

## *Curriculum Vitae*



# **Mahdi Salarpour**

### **Contact Information**

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- University Netherland : HB18.240 EEMCS Building , Delft University of Technology,  
Position as Guest Researcher since June 2014
- University Iran : Electronic Research Center , Sharif University of Technology , Azadi St. ,  
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## **Personal Data**

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- Date of Birth : 6 February 1982
- Place of Birth : Iran , Booshehr
- Sex : Male

## **Academic Education**

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- **Ph.D.**

Started on 02/2011 till present : “Sharif University of Technology” , Tehran/Iran , **GPA : 18.37/20.0**

Field : Microwave & Optical Communications (Field & Wave Communications)

Thesis : “**Modeling and Analysis of MIMO System in 60GHz Frequency Band Considering Antenna Array Geometry and Nonlinear Effects Using Ray Tracing Technique**”

Description: In this research, a complete model for physical layer (TX, RX and channel) of a V-band MIMO communications system is developed in which the communications channel is modeled using Ray Tracing technique. The channel matrix and system capacity are calculated considering antenna array geometry and nonlinear effects of TX PAs and RX LNAs in various output back-offs.

- **Master of Science**

Started on 09/2006 , Graduated on 12/2008 : “Sharif University of Technology” , Tehran/Iran , **GPA : 17.87/20.0**

Field : Microwave & Optical Communications (Field & Wave Communications)

Thesis : “**Phase Noise Reduction of Microwave Oscillator Using Interferometric Technique**”

Description: In this research, an ultra-low phase noise X-band free running oscillator is designed and fabricated for application of high sensitivity and multichannel receivers with phase modulation. Several ideas are investigated to measure and reduce the phase noise and finally interferometric technique is implemented to decrease phase noise by at least 15dB at 1MHz offset. (using FM sideband measurement) The results are compared with a synthesized oscillator showing that better performance is achieved in frequency offsets beyond 100kHz.

- **Bachelor of Science in Electrical Engineering**

Started on 09/2000 , Graduated on 12/2005 : “Sharif University of Technology” , Tehran/Iran , **GPA : 17.40/20.0**

Field : Communications

Thesis : “**Nonlinear Modeling and Analysis of a High Power MOSFET Transistor and its Semiconductor Material Behavior for GSM Frequency Band (Around 900MHz)**”

Description: In this research, a nonlinear model for a 900MHz MOSFET power amplifier (PA)

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is extracted by using describing function method and the results are compared with classic models like Curtice. The data of a practical PA of NEC Ltd. is used to analyze and simulate in MATLAB software and extract nonlinear circuit model. The extracted circuit model is a good solution for nonlinear design of PAs, matching networks and also predistorters.

- **Mathematics High School Diploma and Pre-university**  
Started on 09/1996 , Graduated on 06/2000 : “Imam Khomeini School for Better Talents” , Booshehr/Iran , **GPA : 19.50/20.0**

### **Honors**

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- Semifinalist of Iranian National Physics and Chemistry Olympiad , 1999
- Achieving Silver Medal , Iranian National Math Olympiad , 1999
- Ranked 2<sup>nd</sup> among more than 400000 Participants , Iranian National University Entrance Exam (KONKOOR) , 2000
- Ranked 10<sup>th</sup> among more than 150 B.Sc. Students , Electrical Engineering Department , Sharif University of Technology , 2005
- Ranked 4<sup>th</sup> among more than 10000 Participants , Iranian National University M.Sc. of Electrical Engineering Entrance Exam (Communications Field) , 2006
- Ranked 5<sup>th</sup> among M.Sc. Students , Electrical Engineering Department , Sharif University of Technology , 2008
- Membership of Golden Talents National Foundation , Since 2010
- Entrance to Ph.D. Level in Sharif University of Technology by Golden Talents Rule , 2011

### **Research Interests**

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Micro and RF Electronics , Wave Propagation , Noise Reduction in Electronic and Microwave Devices , Microwave and Millimeter Wave Integrated Circuits , Nonlinear Effects in Microwave and Millimeter Wave , Nonlinear System Modeling & Analysis , Numerical Methods in Electromagnetic , Active & Passive Microwave Circuits and Devices , Millimeter Wave Technology , Antenna & Arrays , Radar Systems , Computer Aided Techniques in Microwave Analysis , Wireless Communications and Channel Modeling

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### **Research Experiences**

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- Design , Fabrication and Measurement of a V-band 4x4 Massive MIMO Transmitter with 2-D Beamsteering Capability Using 60GHz ADPLL Chip and U-Slot Patch Antenna as each Element all on Multilayer PCB of Rogers-FR4 (in TUDelft as Guest Researcher)
- Simulation of a 60GHz MIMO Channel by Ray Tracing Technique in a LOS/NLOS Outdoor Environment (Street) and Calculating Channel Matrix and Capacity Considering Mutual Coupling of Array Elements (Implemented in MATLAB)
- Complete Research on 60GHz MIMO Systems Considering Channel Modeling , Antenna Array Geometry , Beamforming/Beamsteering , Polarization Diversity , Mutual Coupling , Nonlinearity of TX/RX
- Design , Fabrication and Measurement of a very Low Phase Noise Oscillator for 10GHz Frequency in Ambient Temperature Using Interferometric Technique
- Phase Noise Measurement of Free Running and Synthesized Oscillators
- Seminar on Reduction Techniques and Measurement Methods of Microwave and Optical Oscillators Phase Noise
- Investigation of Nonlinear Effects in Fiber Optics
- Analysis of an Ultra wideband (UWB) Signal Reflected from a Dielectric Surface
- Solution for Scattering from a Nano-hole in an Infinite Perfect Electrical Conductor Using MoM (Method of Moment)
- Analysis of Non-Guided and Leaky Modes in Fiber Optics
- Complete Research on Microwave Active Tunable Filters
- Investigation of Balun Measurement for Microwave Circuits
- Design , Fabrication and Measurement of LNA in X-band
- Nonlinear Measurement of Amplifiers
- Design and Simulation of PAs in Various Frequency Bands (UHF, L & X)
- Design , Fabrication and Measurement of Different Microwave Passive Circuits
- Design , Fabrication and Measurement of Different Antennas & Arrays
- Satellite Communications

