Curriculum Vitae

Ali Mili
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Ying Wu College of Computing, New Jersey Inst of Technology
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Research Interests

- *Absolute Correctness and Relative Correctness.* Criteria for Relative Correctness. Definitions of Relative Correctness. Projecting Programs on Specifications. Applications of Relative Correctness. Program Repair.
- *Software Testing.* Mutation Testing. Mutant Equivalence. Redundancy, the Mutant's Elixir of Immortality.
- *Invariant Relations.* Computing Program Functions. Deriving Loop Functions and Loop Invariants using Invariant Relations.
- *System Dependability.* Cybersecurity. Quantitative security attributes. Measuring dependability.
- *Formal Methods in Software Engineering.* Requirements Engineering. Requirements Specifications. Verification and Validation. Analysis of iterative programs.

Education

Academic Education

- October 1985: **Doctorat ès-Sciences d'Etat** in *Computer Science* at the National Polytechnic Institute, *Université Joseph Fourier de Grenoble*, France. Advisor: Professor Gabrielle Saucier. Topic: Specification, Verification and Design of software. Honours: *Très Honorable.*
- May 1981: **PhD** in *Computer Science* from the *University of Illinois at Urbana Champaign.* Advisor: Professor Gernot Metze. Topic: Program Verification and Fault Tolerance. GPA=4.8.
- June 1978: **Doctorat de Troisieme Cycle** in *Computer Science* at the National Polytechnic Institute, *Université Joseph Fourier de Grenoble*, France. Advisor: Professor Gabrielle Saucier. Topic: Computer Architecture and Fault Tolerant Computing. Honors: *Très Honorable.*

- June 1977: **Diplome d'Etudes Approfondies** (Master) in *Computer Science* at the National Polytechnic Institute, *Université Joseph Fourier de Grenoble*, France. Advisor: Professor Gabrielle Saucier. Topic: Testability Measures. Honors: *Assez Bien*.
- June 1976: **Maitrise** (Bachelor) in *Computer Science* at the *Université Scientifique et Médicale de Grenoble*, France. Specialty: Computer Architecture, Applied Mathematics and Operations Research. Honors: *Bien*.
- June 1974: **Diplome Universitaire d'Etudes Scientifiques** at the Scientific College of Perpignan, **Academy of Montpellier**, France. Specialty: *Mathematics, Physics*. Honors: *Bien*.
- June 1973: **Pre-Engineering** at the *National Engineering School of Tunis* (ENIT), Tunisia. Specialty: *Mathematics*, *Physics and Chemistry*. Honors: *Bien*.

Professional Experience

- Starting September 1st, 2001: *Professor* of Computer Science at **New Jersey Institute of Technology** (http://www.njit.edu/), Newark, NJ. Also:
  - Starting July 1st, 2023: *Interim Dean*, Ying Wu College of Computing at NJIT, Newark, NJ.
  - Starting August 1st, 2020: *Part Time Faculty Member*, *National Pilot School of Software*, Harbin Institute of Technology, Harbin, China.
  - July 1st, 2018 to June 30, 2023: *Associate Dean for Academics*, Ying Wu College of Computing at NJIT, Newark, NJ.
  - 2015-2018: *Program Director*, CS PhD Program at NJIT, Newark, NJ.
  - Feb-August 2017: *Visiting Scientist*, **National Institute of Informatics, Tokyo, Japan**. Host: Dr Zhenjiang Hu.
  - 2001-2011: *Faculty Member*, Graduate School, **Rutgers University** (http://newark.rutgers.edu/), Newark, NJ.
  - 2005-2006: *Visiting Scientist*, the Software Engineering Institute, **Carnegie Mellon University** (http://sei.cmu.edu/), Pittsburgh, PA. Participation in two projects: *Ultra Large Scale Systems*, a one-year study of future trends in software engineering; host, Dr Linda Northrop. *Functional Extraction*, a project to automatically compute loop functions; host, Dr Richard Linger.
  - Summer 2005: *Summer Faculty Guest*, **Oak Ridge National Laboratory** (http://www.ornl.gov/), Oak Ridge, TN. Work on Cybersecurity; host, Dr Frederick T. Sheldon.
- July 1st, 1997 to August 31st, 2001: *Professor* of Computer Science at **West Virginia University** (http://www.wvu.edu/). Also,
  - *Site Director*, West Virginia University Site, **Software Engineering Research Center** (http://www.serc.net/), an NSF-funded initiative (IUCRC program).

  - *Senior Scientist*, the **Institute for Software Research** (http://www.isr.us/); was hired to launch this research institute on behalf of West Virginia University.

- July 1st, 1991 to June 30, 1997: **University of Ottawa** (http://site.uottawa.ca/), Ottawa, Canada. Hired as Associate Professor, 1991. Promoted to Full Professor, 1993. Tenured, 1994. Also, elected member of DTPC (Departmental Teaching Personnel Committee) in April 1993.

- October 1st, 1984 to June 30, 1991: **University of Tunis** (http://www.fst.rnu.tn/), Tunis, Tunisia. Hired as *Maitre de Conférences* (Associate Professor). Tenured, 1986. Promoted to Full Professor, 1989. Also,

  - 1987-1991: Chairman of the computer science department of the University of Tunis (elected position).

- June 1982 through October 1984: Assistant Professor, **Laval University** (http://www.ulaval.ca/) in Quebec City, Quebec, Canada. Also,

  - *Part Time Lecturer*, **McGill University**, Montreal, Canada

- June 1981 through June 1982: *Visiting Assistant Professor* of computer science at **Texas A&M University** (http://www.tamu.edu/).

Auxiliary and Consulting Positions

This section lists limited term positions, part time positions and consulting assignments I have taken in addition to my regular positions listed above.

- 2018: *Guest Participant, HS Bremen International Week 2018*, **Hochschule Bremen**, Bremen, Germany. Duties: teach an intensive course, supervise prospective guest students.

- 2017: *Visiting Scientist*, **National Institute for Informatics**, Tokyo, Japan. Duties: Software Engineering Research, participation in host team's scholarly activities.

- 2012: *GastProfessor*, **Alpen Adria Universitaet**, Klagenfurt, Austria. June 2012. Duties: teaching an intensive course on software quality and testing.

