



Aminollah Mahabadi
Computer Engineering
Department



Shahed University,
Persian Gulf Highway
Postal code: 3319118651
P.O. Box: 18735/136, Tehran, Iran
Tel.: +98(21)51212078
Fax: +98(21)51212021
Email: mahabadi@jshahed.ac.ir
Reference: www.shahed.ac.ir

Education

- **Dissertation:** *Multi-objective Resource Management in Multiple Supply Voltages Real-Time Embedded Systems*, Computer Software, Electrical and Computer Engineering Department, University of Tehran, Tehran, Iran (2011-2013).
Concentrations: Computer Hardware, VLSI Multi-Objective Modeling for Temperature & Power-aware on 22nm Technology, Cross-Layer Modeling of Low-level & High-level NoC Design, Mathematical Decomposition & Scheduling NP Problem.
Supervisor: Prof. Ahmad Khonsari.
- **MSc. Thesis:** *A Case Tool for Concurrent Systems Modeling*, Computer Architecture, Amirkabir University of Technology, Computer Engineering Department, Tehran, Iran (1992-1995).
Concentrations: Computer Hardware, Transputers, Occam2, Silicon Compiler, Object Oriented Code Generation, Concurrent System Modeling & Simulation.
Supervisor: Prof. Mohammad Reza Meibodi.
- **BSc. Thesis:** *Hardware Design for 8086x Mainboard Testing and Controlling through Serial Port Communication*, Computer Hardware Engineering, Electrical Engineering Department, Iran University of Science and Technology, Tehran, Iran (1985-1988).
Concentrations: Computer Hardware, Hardware Testing and Control, Hardware Design.
Supervisor: Prof. Karim Mohammadi.

