048. Mar. 2012.
- [P4] G. Drasny, A. El-Zein, W. Roesner, and **F. A. Zaraket**. “Techniques for modeling variables in subprograms of hardware description language programs”. Pat. 8,140,313. Mar. 2012.
- [P5] J. Baumgartner, H. Mony, V. Paruthi, and **F. A. Zaraket** — **originating author**. “Predicate-based compositional minimization in a verification environment”. Pat. 8,086,429. Dec. 2011.
- [P6] J. Baumgartner, H. Mony, V. Paruthi, and **F. A. Zaraket** — **originating author**. “Predicate selection in bit-level compositional transformations”. Pat. 8,037,085. Oct. 2011.
- [P7] G. Drasny, B. Gabor, A. El-zein, and **F. A. Zaraket** — **originating author**. “Unrolling hardware design generate statements in a source window debugger”. Pat. 7,823,097. Oct. 2010.
- [P8] G. Drasny, B. Gabor, A. El-zein, **F. A. Zaraket**, and H. Sharafeddin. “Method, system, and program product for pre-compile processing of hardware design language (HDL) source files”. Pat. 7,506,287. Mar. 2009.
- [P9] **F. Zaraket** — **originating author**, J. Baumgartner, H. Mony, and V. Paruthi. “Method for predicate-based compositional minimization in a verification environment”. Pat. 7,437,690. Oct. 2008.
- [P10] J. Baumgartner, **F. A. Zaraket**, H. Mony, and V. Paruthi. “Enhanced structural redundancy detection”. Pat. 7,360,181. Apr. 2008.

AWARDS

Farouk Jabre Biomedical Research Award on *Symptom Entity Extraction from Electronic Medical Records*, Feb. 2014.

dbGaP access to the CIDR NINDS International Stroke Genetics Consortium Study for the “Identifying Key Genetic Variations Associated with Disease Risk Using Graph Analysis” project

Linguistic Data Consortium (LDC) Data Scholarship, Feb. 2011

IBM Second Plateau Invention Achievement Award, 2008

IBM Bravo Awards for excellence on performance, 2003, 2005, 2006

IBM First Invention Award, 2006

Dean’s Honor List on July 93, 94, and 96

FUNDS

I was awarded the following research grants.

- Farouk Jabre research award, “Automated Symptom and Diagnosis Detection from Clinical Notes”, 24,000 USD, co-PI Ghassan Hamadeh (AUBMC), April 2014.

- European Union Commission, FP7, “Cooperation with Mediterranean Partners to build Opportunities around Societal And Industrial Challenges of Horizon 2020”, 780,000 Euros for three years, AUB-PI, with Tonny Vellin (Proposal lead PI) and 12 partners, March 2014.
- AUB FEA Dean’s office, “Information Discovery from Clinical Notes using Statistical and Knowledge-based Computational Linguistics”, \$14,000, 2013-2014, with G. Hamadeh and M. Jaber.
- Dar Al handasah: “The Lebanese Outsourcing Potential”, interdisciplinary research, 2 years, \$19,500 per year, in collaboration with A. Yassine
- Lebanese National Council for Scientific Research:
 - “Modeling DNA Repair Mechanism (MMR) for Understanding Defects Missed by MMR Leading to Congenital Heart Disease (CHD)”, Jan 1, Dec 31 2015, LL 8,000. co-PI with A. Asaad and Z. Dawy.
 - “Framework for Assessing Offshore Software Project Selection and Resource Allocation”, Jan 1, Dec 31 2013. LL8,000,000. co-PI with A. Yassine.
 - “Improving Ambiguity of Arabic Morphological Analysis Using Partial Diacritics, Linguistic Morphological Rules, Gloss Tags, and Syntax Tags”, Oct 1,2012-Oct 1, 2013. LL8,000,000.
 - “Relational Queries for Arabic Text Mining”, LL8,000,000 per year. 2 years, December 2009-December 2011. PI.
 - “Opinion Polling in English and Arabic Web Pages”, LL8,000,000 per year. December 2009-December 2010. Co-PI with H. Hajj.
- AUB University Research Board (URB)
 - “Interactive Specification and Implementation Construction”, 2013-2015, \$12,000 (6,000 per year)
 - “Coverage Criteria for Software Programs using Formal Specifications”, 2012-2013, \$6,000
 - “Coverage Criteria for Software Programs using Formal Specifications”, 2012-2013, \$6,000
 - “Encoding Software Programs into Satisfiability Modulo Theory Formulas without Bounds”, 2011-2012, \$6,000
 - “Compositional Minimization Transformation for Software Artificats”, 2010-2011, \$10,000
 - “Program Analysis using Transformation and Decision Algorithms”, 2009-2010, \$7,000

STUDENTS/
RESEARCH
GROUP

My research team currently consists of two PhD students. I supervised and co-supervised the following students and research assistants.