- 2010: **Guest lecturer**, through distance learning, *Islamic University of Gaza*, Gaza City. Palestine.

- 2009: **Guest Lecturer**, through distance learning, *Palestine Polytechnic University*, Hebron, Nablus. Palestine.

- 2005, 2006: **Visiting Scientist**, the Software Engineering Institute, Carnegie Mellon University, Pittsburgh, PA.

- 2005: **Visiting Faculty**, Oak Ridge National Laboratory, Oak Ridge, TN.

- 1997-2000: **Principal Research Scientist**, the Institute for Software Research, Fairmont, WV.

- April 1999: **Guest Professor**, *King Fahd University of Petroleum and Minerals*, Dhahran, Saudi Arabia. Duties include advising on curriculum and research plans.
- April 1999: **GastProfessor**, *Universität Bildungwissenscahften Klagenfurt*, Klagenfurt, Austria. Duties include teaching a graduate level course on Software Reuse.
- January 1997: **GastProfessor**, *Universität Bildungwissenscahften Klagenfurt*, Klagenfurt, Austria. Duties include teaching a graduate level course on Software Specification and Verification.
- Winter 1997: **Part Time Lecturer**, *Consortium for Graduate Education in Software Engineering*, an Ontario-wide initiative of IBM Canada and Bell Northern Research. Duties include teaching a graduate level course on program specification and verification to professional employees of IBM and Bell Northern Research.
- May 1996: **GastProfessor**, *Universität Bildungwissenscahften Klagenfurt*, Klagenfurt, Austria. Duties include teaching a graduate level course on program construction and fault tolerance.
- October 1995 to May 1996: **Visiting Professor**, *University of Texas at Arlington*. Duties include teaching graduate and undergraduate courses and some committee assignments. Position could not be renewed because of unforeseen budget restrictions.
- Fall 1994: **Part Time Lecturer**, *Consortium for Graduate Education in Software Engineering*, an Ontario-wide initiative of IBM Canada and Bell Northern Research. Duties include teaching a graduate level course on program specification and verification to professional employees of IBM and Bell Northern Research.
- Fall 1993: **Part Time Lecturer**, *The Institute for Government Informatics Professionals*, a federal government initiative. Duties include teaching a senior-level course on program construction to federal government professionals.
- Spring 1992: **GastProfessor**, *Universität Klagenfurt*, Austria. Teaching a course on program verification.
- Winter and Fall 1992: **Part Time Lecturer**, *Bell Northern Research*. Duties include teaching undergraduate level courses to computer professionals from Bell Northern Research.
- July 1st 1990 to June 30th, 1991: **Consultant**, for the Tunisian Ministry of Higher Education and Scientific Research, Tunis. Mission: Design a nationwide program for the introduction of computers in higher education, and negociate aspects of this program with World Bank officials.
- Spring 1991: **GastProfessor**, *Universität Klagenfurt*, Austria. Teaching a course on program fault tolerance.
- Spring 1990: **GastProfessor**, *Universität Klagenfurt*, Austria. Teaching a course on heuristics for program construction.
- July 1st to November 30th, 1989: **Visiting Senior Lecturer**, computer science department, *University of Queensland*, St Lucia, Qld. Australia.

- Spring 1989: **GastProfessor**, *Universität Klagenfurt*, Austria. Teaching a course on system fault tolerance.
- January 1989: **Professeur Invité**: *Université des Sciences et Techniques Houari Boumediene*, Algiers, Algeria. Teaching a course on software specifications.
- December 1988: **Professeur Invité**, *Université d'Oran Es-Senia*, Oran, Algeria. Teaching a course on software specifications.
- January 1988: **Professeur Invité**, *Université d'Oran Es-Senia*, Oran, Algeria. Teaching a course on software project management.
- March 15 through April 12 1987: **Professeur Invité**, in the department of computer science of *Laval University*, Québec, Canada. Teaching a graduate-level course on program validation.
- July 1st to August 31 1986: **Visiting Lecturer** in the computer science department of the *University of Adelaide*, Australia.
- September 1st, 1985 to December 18, 1985: **Guest Lecturer**, computer science department, *Fudan University* in Shanghai, China. Duties include teaching a graduate level course on programming methodology.
- January 1983 to June 1984: **Auxiliary Assistant Professor** at the School of Computer Science of *McGill University*, Montreal, Quebec.
- December 1980 through June 1981: **Principal Research Scientist** at the Corporate Computer Sciences Center of *Honeywell Inc.* in Minneapolis, Minnesota.
- January 1979 through December 1980: **Research Assistant** at the Coordinated Science Laboratory, *University of Illinois*, Urbana, IL.
- September 1977 through June 1978: **Research Contractor** with the *Délégation Générale pour la Recherche Scientifique et Technique* in Paris, France.
- January 1978 through June 1978: **Teaching Assistant** in logic design and computer architecture at the graduate level in a business school of the *University of Grenoble*, France.
- November 1977 through December 1977 (part-time): **Technical Consultant** in computer science with a shopping mall in *Grand'Place*, Grenoble, France.
- September 1976 through June 1977: **Research Assistant** at the *National Polytechnic Institute of Grenoble*.

Publications

Books

12. *Chinese Translation of Testing Book* cited below. Published in 2017.

11. *Software Quality and Testing*, with F. Tchier. John Wiley and Sons, June 2015. ISBN: 978-1-118-66287-8.

10. *Data Strctures: A Software Engineering Approach —An Arabic Textbook*, with Fairouz Tchier. Phillips Publishing. 2010.

9. *Introduction to Programming with Java —An Arabic Textbook*, with Ahmed Ferchichi. Phillips Publishing, 2009.

8. *Discrete Mathematics and Logic —An Arabic Textbook*, with Lamia Labed. Phillips Publishing. 2006.

7. *Software Engineering: Technical, Organizational and Managerial Aspects —An Arabic Textbook*, with Hany H. Ammar. Phillips Publishing. 2006.

6. *Reuse-Based Software Engineering: Components, Organization, and Metrics*, with H. Mili Sh. Yacoub and E. Addy. John Wiley and Sons, 2002. ISBN: 978-0-471-39819-6.