Publication

Paper

- Mahabadi A., Abdolazimi F. *Big Image Data 15V's Model for Intelligent Data Ocean of Multimedia Things*. Multimedia Tools and Applications, (2023) Submitted.
- Heydari Z., Mahabadi A. *Real-time TDOA-based Stationary Sound Source Direction Finding*. Multimedia Tools and Applications, 82(2023)39929–39960.
- Heydari Z., Mahabadi A. *Real-time Sound Source Localization Method based on TDOA*. Multimedia Tools and Applications, 82(2023)23333–23372.
- Mirbeygi M., et al. *Speech and Music Separation Approaches - A Survey*. Multimedia Tools and Applications, 81(2022)21155–21197.
- Heydari Z., Mahabadi A. *Speed Impulsive Sound Source Direction Finding Method based on TDOA*. Computer Science and Information Technology (CSIT), 19(1)(2021)23-35.
- Mahabadi A. *Real-time Topology-based Tracking of Microscopic Objects*. Journal of Electronic & Cyber Defence, 9(3)(2021)1-20.
- Mirbeygi M., et al. *Classification of Noise-robust Speech Features in the Speaker Authentication System*. Journal of Acoustical Engineering Society of Iran, 9(1) (2021)28-39.
- Heydari Z., et al. *The effect of Energy and Interpolation Combination on the Accuracy of Indoor localization based on the Time Difference of the Arrival Speech Signals*. Journal of Acoustical Engineering Society of Iran, 8(2)(2021)60-77.
- Shahosseini M., Mahabadi A. *Concurrent Detection of Condense Anomalous Subgraphs in Large Social Networks*. Journal of Electronic & Cyber Defence, 9(2)(2021)181-196.
- Heydari Z., Mahabadi A. *Broadband Sound Source Localization Methods based on TDOA-A Survey*. Computer Science and Information Technology (CSIT), 19(1)(2021)1-14.
- Mahabadi A., Hosseini M. *SLPA-based Parallel Overlapping Community Detection Approach in Large Complex Social Networks*. Multimedia Tools and Applications, 80(2021) 6567-6598.
- Mirbeygi M., et al. *RPCA-based Real-time speech and music separation method*. Speech Communication Journal, 126(2021)22-34.
- Mahabadi A., Besmi M. *Risk-aware Service Level Agreement Modeling in Smart Grid*. Multimedia Tools and Applications, 80(2021)1433–1456.
- Mahabadi A. *A Text Localization Model in Big Image Data*. Computer Science and Information Technology (CSIT), 18(1)(2020)66-82.
- Najafi MR. Mahabadi A. *Hyper Real-time Tracking of Concurrent Objects in Video Images*. Computer Science and Information Technology (CSIT), 18(1)(2020)18-30.
- Heydari Z., et al. *Smart Speaker Localization by Using Time Difference of Arrival Approach*. 6TH International Acoustic Conference, Iran, (2020)38.
- Mirbeygi M., et al. *Robust Voice Features Classification*. 6TH International Acoustic Conference, Iran, Tehran, (2020)32.
- Hosseini M., Mahabadi A. *A Distributed Approach to Community Detection in Large Social Networks Based on Label Propagation*. Journal of Electronic and Cyber Defence, 8(4)(2020)1-5.
- Mirzaei M., Mahabadi A. *Hybrid Anomaly Detection Method Using Community Detection in Graph by Feature Selection*. Journal of Electronic and Cyber Defence, 18(1)(2020)17-24.
- Mirzaei M., Mahabadi A. *Graph-based Anomaly Detection Methods in Social Networks- A Survey*. Passive Defense Quarterly Journal, 10(3)(2019)1-13.
- Bastami E., et al. *A Gravitation-based Link Prediction Approach in Social Networks*. Swarm and Evolutionary Computation Journal, 44(2019)176-186.
- Zarei AR., Mahabadi A. *A Robust Text Localization Method in Natural Images*. Computer Science and Information Technology (CSIT), 15(1)(2017)10-21.
- Khatibzadeh A., et al. *Multi-Agent based Controller for Voltage Enhancement in AC/DC Hybrid Microgrid using Energy Storages*. Energies Journal (Microgrids 2016), 10(2)(2017)169.
- Mahabadi A. *A Novel Homogenous Bus Rapid Transit Model Using Hybrid Petri Nets*. The CSI Journal on Computer Science and Engineering (JCSE), 14(1)(2016)29-37.
- Bahremand R., Mahabadi A. *Business Risk Management in Cloud Computing*, International Conference on Modern Research's in Management, Economic & Accounting, Russia, (2016).
- Mahabadi A., Zarei A.R. *Human Face Recognition in Digital Images*. Computer Science and Information Technology (CSIT), 14(1)(2016)16-22.
- Asgari F., Mahabadi A. *Real-time Energy-aware Mapping and Scheduling of Concurrent Tasks and Communications in Many Cores*. The CSI Journal on Computing Science and Information Technology (CSIT), 13(2)(2015)32-46.
- Mahabadi A. *Vision-based Real-time Vehicle Tracking and Counting in Urban Traffic Scenarios*. The CSI Journal on Computer Science and Engineering (JCSE), 13(1)(2015)16-36.
- Bastami E., Mahabadi A. *A Novel Link Prediction Method in Social Network based on Gravitational Search Algorithm*. Computer Science and Information Technology (CSIT), 13(1)(2015)1-15.
- Bnihashem H., Mahabadi A. *Multi-level Fixed-Outline Floorplanning Using Convex Optimization*. The CSI Journal on Computer Science and Engineering (JCSE), 13(1)(2015)1-3.
- Mahabadi A., et al. *Critical path-aware voltage island partitioning and floorplanning for hard real-time embedded systems*. INTEGRATION, the VLSI journal (VLSI), 48(1)(2015) 21-35.
- Khodabandeloo B., et al. *Scenario-based quasi-static task mapping and scheduling for temperature-efficient MPSoC design under process variation*. Microprocessors and Microsystems (MICRO), 38(2014) 399–414.



- Mahabadi A., et al. *Reliable Energy-aware Application Mapping and Voltage-Frequency Island Partitioning for GALS-based NoC*. Computer and System Science (JCSS), **79(2013)457–474**.
- Mahabadi A., Ranjbar A. *Reliable License Plate Recognition*. The CSI Journal on Computer Science and Engineering (JCSE), **7(2&4)(2009) 51-67**.
- Mahabadi A. *Intelligent Traffic Lights*. The CSI Journal on Computer Science and Engineering (JCSE), **6(3)(2008)16-29**.
- Mirzaei A., Mahabadi A. *A Novel Iris Recognition Method for Identification Systems*. Bina Journal of Ophthalmology (Bina), **14(1)(2008)50-59**.
- Mahabadi A., et al. *Parallel Lagrange interpolation on k-ary n-cubes with maximum channel utilization*. Journal of Supercomputing, **46(2008)1–14**.
- Mahabadi A., et al. *Detecting and recognizing License plate using wavelet*. 7th Iranian traffic conference, **Feb 2007**, Tehran, Iran.
- Mahabadi A., et al. *Measuring traffic parameters in junctions*. 7th Iranian traffic conference, **Feb 2007**, Tehran, Iran.
- Mahabadi A., et al. *Recognition of Persian Handwritten Digit using Fuzzy Logic*. The CSI Journal on Computer Science and Engineering (JCSE), **14(1) (2006)19-25**.
- Azimi J., et al. *Optical Handwritten Persian Character Recognition Based on Fuzzy Logic*, 2nd International Conference on Information & Knowledge and Technology (IKT'05), Iran, **2005**.
- Khayati R., et al. *Neonate Recognition Using Footprint*. Daneshvar Journal (Daneshvar), **43(2003)25-32**.