- **Maya Safieddine**, Phd, working on RTL level verification.
coadvisor: R. Kanj.
- **Ameen Jaber**, Phd, 2014-2015 working on computational Arabic.
Leaving to a PhD student position at Purdue with his wife.
Masters, Feb 2014, Arabic information extraction.
- **Dalal Hammoud**, Masters, Sep. 2015, Specification based GUI testing.
Working at a Murex consulting company.
- **Mohamad Sabra**, Masters, August 2015, medical information extraction.
Working at Touch, Lebanon.
- **Christina Abboud**, Masters, June 2013. Adaptive resonance techniques.
coadvisor with F. Karame.
Working at Google, Zurich.

- **Jad Makhoul**, Masters, June 2012. Computational Arabic. Working at Mobilica, Lebanon.
- **Majd Oleik**, Masters, June 2012. The Lebanese software industry. coadviser with A. Yassine. Consultant to Lebanese Petroleum Association.
- **Mohamad Nouredine**, Masters June 2013, Model checking software programs. PhD student at University of Illinois at Urbana Champaign (UIUC).
- **Iman Kawwas**, working on computational Arabic. coadviser with H. Hajj.
- Graduate research assistants
 - **Ali Alawieh**, May 2013–current, IE medical MD-PhD at meMUSC
 - **Zahraa Sabra**, May 2013–current, IE medical PhD at MUSC
 - **Amani Jaber**, September 2013–current, IE medical MD LAU, Resident AUB
 - **Kassem Fawaz**, 2010-2011, Property based coverage PhD at University of Michigan at Ann Arbor (UMICH).
- Undergraduate research assistants
 - **Farah Hariri** , 2012–2014, Specification construction PhD student at University of Illinois at Urbana Champaign (UIUC).
 - **Mohamad Fawaz**, Summer 2013, Behaviors and specifications PhD student at University of Toronto.
 - **Rafah Al-Khatib** , 2012-2013, C to Satisfiability Modulo Theory Translation PhD student at École Polytechnique Fédérale de Lausanne (EPFL).
 - **Hamza Harkous**, 2009–2010, Arabic morphological analysis PhD student at École Polytechnique Fédérale de Lausanne (EPFL).

COURSES

The schedule below details the courses I taught at AUB. EECE-501/502 are senior project courses. EECE798 and EECE796 are special topic and project courses, respectively. EECE635, EECE798E, and EECE796 are given in tutorial mode.

Semester	Course Title	Students
Spring 09	EECE-432 <i>Operating Systems</i>	48
	EECE-636 <i>Logic Synthesis & Verification</i>	2
Fall 09	EECE-330 <i>Data Structures & Algorithms</i>	36
	EECE-637 <i>Advanced Programming Practices</i>	7
	EECE-501 <i>Final Year Project</i>	12
Spring 10	EECE-432 <i>Operating Systems</i>	31
	EECE-636 <i>Logic Synthesis & Verification</i>	6
	EECE-502 <i>Final Year Project</i>	12
	EECE-635 <i>Introduction to Computational Arabic</i>	4
Fall 10	EECE-330 <i>Data Structures & Algorithms</i>	27
	EECE-637 <i>Advanced Programming Practices</i>	24
	EECE-501 <i>Final Year Project</i>	15
Spring 11	EECE-432 <i>Operating Systems</i>	52
	EECE-636 <i>Logic Synthesis & Verification</i>	6
	EECE-635 <i>Introduction to Computational Arabic</i>	2
	EECE-502 <i>Final Year Project</i>	15

Semester	Course Title	Students
Summer11	EECE-796 <i>LTL Synthesis using Auxiliary Variables</i>	2
Fall11	EECE-501 <i>Final Year Project</i>	6
	EECE-798E <i>Advanced NLP</i>	1
Spring 12	EECE-230 <i>Introduction to Programming</i>	23
	EECE-432 <i>Operating Systems</i>	22
	EECE-636 <i>Logic Synthesis & Verification</i>	9
	EECE-798E <i>Advanced NLP</i>	1
	EECE-502 <i>Final Year Project</i>	6
Fall 12	EECE-230 <i>Introduction to Programming</i>	34
	EECE-330 <i>Data Structures & Algorithms</i>	20
	EECE-637 <i>Advanced Programming Practices</i>	7
	EECE-501 <i>Final Year Project</i>	9
Spring 13	EECE-230 <i>Introduction to Programming</i>	28
	EECE-432 <i>Operating Systems</i>	23
	EECE-502 <i>Final Year Project</i>	9
Fall 13	EECE-230 <i>Introduction to Programming</i>	43
	EECE-330 <i>Data Structures & Algorithms</i>	34
	EECE-501 <i>Final Year Project</i>	9
Spring 14	EECE-636 <i>Logic Synthesis & Verification</i>	10
	EECE-432 <i>Operating Systems</i>	23
	EECE-502 <i>Final Year Project</i>	9
Fall14	EECE-231 <i>Programming C++ & Matlab</i>	32
	EECE-501 <i>Final Year Project</i>	6
Spring 14	EECE-502 <i>Final Year Project</i>	6