5. Chinese translation of Reuse Book, cited above, published in 2003.

4. *Program Construction: A Heuristic Relational Approach.* Co-authored with Fatma Mili (Purdue University) and Jules Desharnais (Laval University). **Oxford University Press**, New York, NY. June 1994.

3. *An Introduction to Program Fault Tolerance: A Structured Programming Approach.* **Prentice Hall Inc**, New York, NY and London, UK. 1990.

2. *Towards a Discipline of Structured Specifying.* Co-authored with N. Boudriga (University of Tunis) and F. Mili (Oakland University). **Ellis Horwood, Ltd**, Chichester, UK, 1989.

1. *An Introduction to Formal Program Verification.* **Van Nostrand Reinhold**, New York. 1984.

Contributions to Books

16. *Mutant Subsumption: Basic, Strict and Broad*, with Amani Ayad, Samia Al Balawi, Imen Marsit, and JiMeng Loh. In **Software Technologies**. M van Sinderen and L.A. Maciaszek, Editors. Springer Verlag, 2023.

15. *Quantitative Analysis of Mutant Equivalence.* with Amani Ayad, Imen Marsit, Nazih Mohamed Omri and JiMeng Loh. In **Software Technologies**. M van Sinderen and L.A. Maciaszek, Editors. Springer Verlag, 2020.

14. *Using Semantic Metrics to Predict Mutation Equivalence*, with Amani Ayad, Imen Marsit, Nazih Mohamed Omri and JiMeng Loh. In **Communications in Computers and Information Sciences** series. Springer Verlag, 2019.

13. *Testing Software Product Lines*, with S. Tawfig. In **Innovative Quality Assurance Techniques in Software Product Lines**. Abdelrahman El Faki and Duan YuCong, editors. IGI Global Publishers, 2014.

12. *Towards the Verification and Validation of On-Line Learning Adaptive Systems*, with B. Cukic, Y. Liu, and R. Ben Ayed. In **Computational Methods in Software Engineering**. T. Khoshghoftaar, editor. Kluwer Scientific Publishing, 2003.

11. *Lattice Based Distances*, with H. Ammari. *Relational Methods in Computer Science*. J. Desharnais, M. Frappier, and W. McCauley, editors. **Methodos Publishers**, 2001.

10. *Interpretation of Tabular Expressions Using Arrays of Relations*, with J. Desharnais and R. Khedhri. *Relational Methods in Computer Science*, E. Orlowska, editor. Springer Verlag, 2000.

9. *Report on: Precise Description and Specification of Software*. In: *The Parnas Papers*. D.M. Weiss and D. Hoffman, editors. John Wiley and Sons, 2000.

8. *Software Libraries*, co-authored with S. Atkinson. In: *Encyclopedia of Electrical and Electronic Engineering*. John Webster, editor. John Wiley and Sons, 1999.

7. *A Calculus of Program Transformations and Its Applications*, with R. Ben Ayed, J. Desharnais and M. Frappier. *Lecture Notes in Computer Science*. Springer Verlag, 1999.

6. *State Transition Diagrams*. In: *Handbook of Information Systems Architecture*. P. Bernus, editor. **Springer Verlag**, New York, NY, 1998.

5. *Demonic Relational Semantics of Programs*, with J. Desharnais. In: *Relations in Computer Science*. G. Schmidt, editor. **Springer Verlag**, Berlin, January 1997.

4. *Semantics of Concurrency*, with J. Desharnais, R. Mili, J. Mullins, and Y. Slimani. In: *Handbook of Parallel and Distributed Computing*. Albert Zomaya, editor. **McGraw Hill**, New York, NY, 1996.

3. *Economics of Software Project Management: Basic TUCOMO*, with R. Marwane. In: *The Economics of Information Systems and Technology*. Richard Veryard, editor. **Butterworth Ltd**, London, 1990.

2. *Using Knowledge to Understand Natural Language*, with Chafia Mankai. In: *Informatique Cognitive des Organisations*. Bernard Moulin (editor). **Dunod**, Paris, 1989.

1. *Requirements Engineering Environments*. Yutaka Ohno (editor). **North-Holland Publishing,** Amsterdam, 1982.

Editorships

7. Co-editor, with Kamel Barkaoui, Hanifa Bouncheneb and Sofiene Tahar. *Proceedings, VeCOS 2017*. Montreal, Quebec, August 2017. **Springer** LNCS 10466.

6. Co-editor, with Frederick Sheldon and Joe Trien. *Proceedings, Cyber Security and Information Assurance Workshop*. Oak Ridge, TN, May 2006.

5. Co-guest editor, with K. Barkaoui and M. Jmaiel. *Journal of Systems and Software*, Special Issue on the software track of ACIDCA 2000 (Monastir, Tunisia, March 2000). Fall 2001.

4. Co-guest editor, with Professor J. Zupancic, *Journal of Systems and Software.* Special Issue on Information Systems Design. 1996.

3. Co-guest Editor, with Professor Jean-Pierre Finance, *Journal of Systems and Software: Special Issue on The Role of Languages in Programming.* Published by **North Holland**, June 1990.

2. *Proceedings, Tenth Tunisian French Seminar of Computer Science.* Co editor with Jean Pierre Finance. Published by the **University of Tunis**, 1989.

1. *Workshop Notes, the International Workshop on Models and Languages for Software Specification and Design.* Co-editor with Robert Babb. Published by **Laval University**. 1984.

Dissertations

4. *Une Approche Relationnelle à la Programmation.* Dissertation of **Doctorat ès-Sciences d'Etat**, University of Grenoble and National Polytechnic Institute of Grenoble. Defended October 1985.

3. *Self-Checking Programs: An Axiomatic Approach to the Validation of Programs by the Use of Executable Assertions.* **PhD** Dissertation, Department of Computer Science, University of Illinois at Urbana Champaign. Defended December 1980.

2. *Outils d'Aide a la Decision Dans le Test de Systemes Logiques.* Dissertation of **Doctorat De Troisieme Cycle**, National Polytechnic Institute of Grenoble, France. Defended June 1978.

1. *Application de Techniques Mathématiques à la détermination de Stratégies de Test.* Dissertation of **Diplome d'Etudes Approfondies**, Génie Informatique, National Polytechnic Institute of Grenoble, France. Defended June 1977.

