Amirata Ghorbani

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Senior Student
Department of Electrical Engineering
Sharif University of Technology- Azadi Ave, Tehran, Iran

Profile

Date of Birth	21 March 1994
Hometown	Zanjan, Iran

Education

September 2012 - Present

BS.C in electrical engineering(Communication Systems Branch)

Sharif University of Technology, Tehran, Iran

Cumulative GPA: 19.37 out of 20 (4 out of 4) via 109 credits
Last 4 semesters' cumulative GPA: 19.45 out of 20(4 out of 4)
2nd rank of Communication Systems Major among nearly 90 students
2nd rank among nearly 220 students (class of 2012-2016)

Academic Research History

IMAT & nonlinear distortions   Summer 2014 - Present   **Supervisor**: Dr. Marvasti

IMAT(iterative method with adaptive thresholding) recovers a sparse signal from its random samples. I started my research in ACRI (advanced communication research institute) Signal and Multimedia Processing Lab by learning about principles of sparse signal processing and working with IMAT. Then I did my research on IMAT and its behavior in the existence of non-linear distortion. Afterwards, I modified IMAT algorithm a little bit so that it can compensate distortions inside its iterations. In other words, I integrated the distortion compensating and signal recovery block and the results proved some performance advantages output signal against the two-block method. I am still doing some remaining simulations and the results are going to be prepared as a conference paper.

Blind non-linear Distortion Compensation   Fall 2014- Summer 2015   **Supervisor**: Dr. Marvasti

During my research in ACRI, I was introduced to some blind distortion compensation methods for sparse or low-pass signals. By developing these methods and using my experience from iterative methods in signal processing, I managed to develop a iterative method for compensating sparse signals' non-linear distortions (distortions that we do not know anything about) which strongly outperformed previous methods.

PAPER PREPRINTED:
Masoumeh Azghani, Amirata Ghorbani, Farokh Marvasti : An iterative method for non-linear distortion compensation based on sparsity

BS.C thesis: mechanism design   Summer 2015 - Present   **Supervisor**: Dr. Golestani

I first started learning about principles of game theory and mechanism design and audited the game theory course of Economics Department for the thesis. Then I started learning about principles of local and global stability in mechanisms with a focus on divisible good auctions. I also started learning about different learning methods of strategic agents in a game. Since then I am doing my research on locally stable mechanisms for network resource allocation problem in the presence of strategic users with feasible learning methods.

Language Proficiency

English: Fluent

Toefl IBT score: **112** out of 120 - May 2015
Reading=**30**   Listening=**30**   Speaking=**26**   Writing=**26**
GRE general:
Verbal Reasoning: **157**   Quantitative Reasoning: **168**   Analytical Writing: **4**

Persian: Native
Azerbaijani Turkish: Native

Selected honors & Awards

Ranked **2nd** among nearly 90 students in communication systems branch
Ranked **2nd** among 218 students in the class of 2016, Electrical Engineering Dept.
Fellowship of National Elite Foundation of Iran(since 2012), Awarded Full Scholarship.
Ranked **19th**out of nearly **300,000** participants in Iran's University Entrance Exam (Konkoor), 2012.

Selected Courses

Intro. to Wireless Communications	**19.4** out of 20	With Dr. Golestani
Digital Communications	**20** out of 20	With Dr. Salehi
Digital Image Processing	**20** out of 20	With Dr. Fatemizadeh
Pattern Recognition	**Auditing**	With Dr. Fatemizadeh
Game Theory	**Audited**	With Dr. Fatemi
C Programming	**20** out of 20	With Dr. Taherkhani
Communication Systems	**20** out of 20	With Dr. Behroozi
DSP	**18** out of 20	With Dr. Mashhadi
Signals & Systems	**20** out of 20	With Dr. Aghajan
Probability & Statistics	**19.1** out of 20	With Dr. Nayebi
Engineering Electromagnetics	**18.4** out of 20	With Dr. Borji
Computer Structure & Lab	**20** out of 20	With Dr. Bagheri
Analog Circuits & Lab	**20** out of 20	With Dr. Khorasani
Principles of Electronics & Lab	**19.1** out of 20	With Dr. Fotowat
Principles of EE & Lab	**18.5** out of 20	With Dr. Fardmanesh