Book

- Mahabadi A., *Simulation*. Iran: Azarakhsh Press, 1thEd (1th Version)(1999)- 7thEd(2th Version)(2013).
- Mahabadi A., *Internet and Intranet Engineering*. Iran: Azarakhsh Press, 1thEd(1th Version)(2001)-2thEd (2003).
- Mahabadi A., *Object Oriented Analysis*. Iran: Azarakhsh Press, 1thEd (1th Version)(2000)-2thEd(2001).
- Mahabadi A., *Business Systems Planning Methodology*. Iran: Azarakhsh Press, 1thEd (1th Version)(2000).
- Mahabadi A., *Visual MicroSim PSpice*. Iran: Azarakhsh Press, 1thEd (1th Version)(2000).

Research Experience

Dissertations & Theses

- **VLSI Chip Design**
 - ◆ Resource Management (**Mapping & Scheduling**).
 - ◆ Multi-objective Chip Design (**NoC**).
 - ◆ Cross-Layer Modeling (**Low- & High-level VLSI chip Design-22nm**).
 - ◆ Power-Aware & Temperature-Aware NoC Design (**+GALS**).
 - ◆ Process Variation Modeling (**NoC**).
 - ◆ Chip Floorplanning (**SoC & NoC**).
 - ◆ Silicon Compiler Design (**Occam & Transputers**).
- **Distributed & Cloud Computing Systems**
 - ◆ Risk-averse Multi-level AC/DC Controller Design in Transient Mode (**AC/DC Microgrid**).
 - ◆ Risk-averse/-aware Multi-level AC/DC Controller Design (**AC/DC Microgrid**).
 - ◆ Distributed Monitoring Systems (**Agent-oriented**).
 - ◆ IT Risk Modeling & Management (**Cloud Security Objective**).
 - ◆ Risk Asset Analysis (**Cloud & Grid Computing**).
 - ◆ Risk-aware Service Level Agreement Modeling (**Smart Grid**).
 - ◆ Agent-oriented Peak Power Shaving in Smart Grid (**Electrical Vehicle**).
 - ◆ Multi-class Service Level Agreement (**Cloud & Grid Computing**).
 - ◆ Financial Risk Management (**Business Risk**).
 - ◆ Contract-based Scheduling in SmartGrid (**Cloud & Grid Computing**).
 - ◆ Parallel Processing and Programming (**GPU & OpenMP**).
 - ◆ Distributed Community Detection in Large Social Graphs (**Parallel & Scalable**).
- **Signal & Image Processing**
 - ◆ Big Image Data Modeling (**Big Data & Image**).
 - ◆ Knowledge-based Medical Image Processing (**Knowledge Graph & Image**).
 - ◆ Topology-based Tracking (**Video Images & Parallel Processing**).
 - ◆ Sound Source Localization (**Localization & Acoustic**).
 - ◆ Sound Source Direction Finding (**Localization & Acoustic**).
 - ◆ Speech & Voice Authentication (**Speech**).
 - ◆ Text Localization Towards Big Image Data (**Image**).
 - ◆ Speech & Music Separation (**Speech & Music**).
 - ◆ Acoustic Target Localization & Tracking (**Acoustic**).
 - ◆ Multi-object Image Tracking (**Sequential & Parallel**).
 - ◆ Concurrent Microscopic Objects Tracking (**Parallel & Scalable**).
 - ◆ Vehicle Tracking in Urban Traffic (**Detection & Classification**).
 - ◆ Optical Character Recognition (**Persian OCR**).
 - ◆ License Plate Recognition System (**Persian Plate**).
 - ◆ Automotive Navigation System (**Portable Car Simulator**).
 - ◆ Digital Photo Frames (**Real-time Embedded system**).
 - ◆ Intelligent Traffic Lights (**Video Images**).
 - ◆ Parallel Text Detection & Localization (**Big Image Data**).
 - ◆ Iris Recognition Method (**Image**).
 - ◆ Human Face Detection & Recognition (**Image**).
 - ◆ Human Hand Recognition (**Image**).
 - ◆ Neonatal Recognition using Footprint (**Image**).