Journals

77. *On The Persistent Rumors of the Programmer's Imminent Demise*, with H. Mohammadi, W. Ghardallou and Elijah Brick. **Journal of Software and Systems Modeling**. 2023.

76. *Towards a Theory of Program Repair*, with Besma Khaireddine, Aleksandr Zakharchenko, and Mathias Martinez. **Acta Informatica**, 2023.

75. *The Ratio of Equivalent Mutants: A Key to Analyzing Mutation Equivalence*, with Imen Marsit, Amani Ayad, David Kim, Monsour Latif, JiMeng Loh, Med Nazih Omri. **Journal of Systems and Software**. 2021.

74. *Differentiators and Detectors.* **Information Processing Letters**. 2021.

73. *Correctness Enhancement: A Pervasive Software Engineering Paradigm*, with Besma Khaireddine, Marwa Ben AndelAli, Lamia Labed Jilani, and Aleksandr Zakharchenko. **IJCCBS**, vol 10, No 1, pages 37-73, 2020.

72. *Convergence: Integrating Termination and Abort-Freedom*, with Nafi Diallo, Wided Ghardallou, and Jules Desharnais. **Journal of Logical and Algebraic Methods in Programming**. Volume 97, pages 1-29. February 2018.

71. *What is a Fault? and Why does It Matter?*, with M. Frias, J. Desharnais, W. Ghardallou and N. Diallo. **Innovations in Systems and Software Engineering**, Springer Verlag, 13(2-3), pages 219-239, 2017.

70. *Projecting Programs on Specifications: Implications and Applications.* Accepted pending minor revisions. Science of Computer Programming. Volume 138, pages 26-48, 2017.

69. *Programming Language Use in Academia and Industry*, with L. Ben Arfa and B. Cohen. **Informatics in Education**. To appear, 2015.

68. *Putting Engineering into Software Engineering Education*, with F. Tchier and L. Ben Arfa. **Computers in Human Behavior**, Volume 48, pages 245-254, 2015.

67. *Semantic Metrics for Software Products*, with A. Jaoua, M. Frias, and R. Helali. **Innovations in Systems and Software Engineering: A NASA Journal**. Volume 10, Number 3, pages 203-217, 2014.

66. *Verifying Loops with Invariant Relations*, with A. Louhichi, W. Ghardallou, Kh. Bsaies, L. Labed Jilani, O. Mraihi and A. Mili. **International Journal of Critical Computer Based Systems**. Volume 5, Nos 1,2. Pages 78-102, 2014.

65. *A Cybersecurity Model in Cloud Computing Environments*, with Latifa Ben Arfa, Mouna Jouini, Anis Ben Aissa. **Journal of King Saud University**, 25(1), pages 63-75.

64. *A Versatile Concept for the Analysis of Loops*, with Wided Ghardallou, Olfa Mraihi, Asma Louhichi, Lamia Labed Jilani, and Khaled Bsaies. **Journal of Logic and Algebraic Programming**. Vol 81, No 5, pages 606-622. Elsevier, 2012.

63. *Invariant Functions and Invariant Relations: An Alternative to Invariant Assertions*, with Lamia Labed Jilani, Olfa Mraihi, Asma Louhichi, Wided Ghardallou and Khaled Bsaies. **Journal of Sympolic Computation**. Elsevier, 2012.

62. *Invariant Assertions, Invariant Functions and Invariant Relations*, with Olfa Mraihi, Asma Louhichi, Lamia Labed Jilani and Jules Desharnais. **Science of Computer Programming**. Elsevier, 2012.

61. *Invariant Relations, Invariant Functions and Loop Functions*, with Lamia Labed, Olfa Mraihi and Asma Louhichi. **Innovations in Systems and Software Engineering**. Springer Verlag, 2012.

60. *Reasoning About Quantitative Architectural Attributes*, with L. Labed Jilani, Imen Derbel, Khaled Bsaies, Hamdi Nasreddine. **The Journal of Software**. Vol 6, No 4, pages 574-583. 2011.

59. *A Quantitative Model for Software Engineering Trends*, with Latifa Ben Arfa Rabai and Yan Zhi Bai. **Information Sciences, an International Journal**. Elsevier, 2011.

58. *Defining and Computing a Value Based Cyber Security Measure*, with A. Ben Aissa, R.K. Abercrombie, F.T. Sheldon. **Information Systems and E-Business Management**, 2011. Springer Verlag.

57. *Quantifying Security Threats and Their Impact*, with A. Ben Aissa, F.T. Sheldon, and R.A. Abercrombie. **Innovations in Systems and Software Engineering: A NASA Journal** (Springer Verlag). 2010.

56. *Mathematics for Reasoning about Loops*, with Shir Aharon and Chaitanya Nadkarni. **Science of Computer Programming**, Fall 2009.

55. *Reflexive Transitive Loop Invariants*, with A. Louhichi, O. Mraihi, L. L. Jilani, Shir Aharon, and Ch. Nadkarni. **Journal of Sympolic Computation**, special issue on invariant generation, 2009.

54. *Modeling the Evolution of Operating Systems*, with F.L Min and Y. Peng. **Journal of Systems and Software**. 2006.

53. *Modeling Security as a Dependability Attribute: A Refinement Based Approach*, with A. Thomasian, A. Vinokurov, R. Sheldon, L. Labed and R. Ben Ayed. **Innovations in Systems and Software Engineering: A NASA Journal**. Vol 2, Number 1, April 2006.

52. *Programming Language Trends: An Empirical Study*, with Y.F. Chen, L. Wu, K.F. Wang and R. Dios. **IEEE Software**, 2005.

51. *Recoverability Preservation: A Measure of Last Resort*, with F.T. Sheldon, F. Mili and J. Desharnais. **Innovations in Systems and Software Engineering: A NASA Journal**. Vol 1, Number 1, April 2005.

50. *Relational Characterizations of System Fault Tolerance*, by Vittorio Cortellessa, Diego DelGobbo, mark Shereshevsky, Jules Desharnais, and Ali Mili. **Science of Computer Programming**. 2004.

49. *Representation, Validation and Integration of Scenarios Using Tabular Expressions*, by J. Desharnais, R. Khedhri and A. Mili. **Journal of Formal Methods in Software Development**. Special issue on tabular expressions. D. Parnas and C. Heitmeyer, editors. Accepted September 2004.

