Ehsan Pazouki

Contact Info

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Personal Info

- Birth Date: June 5 1982
- Nationality: Iran
- Marital: Married With a Son

Profile

Doing researches that make applicable, practical, reliable products and results that are used as tools for solving real problems using artificial intelligence (AI) concepts and provide effective solutions for the problems of common people is my main interest. I like extremely to work in multidisciplinary projects where I can collaborate with various specialists as a team member. Using AI in the agricultural and environmental issues is my focus where Water management for optimizing irrigation systems and making a digital twin system of the farmland are two branches of the agricultural sector that receive more interest. I did many researches in these domains and used geospatial, Deep Models, expert system, optimization algorithms and some other AI's concepts for solving problems. Tree counting is an application of my current research in the environmental sector in which some crowd counting algorithms based on the Deep Models are used.

Educations

Bachelor of Science in Computer Engineering
- Iran University of Science and Technology, Tehran, Iran
- Fall Semester of 2001 – Summer Semester of 2005
- Honor: Second Grade between Fellow Students of Faculty of Computer Engineering
- GPA: 3.58(B)

Master of Science in Computer Engineering

- Artificial Intelligence
- Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
- Fall Semester 2005 – Sprint Semester 2008
- Honor: First Grade between Fellow Students of Faculty of Computer Engineering
- GPA: 3.86(A)
- Thesis: Analyzing performance of the special player of soccer using TV video

Doctoral Degree in Computer Engineering

- Artificial Intelligence
- Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
- Sprint Semester 2010 – Sprint Semester 2015
- GPA: 3.66(A)
- Thesis: Approach based on the calculus of variation and partial differential equation for object tracking in the wide area using moving model of the object

Work Experiences

Senior Researcher

- 2007-2016 (9 years) - Part Time
- Place:
    o Research center of Amirkabir University (Tehran Polytecknic)
- Main Issues:
    o Analyzing, designing and making an imaging payload.
    o Researching in remote sensing applications, prerequisites and algorithms
    o Team working in the multidisciplinary environment with 10 different special departments and about 40 specialists
    o Problem solving in hi-tech issues
    o Producing for harsh and complex environments
- Main Products:
    o Imaging payload that meet spectral, spatial, radiometric and timing requirements
    o Image processing tools based on the Hardware Digital Language (HDL) for real-time and reliable processing
    o Remote sensing tools
- References:
    o An attached research certificate
    o An attached recommendation
    o An attached lecture certificate of APSCO workshop

Research and Development Leader

- 2007-2017 (10 years) - Part Time
- Place:
    o Samim Group Media and Communication Technology
- Main Issues:
    o Analyzing, designing and making smart cameras for ITS applications
    o Researching and making embedded systems
    o Leading a multidisciplinary team with 4 different special departments
    o Producing for harsh and complex environments
- Main Products:
    o Smart camera for number plate, car and event recognition and traffic monitoring
    o Pattern recognition algorithms that provide confident and reliable outputs
    o Compact, embedded, stable image processing infrastructure for real and harsh applications
- References:
    o An attached Social Security report

- o Some of my co-workers:
  - Reza Aslanzadeh (linkedin.com/in/raslanzadeh - aslanzade@gmail.com)
  - Amir Ghodrati (linkedin.com/in/amir-ghodrati-7462365a - ghodrati@gmail.com)
  - Shahram Kalantari (linkedin.com/in/shahram-kalantari-050b5753 - shahramk@gmail.com)

Assistant Professor

- 2017 - present (5 years) – Full Time
- Place:
  - o Shahid Rajaee Teacher Training University
- Main Issues:
  - o Teaching AI and Computer Science-Software Engineering courses
  - o Supervising more than 10 graduate students of Department of Artificial Intelligence
  - o Researching in the smart farming and digital agriculture fields
  - o Producing smart mobile and web applications in the digital twin system of farmland scope
- Some Courses:
  - o Under graduated: Software Engineering, Computational Intelligence, Internet Engineering
  - o Graduate: Mining of Massive Datasets, Evolutionary Computing, Real-time Embedded Systems
- References:
  - o An attached Recruitment Order
  - o An attached Recommendation

Skills

Smart and Precision Agriculture

I have been studying theories and basic concepts of agriculture since 2019. I started with water management and irrigation issues. I planned to develop smart mobile apps and web panels for monitoring, modeling and managing farmlands and growth of the crops as a digital twin system. I decided to propose an architecture for making a virtual field twin with the real field and help the farmer get optimal decides. I have 10 experiences in academic projects on real fields and I am involved in one industrial project.