- **ITS & Intelligent Simulation**

- ♦ Asynchronous Case Tool (**Multi-threading**).
- ♦ Car Safety Modeling (**Accident Modeling**).
- ♦ Bus Rapid Transit Modeling (**Controller Modeling**).
- ♦ Intelligent Graph Formulation (**BIM Graphical Modeling**).
- ♦ Automotive Navigation Simulator (**Navigation Modeling**).
- ♦ Mathematical Decomposition Modeling (**NP Problem Solving**).

- **Graph/Data mining & AI**

- ♦ Information Diffusion in Social Networks (**Security & AI**).
- ♦ Robust Modeling of Code Injection Vulnerabilities in Web Applications (**Security & AI**).
- ♦ Graph Embedding (**Large Complex Networks & Graph**).
- ♦ Heterogeneous Information Networks (**Graph**).
- ♦ Parallel Community Detection in Social Networks (**Agent-interest**).
- ♦ Parallel Overlapping Community Detection in Social Networks (**Label Propagation & Multi-threading**).
- ♦ Intelligent Graph Formulation of Building Information Models (**IoT in Smart Buildings**).
- ♦ Graph Embedding (**Social Networks & Graph**).
- ♦ Anomaly Detection in Graphs [Node, links & Condense Subgraphs] (**Parallel & Security & Signal & Graph**).
- ♦ Anomalous Subgraphs Detection in Graphs (**Security & Signal & Graph**).
- ♦ Community Detection in Social Graphs (**Swarm & Graph Modeling**).
- ♦ Link Prediction in Social Networks (**Graph Method**).
- ♦ Intelligent Advisor Recommender System (**AI**).
- ♦ Intelligent Attacker Machine (**Security & AI**).
- ♦ Academic Course Advising Expert System (**AI**).

- **Exploiting Hard/Soft Systems& Devices**

- ♦ Code Smell (**Security & Software**).
- ♦ Intelligent Attacker Machine (**Security & AI**).
- ♦ Exploiting Embedded Systems (**Security**).
- ♦ Exploiting Movable Device & Bot Codes (**Security**).
- ♦ Inspects Detector Systems (**Biological & Ecological Footprint**).
- ♦ Automatically Temptation-based Bot Net Modeling and Generation (**Security**).

- **Virtual & Physical Strategic Planning Model**

- ♦ Information & Communications Technology Strategic Planning (**ICT Planning**).
- ♦ Strategic Business Model (**Business Model**).
- ♦ Startup Accelerator Business Model (**Business Model**).
- ♦ Startup Incubator Business Model (**Business Model**).

Research & Industrial Projects

- Graph Embedding in Link Prediction. Iran: Institute for Research in Fundamental Sciences (IPM) (**2023**).
- Startup Accelerator Business Modeling. Iran: Iran Khodro Industrial Group Co. (**2022**).
- Parallel Community Detection Approach in Social Networks SLPA-based. Iran: Shahed University (**2021**).
- Real-time Digital Photo Frames Embedded System. Iran: Shahed University (**2017**).
- Robust Text Detection and Localization Method in Digital and Video Images. Iran: Shahed University (**2017**).
- Agent-oriented HPCs Service Management System. Iran: Institute for Research in Fundamental Sciences (IPM) (**2016-2017**).
- Software Acceptance Testing and Management. Iran: National Land and Housing Organization (**2016**).
- Information Technology Risk Modeling in Cloud Computing. Iran: Institute for Research in Fundamental Sciences (IPM) (**2015**).
- License Plate Recognition System. Iran: Shahed University (**2011**).
- Car Safety Modeling Tool. Iran: Shahed University (**2011**).
- Asynchronous Modeling Tool. Iran: Shahed University (**2010**).
- Intelligent Traffic Light System with Colored Video Images. Iran: Shahed University (**2010**).
- Airport Systems Integration Project Designer & Manager. Iran: Imam Khomeini International Airport (IKIA) (**2003-2006**).
- Information Systems and SMS Center Driver Software Manager. Iran: Tidewater Middle East Co. PLC, Rahyab Rayaneh Gostar Co. (**2002-2004**).
- ERP and Automation System Designer & Manager. Iran: Société anonym iranienne de production automobile Group (SAIPA), SAIPAYADAC (**1999-2001**).