48. *Architectural Level Risk Analysis Using UML*, with K. Goseva Postojanova, A. Hassan, A. Guedem, D.M. Nassar and H.H. Ammar. **IEEE Transactions on Software Engineering**, 29(10), pages 946-960, 2003.

47. *Software Technology Watch*, with R.D. Cowan, A. McKendall, L. Yang, D. Chen, and T. Spencer. **IEEE Software** Magazine. July/August 2002.

46. *Software Engineering Technology Watch*, with R.D. Cowan, A. McKendall, L. Yang, D. Chen, and T. Spencer. **Information Sciences, an International Journal**. Invited contribution, Special issue on WICS'00 workshop. 2001.

45. *Managing Software Reuse Economics: An Integrated ROI-based Model*, with S. Fowler Chmiel, R. Gottumukkala and L. Zhang. **Annals of Software Engineering**. Volume 11, 2001. K. C. Chang, editor.

44. *Defining and Applying Measures of Distance Between Specifications*, with L. Labed Jilani and J. Desharnais. **IEEE Transactions on Software Engineering**. Volume 27, No 8, August 2001.

43. *Semantic Distance Between Specifications*, with R. Mili, M. Frappier and J. Desharnais. **Theoretical Computer Science**, vol 247, pp 257-276, September 2000.

42. *A Comparative Analysis of Hardware and Software Fault Tolerance: Impact on Software Reliability Engineering*, with H. Ammar, B. Cukic and C. Fuhrman. **Annals of Software Engineering**. Volume 10, Spring 2000, pp 103-150.

41. *A Calculus of Program Adaptation and Its Applications*, with R. Ben Ayed, J. Desharnais and M. Frappier. **Science of Computer Programming**, Elsevier Publishing. Volume 38, pages 73-123, 2000.

40. *A Case Study in Software Reuse*, with E. Addy and Sh. Yacoub. **Software Quality Journal**. Kluwer Publishing. Volume 8, Number 3, pages 169-195, November 1999.

39. *Towards an Engineering Discipline of Software Reuse*, with E. Addy, Sh. Yacoub and H. Mili. **IEEE Software**. Pages 22-31. September/October, 1999.

38. *The Long Story of a Short Theorem.* **Automated Software Engineering**. 1999.

37. *Structure Coercion in Relational Specifications.* Co-authored with J. Desharnais and M. Frappier. **Bulletin of the Interest Group on Pure and Applied Logic**. Special Issue: Relational Methods in Computer Science, Volume 6, Number 2, pages 317-340 (1998).

36. *Integrating Sequential Scenarios.* Co-authored with J. Desharnais, M. Frappier and R. Khedhri. **IEEE Transactions on Software Engineering**. Vol. 24, Number 9, September 1998, Pages 695-708.

35. *A Survey of Software Components Storage and Retrieval.* Co-authored with R. Mili and R. Mittermeir. **Annals of Software Engineering**. volume 5 (1998), Pages 349-414.

34. *Storing and Retrieving Software Components: A Refinement Based System*, with R. Mili and R. Mittermeir. **IEEE Transactions on Software Engineering**. July 1997, Pages 445-460.

33. *A Calculus of Program Construction by Parts*, with M. Frappier and J. Desharnais. **Science of Computer Programming**. October 16, 1997, Pages 237-254.

32. *Reusing Software: Issues and Research Directions*, with H. Mili and F. Mili. **IEEE Transactions on Software Engineering**. June 1995, Pages 528-562.

31. *Embedding a Demonic Semi-Lattice in a Relation Algebra*, with J. Desharnais and N. Belkhiter. **Theoretical Computer Science**, volume 149, Pages 333-360 (1995).

30. *Using Action Histories to Specify Objects*, with D. Skuce. **Journal of Object Oriented Programming**. 1995, Pages 41-49.

29. A Relational Division Operator: The Conjugate Kernel, with J. Desharnais, A. Jaoua, F. Mili and N. Boudriga. **Theoretical Computer Science**. Vol 114 (1993), pp 247-272.

28. *On the Mathematics of Sequential Decompositions*, with J. Desharnais and F. Mili. **Science of Computer Programming**. Volume 20 (1993), pp 253-289.

27. *Machine Translation from Arabic to English and French*, with Ch. Mankai. **Information Sciences, an International Journal**. (North Holland). 1993.

26. *Semantics Based Software Retrieval to Support Rapid Prototyping*, with N. Boudriga and R. Mittermeir. **Structured Programming**. Springer-Verlag, vol 13, pp 109-127 (1992).

25. *On the Lattice of Specifications*. with N. Boudriga and F. Elloumi. **Formal Aspects of Computing**. Springer-Verlag, 1992.

24. *On The Semantics of Concurrency: A Relational Approach*, with N. Boudriga and Y. Slimani. **Information Sciences, An International Journal**. North Holland, 1993.

23. *DIDON: A System for Executable Specifications*, with N. Boudriga and R. Zalila. **Information and Software Technology**. Volume 33, number 7, pp 489-498.

22. *Heuristics for the Construction of While Loops*, with F. Mili. **Science of Computer Programming** (North Holland). Volume 18, pp 67-106, 1992.

21. *A Relational Model for the Specification of Data Types*, with N. Boudriga, F. Mili and R. Zalila. **Computer Languages**. Vol 17, No 2, pp 101-131, 1992.

20. *Adapting COCOMO to Tunisia: Basic and Intermediate TUCOMO*, with R. Marwane. **Information and Software Technology**. Butterworth Ltd. Special Issue, June 1991.

19. *Controllable Factors for Programmer Productivity*, with L. Kemayel and I. Ouederni. **Journal of Systems and Software**, (North Holland).

18. *Specifying with Regular Relations*, co-authored with Noureddine Boudriga, Jean Louis Durieux and Ali Jaoua. **Theoretical Computer Science**. March 1991.

17. *On the Use of Executable Assertions for Error Recovery and Damage Assessment*, co-authored with Ali Jaoua. **Journal of Systems and Software**. April 1990.

16. *The Economics of Software Project Management in Tunisia: Basic TUCOMO*, co-authored with R. Marwane. **Information and Software Technology**, special issue on the economics of software project management. June 1989.