FINAL YEAR PROJECTS I supervised the following final year projects.

2009-2010	AUBSarf: Arabic morphological analyzer, creative achievement award
	Nabbish: thumbnail extractor for content based image search
	Automated financial trading
	McAPoCo: Multi-core aware portable code
2010-2011	Portable Parallel Programming, best poster award
	Mathifier: speech recognition for math equations, creative achievement award
	Content based image search
	Strategy diversification trading robot , best paper award at the FEA student conference
	Rule-based automated debugging of software
2011-2012	Make my program work
	Visualization of Software Coverage
2012-2013	Recognition of the Lebanese sign language
	On network optimizations
	Clinical wizard
2013-2014	Secure Journalism
	eNeighborhood Digital Flow Fingerprint
	Energy Management System
2014-2015	SchoolMan: a Scholastic Information Management System creative achievement award
	Motion-based Music Composition Tool

UNDERGRADUATE RESEARCH

In addition, I also supervised the following students in their undergraduate research courses.

Joseph Mourad: Logic Construction From Type Theory

Maurice Abou Jaoudeh: Medical Natural Language Processing
AbdulRahman AlHamali: Arabic Temporal Normalization
Hadi Kobeissi: Protocol Faults and Static Analysis

TALKS

- Invited to visit the US Office of Naval Research (ONR) Global in London, UK, on Friday, 30 October, 2015. “Information extraction of protein protein networks related to traumatic brain injury”.
US Department of Defense.
- “Natural Language Processing at the American University of Beirut,” Sussex Informatics NLCL, Sussex University, United Kingdom, August 2013.
- “Program Analysis and Logic Solvers,” Lab for Automated Reasoning and Analysis (LARA), Ecole Polytechnique Federal de Lausanne (EPFL), Switzerland, Sep. 2010.
- “Sequential Logic Solvers for the Analysis of Imperative and Declarative Programs,” Centre of Research in Computing, Open University, Melton Keynes, United Kingdom, July 2008.
- “Software Verification and Sequential Circuit Solver,” University of Cambridge Research Lab, Microsoft Research, United Kingdom, Jun 2008.
- “Finite Models of Theories in Relational Logic,” ACL2 Theorem Proving Seminar Series, UT Austin, July 2006.

OTHER
PROPOSALS
NOT AWARDED

The granted and awarded proposals are listed are in the “Fund”s Section. The following applications were not awarded.

- National Instruments (NI) Academic Research Grant, “CTLV: An Approach and Tool for Concolic Testing of LabView”, with W. Masri, 2 years,
- National Institute of Health (NIH), R01 Grant, “Extracting Connectomics from Literature Using Image and Natural Language Processing Techniques”, \$750,000 2014-2016, with Antonietta Lavin (MUSC).
- Fraouk Jabre research award, “Noninvasive Monitoring and Diagnosis of Physiologic Disturbances in Term and Preterm Newborns Using Video Analysis Techniques”, 2014-2015, \$24,000, co-PI with L. Charafeddine, and H. Sharafedin.
- Fraouk Jabre research award, “Hybrid Computational Models for Predicting and Analysing Bacteria Resistance”, 2013-2014, \$24,000, co-PI with A. R. el-Bizri.
- **L’Accord de Coopération pour l’évaluation et le Développement de la Recherche (C.E.D.R.E).** *Framework to prevent deadlock for large distributed compositional systems.* (“Un cadre abstrait pour la prévention des blocages dans des systèmes distribués base de composants”) with Sadek Bensalem: University of Joseph Fourier, Grenoble, France, Joseph Sifakis: founder of the Verimag Laboratory, Grenoble, France, Marius Bozga: research engineer at CNRS and member of the Verimag Laboratory, Paul Attie: associate professor, computer science, AUB, and Mohammad Jaber: assistant professor, computer science, AUB.
- **Qatar National Foundation:** “Relational Arabic Text Mining Framework using Morphological and Case-based Analysis”, \$340,000 per year, in collaboration with Qatar University — not awarded
- **Qatar National Foundation:** “Arabic text mining framework”, 3 years, \$340,000 per year, in collaboration with Qatar University — not awarded