Current Interests & Skills

- Software Systems Design (SSADM, Object-oriented & Agent-oriented Modeling): **Industrial Project, Book, Course & Research Project**.
- Intelligent Simulation (Modeling & Tool Implementation): **Book, Research Project & Course**.
- Intelligent Transportation Systems (Modeling & Simulation): **Thesis, Industrial & Research Project & Paper**.
- VLSI Power/Temperature/Process Variation-aware NoC (Modeling & Simulation): **Dissertation, Course & Paper**.
- Optimization & Mathematical Decomposition for Solving VLSI NP-Problems (Modeling): **Dissertation & Paper**.
- Real-time Embedded System Design (Resource Allocation & Scheduling): **Course & Paper**.
- Image and Vision Systems (Modeling & Applied): **Thesis, Industrial & Research Project, Course & Paper**.
- Music and Speech Processing (Music/Speech Discrimination Modeling): **Thesis & Research Project**.



- Information Technology (IT) Risk Management (Cloud Risk Asset Analysis & Modeling): **Research Project & Paper.**
- Information and Social Networks Modeling (Prediction & Risk in Complex/Large Networks): **Thesis, Course & Paper.**
- Data Mining (Anomaly Detection in Medium & Large Graphs): **Thesis, Course & Paper.**
- Information & Communications Technology (ICT) Strategic Planning: **Industrial Project.**
- Parallel Processing (Architecture & Algorithm for Big data): **Thesis, Course & Paper.**
- System Modeling and Testing (Hardware & Software): **Thesis, Industrial Project & Paper.**
- Intelligent Agent-oriented Modeling (ICT, energy & AC/DC Control Microgrid): **Industrial Project & Paper.**
- Information Security Management System (ISMS): **Industrial Project.**
- Exploiting Hardware & Software Systems and Devices (Modeling & Design): **Industrial Project.**
- Distributed Embedded Controller Development with Petri Nets (Modeling & Design): **Industrial Project.**
- Distributed Real-time SmartGrid Controller Design (Modeling & Design): **Dissertation.**
- Multi-level Temptation Modeling in Automatically Botnet Generation System (Modeling & Implementation): **Thesis.**
- Graph Embedding in Link Prediction for Large Social Networks (Modeling & Implementation): **Thesis.**

Teaching Experience

Courses

- Information and Social Networks (**Graduate**).
- Real-time Embedded Systems Design (**Graduate**).
- Distributed Systems (**Graduate**).
- Advanced Operating Systems (**Graduate**).
- Network on Chip Design (**Graduate**).
- System on Chip Design (**Graduate**).
- Computer Networks Security (**Graduate**).
- Interconnection Networking (**Graduate**).
- Image Processing (**Graduate**).
- Intelligent Simulation (**Graduate**).
- Object Oriented Analysis (**Graduate**).
- Digital Circuits Design (**Undergraduate**).
- Real-time Hardware and Software Codesign (**Undergraduate**).
- Real-time Embedded Systems Design (**Undergraduate**).
- Digital Circuits (**Undergraduate**).
- Operating Systems (**Undergraduate**).
- Research Methods and Technical Presentation (**Undergraduate**).
- Computer Architecture (**Undergraduate**).
- Computer Networks (**Undergraduate**).
- Microprocessors (**Undergraduate**).
- Interfacing and Peripherals' Design (Intel 80x86) (**Undergraduate**).
- Compiler Design (**Undergraduate**).
- Discrete Simulation (**Undergraduate**).
- Discrete Mathematics (**Undergraduate**).
- Data Structure (**Undergraduate**).
- Assembly Language (Intel 80x86, Zilog Z80, Motorola 68000, MCS 6502, IBM RS/6000 & IBM 370) (**Undergraduate**).
- Computer Programming (C, Pascal & FORTRAN) (**Undergraduate**).
- Advanced Programming (C++) (**Undergraduate**).
- Object Oriented Programming (C++, C#, VC & VB) (**Undergraduate**).

Laboratories

- Computer Networks.
- Operating Systems.
- Acoustic Signals.

Community Involvement & Awards

Honors & Awards

- Second Award *Faculty Research of Electrical Engineering Department, Shahed University, Tehran, Iran (2008).*
- Second Award *Faculty Research of Electrical Engineering Department, Shahed University, Tehran, Iran (2009).*

Research Centers

- Member of *Engineering Acoustics Research Center (EARC), Shahed University, Tehran, Iran (2015-present).*
- Researcher of *Institute for Research in Fundamental Sciences (IPM), Tehran, Iran (2013-present).*



- Head of *Intelligent Transportation Systems Research Center (ITS)*, Shahed University, Tehran, Iran (**2009-2011**).

Department

- Head of *Computer Engineering Department*, Shahed University, Tehran, Iran (**1999-2000, 2002-2003, 2005-2007&2008-2009**).

Journal

- *Editorial Member of CSI Journal on Computer Science and Information Technology (JCSIT)*, Society of Computer, Tehran, Iran (**2020-present**).