15. Japanese version of ACM Computing Surveys article (see below) appeared in the Japanese journal **BIT**, Kyoritsu Shuppan Co, Ltd. pp 79-108. May 1988.

14. *On the Analysis of Iterative and Recursive Programs*. Co-authored with Fatma Mili and Mustapha Ben Alaya. **Australian Computer Journal**. February 1988.

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51. *Program Construction by Parts*, with M. Frappier and J. Desharnais. Proceedings, **Mathematics for Program Construction '95**. Springer Verlag's Lecture Notes in Computer Science. Germany, July 1995.

50. Two invited papers: *La Rèutilisation de Logiciels: Dèfis et Possibilitès*, and *La Mèthodologie Cleanroom pour le Dèveloppement de Logiciels sans Fautes: Une Expèrience d'Enseignement*. **Proceedings, Forum Informatique 1995**. Tunis, Tunisia, March 1995.

49. *Les Mathématiques de la Construction de Programmes*, with M. Frappier. Invited paper, **42 ème Colloque de Mathématiques du Québec**. Sherbrooke, PQ, October 1994.

48. *Lifeycle Maintainability Estimation for a Space Robotics Simulator*, with S. Matwin, D. Crabtree, and M. Frappier. **45th International Astronautical Federation Congress**. Jerusalem, Israel, October 1994.

47. *A Process for Verification Based Inspections*, with L. Ben Arfa, M. Frappier, R. Mili, D. Skuce. **Sixth International Conference on Software Engineering and Knowledge Engineering**. Jurmala, Latvia, June 1994.

46. *Storing and Retrieving Software Components: A Refinement Based Approach*, with R. Mittermeir and R. Mili. **Sixteenth International Conference on Software Engineering**. Sorento, Italy, May 1994.

45. *Modelling Software Engineering Knowledge: Applications to Curriculum Development*, with S.H. Talbert and R. Mili. **International Workshop on Software Engineering Education**. Sorento, Italy, May 1994.

44. *A First Course in Data Structures: A Software Engineering Approach*, with R. Mili. **SIGCSE '94**. Phoenix, AZ, March 1994.

43. *University Outreach in Software Engineering*, with B. Hodson. **Sixth International Workshop on Software Engineering and Its Applications**. Toulouse, France, november 15-19, 1993.

42. *A System for Software Reuse: Preliminary Implementation*, with R. Mittermeir and R. Mili. **Sixth International Workshop on Software Reuse**. Owego, NY, November 2-4th, 1993.

41. *A Formal Model for Software Specification and Its Automation*, with R. Mili. **ARO/AFOSR-/ONR Workshop**, Monterey, Ca, October 1993.

40. *Software Engineering Education in Government: The DSS Institute*, with R. Mili, B. Hodson, J. Raymond. **National Workshop on Software Engineering Education**. Toronto, May 1993.

39. *A Formal Approach to Software Reuse: Design and Implementation*, with R. Mili and R. Mittermeir. **Fifth International Workshop on Software Reuse**, Palo Alto, Ca, October 1992.

38. *Computers in Education: A National Proposal*, with N. Boudriga. **Twelveth World Computer Congress**. Madrid, Spain, September 7-11, 1992.

37. *Au Automated System for Specification Validation: Design and Preliminary Implementation*, co-authored with N. Boudriga and R. Zalila. **Hawaii International Conference on System Sciences**. Koloa, HI, January 7th-10th, 1992.

36. *On the Lattice of Specifications.* with F. Elloumi and N. Boudriga. *Second Montreal Workshop on Programming Language Theory.* Montreal, PQ, December 13-15 1991. Concordia University.

35. *Am Empirical Study of Software Maintenance*, co-authored with L. Sekhri and L. Ben Arfa. **IEEE Conference on Software Maintenance- 1991**. Sorrento, Italy, October 14-17, 1991.

34. *Une Interface SAS en Yafool.* DECUS Conference. Paris, France, June 1991.

33. *Heuristics for the Construction of Logic Programs*, with N. Boudriga and A. Ferchichi. **Workshop on Logic Programs Construction and Transformation**. Manchester, UK. July 1991.

32. *Software Maintenance Management in Tunisia: A Statistical Study*, with L. Ben Arfa. **Conference on Software Maintenance**. San Diego, CA, November 1990.

31. *The Conjugate Kernel: A Relational Division Operator.* **Workshop on the Use of Relations for Program Construction**. Hollum Ameland, Holland, September 1990. Also: under second revision for the journal **Theoretical Computer Science**, North Holland Publishing.

30. *Relational Division: An Operator for Program Construction.* Co-authored with Noureddine Boudriga. **Conference on Program Construction, Technical University of Budapest**. Budapest, Hungary, September 1990.

29. *A Database of Software Components.* Co-authored with Noureddine Boudriga. **International Conference on Data Base and Expert Systems Applications**, Vienna, Austria, August 1990.

28. *On The Lattice of Specifications.* Co-authored with Noureddine Boudriga and Fathi Elloumi. **SIAM Conference on Discrete Mathematics**, June 11-14th, 1990. Atlanta, Ga.

27. *Specifying and Verifying Data Types.* **Thirteenth Australian Computer Science Conference**. Melbourne, February 7th-9th, 1990.

26. *Les Facteurs Contrôlables de Productivité des Programmeurs.* **Second International Conference on Software Engineering and Its Applications**. Toulouse, France, December 5-9 1989.

25. *Adapting COCOMO to Tunisia: Basic and Intermediate TUCOMO.* With R. Marwane, **COCOMO Users Workshop, Software Engineering Institute**, Carnegie Mellon University, Oct 89.

24. *Using Knowledge to Understand Natural Language.* **Informatique Cognitive des Organisations**. Québec, Canada. June 1989.

23. *TUCOMO: Adaptation of COCOMO to Tunisia*, with R. Marwane. **First International Conference on Software Engineering and Its Applications**. Toulouse, France, December 5-9 1988.

22. *Traduction Automatique Arabe Anglais par les Grammaires à Cas*, with Chafia Mankai. **Colloque: Informatique et Langue Naturelle**. Organized by AFCET (PRC Informatique Linguistique) and Projet Franco-Québéquois SILFEC. 12-13 October 1988

21. *Spécifier des Algorithmes + Spécifier des Structures de Données = Spécifier des Programmes.* Invited talk, **Colloque sur le Génie Logiciel: Spécification de Programmes**. Oran, Algeria, October 10-12 1988.