- **The Arab Science and Technology Foundation (ASTF):** “Hadithopedia: comprehensive hadith authenticity encyclopedia”, 2 years, \$45,000 per year — not awarded
- **Regional Microsoft PhD Fellowship:** “Transformation based verification framework for software systems”, 3 years, \$22,000 year— not awarded
- **Google Research Awards, Feb 2011:** “Automated User Goal Detection through Model Inference”, 2 years, \$ 37,500 per year — not awarded.

SERVICE

- Department
 - Member, ECE Adhoc committee exploring a software engineering program, 2015-current
 - Member, ECE Ad-hoc Software committee, 2009-present
 - Academic Advisor, 2009-present
 - Member, ECE Graduate Student committee, 2012-2013, 2014-current
 - EECE seminar, Feb 2012-Sep 2014
 - Member, ECE Undergraduate Student committee, 2009-2011, 2013-2014
 - Proposed a minor in computational systems for non-ECE engineering students, Fall 2013
 - Organized a tech talk at AUB for Facebook university recruiting, Oct 2011
 - Secretary, 2010-2011
 - Member, ECE Summer internship committee, September 2009
 - Prepared and delivered the software lecture in the EECE 200 course in Fall 2010, 2011, 2012, and 2013.
- Faculty:
 - Adhoc committee on Entrepreneurship and Software Start-up
 - FEA Student conference reviewer
 - Member, extended Biomedical PhD Program committee
 - Represented AUB at the Eleventh LIRA conference 2014 with a candidate project.
- University:
 - Member, Computational science graduate programs, 2009-present
 - Member, Healthcare Leadership Academy-Information Technology training committee, Spring 2014
 - Represented AUB at the Arabic Open Source Tools UNESCO Workshop, February 2009.
 - Member of jury, AUBMC Biomedical research day, Feb 2014
 - FEA Faculty Observer, SRC Elections 09-current
 - Served on a dozen Masters thesis committees in ECE and CMPS
- Faculty and university IT initiatives
 - Upon joining AUB, I drafted an initiative with recommendations to the FEA-IT department to improve IT services for AUB professors at large. The initiative led to several improvements across AUB. Spring-Fall 2009.
 - Found and reported important security issues with AUB banner system that may compromise the grading system. Fall 2014.
 - Provided consultancy with recommendations to the IT committee that worked on resolving the reported AUB banner problem. Fall 2014.
 - Proposed and contributed with an FYP group several additional functionalities to the AUB Banner system that simplify schedule construction for students, registration bottlenecks for IT, and grade submission for professors. Some of the functionalities are being adopted in the system.

- Community and Profession

Program committee, International Conference on Software Testing, Verification and Validation (ICST 2016).

Organizing the first Arab Big Data Initiative, Aug 28-29, 2015, AUB, Beirut Lebanon. A MOSAIC-FP7 project activity.

Big data and health session chair, the first Arab big data initiative, Aug 28-29, 2015, Beirut Lebanon. A MOSAIC-FP7 project activity.

Reviewed papers at different IEEE/ACM journals and conferences on hardware and software verification (FSE, ICST, ISSRE, SAC, ICCAD, DAC, HRL, CHARME, DTC, WODA, TAICPART, ICCD, HVC, FMCAD, ASE, TLPL, VMCAI, JSS, TCAD), and information extraction (Frontiers, PlosOne, Frontiers, PlosOne, IJSWIS).

Reviewed Research Proposals for AUB University Research Board, and for the Lebanese National Council for Scientific Research.

Reviewed Research Proposals for Lebanese National Council for Scientific Research.

Reviewed Research Proposals for “Programme CEDRE”, Lebanese ministry of education and higher education.

Member, IBM Academic Initiative, 2012-current.

Elected Member of the University Student Faculty Council (USFC) at AUB 1997-1998

Elected Student Representative for the Faculty of Engineering and Architecture Students Representative Committee 1997

Elected Student Representative in the Engineering and Architecture Faculty Admission Committee 1997

Elected Student Representative in the University Scholarship Committee 1997

OPEN SOURCE PROJECTS. I provide most of the products and the corresponding source code that come out of our research in information extraction and automated correctness as open source products published on my webpage as well as public software repositories such as google code, bitbucket, and github. We provide information and maintenance services when possible in response to questions and requests. The latest information show dozens of downloads. We also receive more than a dozen feature requests and bug reports per year.