Software Skills

Expert

- Computer Calculation & Simulation Software
    - Matlab

Intermediate

- Programming
    - C , C++, 8051 Assembly, Verilog(VHDL)
- Simulation Software
    - Orcad PSPICE, Synopsys HSPICE, Altera Quartus, Cadence(Layout & Simulation), Proteus, Altium Designer

Selected Academic Projects:

Image denoising using a multi-kernel method   Spring 2015   **Supervisor**: Dr. Fatemizadeh

Using matlab for Implementing the brand new denoising method established in paper "Z.Sun, S.Chen, L.Qiao, A general non-local denoising model usingmulti-kernel-induced measures". This method outperformed the existing non-local denoising methods by using the idea of multi-kernel methods used in machine learning works

Optical Character Recognition (OCR)   Spring 2014   **Supervisor**: Dr. Aghajan

Using matlab and implementing optical character recognition for recognizing the numbers and symbols used in car plates.

BJT Amplifier   fall 2014   **Supervisor**: Dr. Movahedian

Designing a BJT amplifier using HSPISE with a gain of 100dB, an input CMR of 2 volts, power dissipation of 15mw and voltage sources of +3 and -3 volts

Signal & Multimedia Lab   Summer 2014   **Supervisor**: Dr. Marvasti

Primary image processing methods, simulation of sparse signal recovery methods using matlab, attending weekly conferences in the Lab

Composite Video Generator on CRT   fall 2014   **Supervisor**: Dr. Bagheri

Designing a circuit using 8051 microprocessor which driving a CRT using composite video standards portraying a mono-colored steady rectangular object on the monitor with the option of moving it arbitrarily by using a Nintendo Atari gamepad

Chua's Circuit   Spring 2013   **Supervisor**: Dr. Khorasani

Implementing Chua's circuit on a PCP. Chua's circuit is one of the circuits with a chaotic bahavior.

Audio Amplifier   Spring 2014   **Supervisor**: Dr. Fotowat

Designing & Implementing an audio amplifier on a PCB using BJT transistors with specs for power dissipation & distortion.

Teaching Experiences

Lab Teaching Assistant	Digital Circuits & Lab	Dr. Shabani
Course Teaching Assistant	Digital Signal Processing	Dr. Mashhadi
Lab Teaching Assistant	Principles of EE & Lab	Dr. Fardmanesh
Course Tutorial Class Assistant	Principles of EE & Lab	Dr. Fotowat
Course Tutorial Class Assistant	Circuits Theory	Dr. Fatemizadeh
Course Tutorial Class Assistant	Principles of Electronics	Dr. Fakharzadeh
Course Tutorial Class Assistant	Analog Circuits & Lab	Dr. Khorasani
Course Lab Assistant	Analog Circuits & Lab	Dr. Shabani
Course Teaching Assistant	Principles of EE & Lab	Dr. Fardmanesh
Course Teaching Assistant	Principles of Electronics	Dr. Sadughi
Lab Teaching Assistant	Principles of EE & Lab	Dr. Hashemi
Lab Teaching Assistant	Logic Circuits & Lab	Dr. Mohammadzade

Hobbies & Interests

Reading Books

Since years ago I have always tried to have one hour of book reading every day. Historical, romantic, and above all psychological books have always been the best choices for me; fostering my personality.

Listening to music

My interest in music varies from pop and rock genres to Persian traditional music.

Watching movie

I am on the idea that 7th art is the best way to express pure emotions.

Reading & watching the new

I cannot imagine a life without knowing what is going on in my surrounding world. I check BBC, DW, and so forth multiple times a day.

Other

All in all, I truly enjoy spending time with my friends and also meeting new people. I think that each person is a mystery solving which is the most enjoyable thing one can do during his or her life.

Research Interests

- Wireless & Sensor networks
- Game theory & Mechanism Design
- Multimedia Signal Processing
- Data Science & Machine Learning

References

Prof. Marvasti, Farokh

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Prof. Golestani , Jamel

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