20. *On Understanding Arabic: A Vote for Case*, with Chafia Mankai. *Regional Seminar on New Computer Technologies.* Amman, Jordan, 27-29 September 1988. Organizer: **UNESCO**.

19. *Al Biruni: A System for the Automatic Analysis of Arabic*, with Ch. Mankai. **Journées sur l'informatique et la Linguistique**. Tunis, November 11-13, 1987.

18. *A Perspective on Programming Knowledge*, with Fatma Mili and Jules Desharnais. **Proceedings, Fourth International Workshop on Software Specification and Design**, Monterey (CA), April 1987.

17. *Issues in Program Specifications: Toward a Discipline of Structured Specifying*, with Barry Dwyer. **Tenth Australian Computer Science Conference**, Melbourne (Australia), February 1987.

16. *Enseignement des Structures de Données: Proposition de Curriculum*, with Chafia Mankai. Confrence **ICOMID**, sponsored by CIRIA (Tunis) and IFIP (Geneva), held in Monastir February 3-7, 1985.

15. *Software Engineering Education: Synthesis of Some Experience*, with P. Robillard and M. Dupras. **World Conference on Computers in Education**. Norfolk, Va (July 1985).

14. *De la Programmation Structurée à la Programmation Automatique*, with Paul Torrès. **Septième Séminaire Tuniso-Français**. Mai 1985, Tunis.

13. *Assigning Meanings to Program Verification Methods: A Classifying Survey*, with Jules Desharnais. **Seventh International Conference on Software Engineering**, Orlando, FL (March 1984).

12. *Relations as The Basis for Program Specification, Verification and Design*, with Jules Desharnais. **International Workshop on Models and Languages for Software Specification and Design.** Orlando, FL (March 1984).

11. *Toward the Automatic Symbolic Execution of While Statements.* with Jules Desharnais. **Seventeenth Hawaii International Conference on System Sciences**, Honolulu, HI. January 4-6, 1984.

10. *On the Specification and Design of Programs: Set-theoretic Concepts.* **Seventeenth Hawaii International Conference on System Sciences**, Honolulu, HI. January 4-6, 1984.

9. *The Bottom Up Analysis of While Statements: Strongest Invariant Functions.* **IFIP'83. Ninth World Computer Congress**. 19-23 September 1983. Paris, France.

8. *A Course on Formal Program Verification: Motivation, Logistics and Syllabus.* **CSA Conference**, May 17-19, 1983. Ottawa, Canada.

7. *Proving Programs by Structural Induction: The True Nature of the Sometime Method.* **Sixteenth Hawaii International Conference on System Sciences**. Honolulu, HI. January 5-7, 1983.

6. *A Case for Teaching Program Verification: The Why, What and How?.* **Fourth Annual Conference on Computer Developments**, Houston Texas. November 1982.

5. *Systems Requirements Specification: A Simplified Approach.* **Symposium on Current Issues of Requirements Environments**. Kyoto, Japan. September 20-21, 1982.

4. *A Closer Look at Iteration: The Self Stabilizing Capability of Loops.* **Sixth International Conference on Software Engineering**, Tokyo, Japan, September 13-19, 1982.

3. *Self-Checking Programs: An Axiomatization of Program Validation by Executable Assertions*, with Gernot A Metze. **Eleventh Fault Tolerant Computing Symposium**. June 24-26, 1981. Portland, ME.

2. *Self-Checking Programs.* **Computer Science Conference** (ACM), Saint Louis, Mo. February 24-26, 1981.

1. *Etude de Reseaux Porteurs d'Information: Leur Application à la Testabilite de Systemes Informatiques*, with P Caspi and C Robach. **International Federation on Automatic Control. Workshop on Information and Systems**. Compiegne, France. October 1977.

Invited/ Keynote Conference Presentations

- *MEDI 2021: Tenth International Conference on Model and Data Engineering*, Tallin, Estonia, July 2021.
- *International Conference on Management Engineering, Software Engineering, and Service Sciences.* WuHan, China, January 2020.
- *International Conference on Verification and Evaluation of Computer and Communication Systems.* Porto, Portugal, October 2019.

Invited Talks

Very partial list.

- *Charles university, Prague, Czech Republic.* July 25, 2019. Host: Professor Martin Loebl.
- *University of Idaho, Moscow, ID.* December 7, 2015. Host: Professor Jamil Hassan.
- *University of Memphis, Memphis, TN.* Fall 2014. Host: Professor Frederick Sheldon.

Professional Contributions

Interventions

This section lists various forms of unreferreed interventions in scientific meetings, in the form of invited talks, panel sessions, short courses, tutorials, etc. Talks in departmental seminars (of which we have logged about fifty worldwide) are *not* included.

- Panelist, *Formal and Informal Verification Methods*, Tenth IEEE High Assurance Systems Engineering Symposium. Dallas, TX, November 14-16, 2007.
- Panelist, *Software Engineering Research Agenda*. Panel Chair, Dieter Rombach. Panelists: C. Ghezzi, R. Jeffrey, L. Osterweil, D. Parnas, T. Tamai. **International Conference on Software Engineering**, Toronto, Ont. May 2001.
- **SEE-94: Software Engineering Education**. Panel Session Speaker, along with M. Shaw (CMU, Chair), W. Humphrey (AT& T), B. Boehm (USC), I. Sommerville (Lancaster). Panel Session: *Dreams in Software Engineering Education*. Sorento, Italy, May 1994.
- *IFIP WG 2.1 Meeting*, Winnipeg, Manitoba, Canada. Theme: *Heuristics for Sequential Decompositions*. May 1993.
- **IFIP Working Group 8.1 Conference on the Object Oriented Approach in Information Systems**. October 28th, 1991: Quebec City, Canada. Tutorial titled: *Managerial Aspects of Software Engineering*.
- **IFIP WG 2.1 Meeting**, Brussels, Belgium. Theme: *The Conjugate Kernel*. January 1991.
- **Fourth Tunisian School of Computer Science, Hammamet**. Theme: *Software Project Management*. November 1990.
- **IFIP WG2.1 meeting. Chester, UK**. Theme: *The Lattice of Specifications*. May 1990.
- **IFIP WG2.1 meeting. Chester, UK**. Theme: *Heuristics for Program Construction*. May 1990.
- **ICOMIDC School on Mathematics and Artificial Intelligence, Tunisia**. April 1988. Theme: *Programming Heuristics*.
- **Ecole d'Informatique de la Faculté des Sciences de Tunis, Tunisia**. November 1986. Theme: *Structured Programming*.
- **McGill University, Montreal**, School of Computer Science. McGill Summer Institute of Computer Science. Theme: *Software management and Economics*, June 1985.
- **McGill University, Montreal**, School of Computer Science. June 1985. McGill Summer Institute of Computer Science. Theme: *Program Specification and Verification*, June 1985.