PROFESSIONAL EXPERIENCE

IBM Corporation , Austin, Texas USA, June 2001—Dec 2008

Lead of logic debug and structural verification tools

- Re-architected and optimized tools to handle real time data and interactive debug.
- Added new functionalities to the tools, many of which were patented as IBM inventions.
- The team works closely with tool users in an eXtreme Programming environment where users highly contribute to the design and fix process.

- I lead the XScope team. XScope is a logic visualization tool that offers an integrated debug environment for hardware logic designs. It is a multi-threaded and multi-processed application and uses many technologies such as C/C++, QT, and STL.
- I also lead the structural verification team. The team owns a suite of structural tools (Nemo, Arctic, and LockStep) that enable asynchronous verification within the IBM verification methodology. Member of the SixthSense team
- SixthSense is an IBM inhouse transformation-based verification framework used for (semi-)formal verification and sequential equivalence checking. I design and develop reduction and decision techniques and embed them into SixthSense

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Softdomain Incorporated, Piscataway, New Jersey USA, Apr. 1999—Jun. 2001

Senior software engineer

- Co-invented, designed and implemented Infowiz (www.infowiz.com) This is a multi-platform, multi-threaded message/execute framework that accepts realtime messages/commands on several data ports (SMS, POP3, SMTP, HTTP, IM, etc) and responds in kind in real time. (C/C++, POSIX, TCP/IP, Perl)
- I designed and built multi-platform and multi-threaded software packages that included kernel device drivers, dynamic web-based communication utilities, database and GUI interfaces using C/C++, Java, STL, TCP/IP, SQL, QT, and gtk++.

Sun Microsystems Incorporated, Piscataway, New Jersey USA, May 2001—Jun. 2001

I worked as a system level troubleshooting engineer for the BMG Music royalty system that featured technologies such as Sybase, SQL stored procedures, COBOL, cshell, and HP Unix.

Sun Microsystems Incorporated, Piscataway, New Jersey USA, Feb. 2000—Feb. 2001

I led the Sun Microsystems team that ported the AT&T Billing System (CADM) from HP/UX to Sun Solaris 2.6.

NetSilica Incorporated, Piscataway, New Jersey USA, Sep. 2000—Dec. 2000

I helped design and integrate a full portal system that offers internet disk space along with personalized web desktop for NetSilica. The project work involved technologies such as Visual C++, COM/DCOM, TCP/IP, Java servlets, Java applets, Windows shell programming, and Windows application programming.

Santa Cruz Operations Incorporated, New Providence, New Jersey, May 1999—Feb. 2000

I designed and implemented a new feature in SCO-Unixware 7.1 called world wide naming (WWN) or unique disk identifier. The module was released in the 7.1 kernel.

Sadess Technologies Incorporated, Beirut, Lebanon, Oct. 1998—Apr. 1999

Software Engineer Program Manager

- I was the main architect and programmer of Visual Floor (VF), an add-on CAD library/module to AutoCAD. VF uses AutoCAD functionality to help design and analyze concrete and steel structures from a floor map. Work involved technologies such as Windows NT, VC++, ARX, MFC, and ADO.

American University of Beirut, Beirut, Lebanon, Jun. 1996—Jul. 1998

Teaching assistant, network administrator, researching programmer

- I assisted teaching and taught lab sessions for digital signal and image processing and digital communication courses. I also taught computer literacy courses and C/C++ programming labs.
- I worked on developing arabization modules for windows such as a generic arabized edit box (Yaraah) and an Arabic enabled web browser (Fanous).

TECHNICAL
SKILLS

OS: Android, AIX, HP, Solaris, Linux, Windows
Languages: C/C++, PERL, JAVA, SQL
Methodologies: OOP/OOD, Design patterns, Aspects, Design by Contract
Middleware: STL, Qt, Motif, CORBA, ADO, ODBC, COM/DCOM, SDK, JFC, MFC
Internet: UNIX and Windows web and proxy server, Java Applets, JavaScript, CGI, ActiveX, TCP/IP
Applications: T_EX, L_AT_EX, B_IB_TE_X, Microsoft Office, Lotus SmartSuite, and common productivity packages
Tools: Vim/Emacs and command line UNIX development tools, Visual Age, GNU Make, Visual Studio, Clearcase, CMVC, Eclipse, Sun Workshop, MATLAB, MATLAB toolboxes, Simulink

MISCELLANEOUS

Languages: Read, write and speak Arabic, English, and French
Interests: Soccer, Chess, literature and poetry, write Arabic poetry and short stories