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### **Professional Experiences**

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- **Technical staff and research assistant**

Microwave & RF Electronic Lab. , Department of Electrical Engineering , Sharif University of Technology , Fall 2008

- **RF designer engineer**

Kiatel Company , Tehran/Iran , From Spring 2004 to Fall 2005

Description: I worked one year in Kiatel company one of the most famous domestic companies in GSM/DECT PMR (private mobile network) as RF designer engineer for 2 projects “mobile jammer” and “mobile repeater” implementation which were the prototypes to get markets in various applications where cell phone use is forbidden or in blind regions to amplify the mobile signal. I managed the hardware of whole systems from design to simulation, fabrication and test on PCB level.

- **RF designer engineer and project manager**

Electronic Research Center , Sharif University of Technology , Tehran/Iran , From Fall 2005 till June 2014

Description: In this corporation, I designed and fabricated various industrial communications and RF electronic systems in 0.05-40GHz frequency band for end user clients. The parts of systems include antenna array, RF transceivers, DSP-FPGA (hardware processing), algorithm design and implementation, software processing and Graphical User Interface (GUI). After 2 years, my position was enhanced to system manager besides RF designer with the following responsibilities:

- 1- Making technical proposal according to request of proposal (RFP) of end user
- 2- Total system design according to required system specification
- 3- Detailed system design for antenna array and RF transceivers
- 4- Project management and control according to a well-defined gantt chart or CPM (control project management)
- 5- System engineering to supervise all system tests including FAT (Factory Acceptance Test), Environmental test and SAT (Site Acceptance Test)

Actually during this work experience I got much research knowledge in R&D section and several system engineering skills in production line and system tests. Because of design flexibility, I could create innovative ideas in system design to get better performance with

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reasonable cost and time. I supervised a group of about 10 engineers with various expertise's to manage and track their activities periodically and gather the reports in order to integrate the total system. Through this task I acquired an active attitude and good communication skills for team playing. The other acquired skills and knowledge in this career included how to control and convey a project from time-expense point of view, communicate with users and customers, satisfy their needs and train them to use systems which also enhanced my ability in team working activities.

### **Skills**

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#### **Knowledge of :**

Vector and Scalar Network Analyzer (VNA & SNA) , Vector and Scalar Spectrum Analyzer , Signal Generator , Analog & Digital Oscilloscopes , Noise Figure Measurement , Phase Noise Measurement , Amplifier Nonlinear Measurement , Calibration of Communication Systems , Different Microwave Receivers Fabrication & Measurement Containing Crystal Video (DLVA or Detectors) , IFM (Instantaneous Frequency Measurement) , Tuner (Superheterodyne) & Digital Receiver

#### **Professional in :**

ADS (Advanced Design System) , CST Microwave , Ansoft HFSS , Microwave Office (AWR) , ORCAD , FEKO , Protel (DXP) , MATLAB (Programming & Simulink) , Microsoft Office

#### **Good Familiarity with :**

AutoCAD , Solid Work , Corel Draw , Cadence

### **Languages**

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▪ **Farsi :** Mother Tongue

▪ **English :** Excellent

#### **TOEFL :**

IBT , Score : 83

#### **GRE :**

CBT , Score : Verbal : 330 (13%) , Quantitative : 800 (92%) , Analytical : 2.5 (03%)

▪ **French :** Good

Passing 16 terms in Kish Institution of Science and Technology

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### Publications

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- *M. A. Ebrahimi-Ganjeh , M. Soltanian , M. Salarpour and A. M. Pezeshk*  
**“Comprehensive Study of Non-Uniform Circular Array Interferometer in a Real Time Broadband 3-Dimensional Direction Finder (2-12 GHz)”**  
*Progress In Electromagnetics Research (PIER) C , Vol. 24 , 69-81 , 2011*
- *M.A. Ebrahimi Ganjeh , M. Salarpour and A.M. Pezeshk*  
**"Phase Interferometer Direction Finder via Neural Network"**  
*C4I Conference held in Sharif University of Technology , Fall 2010*
- *S. Kiani , A.M. Pezeshk , H. Pourghassem and M. Salarpour*  
**"SAR Satellite Detecting and Tracking Using Phase Array Antenna"**  
*C4I Conference held in Sharif University of Technology , Fall 2010*
- *A. Akbari Khezri , M. Salarpour and A.M. Pezeshk*  
**"A Proposed New Direction Finding Algorithm with High Accuracy Based on Amplitude Comparison for Radar Targets in 2-18GHz Frequency Band"**  
*C4I Conference held in Sharif University of Technology , Fall 2010*

### References

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#### **Prof. Robert Bogdan Staszewski**

Professor at Delft University of Technology and University College Dublin

(My Supervisor for Guest Research)

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#### **Dr. Amir Mansour Pezeshk**

Manager of Advanced Electronic Core at Electronic Research Center , Sharif University of Technology

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