- **Ecole d'Eté d'Informatique de l'Université Laval, Canada**. Theme: *Software Project Management*. June 1985.
- **Ecole d'Eté d'Informatique de l'Université Laval, Canada**. Theme: *Structured Programming*. June 1984.
- **University of California at San Diego**, May 1982. Theme: *Workshop on the Effectiveness of Testing and Proving Methods*.

Professional Societies

- **Member**, *International Federation for Information Processing*. Member, IFIP TC2. Guest, IFIP WG 2.1.
- **National Representative**, The technical committee TC 2 of *International Federation of Information Processing* (IFIP).
- **Member**, *ACM*. Also, **co-founder and first faculty advisor**, *ACM student chapter of Laval University*, chartered April 1984. Also, **co-founder and faculty advisor**, *Student Chapter of the University of Tunis*, chartered February 1986.
- **Member**, *IEEE Computer Society*. Former member of local chapters at Urbana, Minneapolis and Houston. Former member and Vice-President, local chapter of Quebec.
- Member, **New York Academy of Sciences**, since 1992.
- **Co founder, first president, and member**, *The Tunisian Information Processing Society*. Chartered, 1989.
- **Member**, *Association Nationale des Docteurs ès-Sciences*, France.
- **Member, and former secretary general**, *Association des Maitres en Informatique de Grenoble*.

Professional Functions

Regularly sollicited to fulfill professional functions such as editorial functions, program committee memberships, reviewerships, etc. Sample of functions (not totally up to date):

- *Member of the Editorial Board*, **Innovations in Systems and Software Engineering: A NASA Journal**, Springer Verlag, 2007-Present.
- **Member of the Editorial Board**, *IEEE Transactions on Software Engineering*: 2001-2005.
- **Associate Editor**, *The Journal of Systems and Software* (1985-2003).
- Editorial board (comité de rédaction) of *Technique et Science Informatiques* (from 1989 to 1993).

- **Program co-chairman**, *Tenth Tunisian French Seminar of Informatics* (with Prof. Jean Pierre Finance). *Second Maghrebine Conference on Software Engineering and Artificial Intelligence* (with Prof. Mohammed Bettaz). *Symposium on Software Reuse, '99* (with Prof. Roland Mittermeir), *ACS International Conference on Computer Systems and Applications, '01* (with Prof. Pierre Flener and Prof. Fahmy Tolba).

- **Member, Program committee**, *Third Algebraic Methodology And Software Technology '93. Fifteenth International Conference on Software Engineering '93. Symposium on Software Reuse '95, '97, '99, '01. Logic for Program Synthesis and Transformation, '98, '99, '00. Automated Software Engineering, '98, '99, '00, '01. Conference on Software Metrics '02.*

- **Grant Reviewer**, Canada's *Natural Sciences and Engineering Research Council*, Ottawa, Canada. *US National Science Foundation*, Washington. **Panelist**, Evaluation Panel, *NSF CAREER grants.*

- **Prize Reviewer**, *Harlan D. Mills Prize for Practical Visionary*, 2001-2003.

- **Recipient, A.H. Shooman Prize for Young Arab Scientists**. A.H. Shooman Foundation: Amman, Jordan.

- **Book Review Contributor**, *ACM Computing Reviews. Science of Computer Programming. IEEE Software.*

- **Reviewer**, *IEEE Computer. Software- Practice and Experience. IEEE Transactions on Software Engineering. Computing Reviews* (ACM).

- **Panel Member**, *IEEE Standards Working Group on Software Lifecycle Models.*

- **Reviewer**, *Fault Tolerant Computing Symposia. Hawaii International Conferences on System Sciences.*

- **Steering Committee Member**, the *International Steering Committee for the series of International Workshops on Software Specification and Design.*

Awards

- Excellence in Teaching Awards (Institute-wide, College-wide), NJIT/ YWCC, 2017.

- Certificate of Appreciation Award, IEEE Computer Society, September 2002 (for service on the Harlan D Mills Awards Committee).

- Certificate of Appreciation Award, NASA Ames Research Center, October 2000 (for service to the Design for Safety program).

- Outstanding Researcher Award, College of Engineering, WVU, 2000.

- Recognition of Service Award, ACM, May 1999 (for service as co-Program Chair, SSR).

Graduate Supervision

I have supervised a total of 32 doctorates and 35 masters and I am currently supervising 7 doctoral students and 2 masters students.

Master's theses supervised were completed at the following institutions: NJIT, Newark, NJ; Laval University, Quebec, Canada; University of Tunis, Tunisia; University of Ottawa, Canada. Dissertations dealt with: Natural Language Processing; Mathematics of Programming; Program Fault Tolerance; Program Specifications; Programming Heuristics.

Doctoral theses supervised were completed at the following institutions: NJIT, Newark, NJ; University of Tunis, Tunisia; University of Oran Es-Senia, Algeria; University of Toulouse, France; University of Ottawa, Canada. Dissertaions dealt with: cybersecurity; system dependability. Program Construction; Semantics of Concurrency; Databases; software cost estimation; software technology watch; Natural Language Processing; Expert Systems; Software Specification; Program Fault Tolerance; Software Cost Estimation; Programmer Productivity.

Languages

- Fluent in: Arabic, French, English (in addition to native Tunisian).
- Some knowledge of: Italian, German, Russian.
- Learned/ Used to speak/ read (some): Mandarin Chinese, Japanese.

Personal

Born in Tunisia. Married (Dr Amel Mili, UPenn). Three children: Noor, Farah, Serena.