Team Management and Product Owner

I have about 13 years of experiences in team management and I was product owner in more than 15 research and industrial projects.

Data Mining and Signal Processing

- Knowledge Discovery and Modeling:

  I have started working in this area since 12 years ago and my first notable research production in this area was the published paper in 2009. I have introduced and used many tools and algorithms in this area on greater than 30 academic researches and about 5 industrial products such as Computational Intelligence (CI) tools and algorithms, learning models, Python programming language and well-known related tools and packages, C++ programming language and related libraries.

- Image and Video Processing:

I have begun video processing since 13 years ago and my first notable research production is my MSC Thesis which was completed in 2008. I have introduced and experts many tools and algorithms of video processing on greater than 50 academic research and about 10 industrial products such as OpenCV package, C, C++, Python, VHDL, Verilog, Java languages and Mobile programming tools, real-time and embedded programming tools and so on.

- NLP and Text Processing:

I have worked in Natural Language Processing for two years which started by making a machine translation system based on the statistical algorithms. In this area, I have only about 5 academic researches and I do not have any industrial experience.

Embedded System (Mixed of Hardware & Software) Design

- Firmware Designing/Implementation/Deployment

I have many experiences in using SOC, FPGA Xilinx and Altera and many special sensors to produce some embedded products in ITS. I had designed and implemented many embedded SOC based products in the ITS application for monitoring and controlling traffic using smart tools and algorithm which worked 24/365 by real-time constraint. Also, I had designed, implemented and tested digital hardware, firmware and software as imaging payload which used smart and real-time performance. I have about 10 years of experience in this area where I used digital hardware design tools, OS level design tools and artificial intelligence package, algorithm and tools for producing smart embedded products.

- Remote Testing

In our projects, the designed products usually must be installed in the special and inaccessible places, so we had to use remote methods, tools and frameworks for testing, monitoring and controlling. I used remote infrastructures for testing in R&D and operation phases in about 20 industrial experiences.

Outdoor and hazardous Field Project Management

Based on the situation and applications of our projects we had to usually install our products in hazardous places such as high places, above highways, out of the cities, far from technologies and usual infrastructures. So, I have great experiences in project management in the outdoor and hazardous fields in many industrial projects.

Teaching and Education

I have about 5 years of academic teaching and educational experiences. In these years, I taught about 9 different courses in bachelor and graduate level. I supervised 10 graduated students and more than 30 under graduated students.

Language Skills

- English: Professional working proficiency
- Persian: Native

Tools and Instruments

Hardware

- Many types of SOC based boards and processing unites
- Some family of Xilinx FPGA chips
- Some family of Altera FPGA chips
- Different Imaging sensors by CCD and CMOS technologies and from variety companies such as Kodak, On Semiconductor, Sony , …
- Different Optical equipment such as Lens, Optical Filters, Mechanical Adaptors
- Different Programming and testing especial processors such as AVR and FPGA Chips

Software

- Programming: C, C++, Java, C#, Python, Verilog, VHDL, PHP, JavaScript and …
- Modeling: WinSRFR, DSSAT, SIRMOD, SurDev

Current Publications

- Generating digital elevation model from farm fields using smartphone, Earth Science Informatics, Feb 22, 2022
- AgriBot: a mobile application for imaging farm fields, Multimedia Tools and Applications, Mar 31, 2022
- A practical surface irrigation design based on fuzzy logic and meta-heuristic algorithms, Agricultural Water Management · Oct 1, 2021
- A practical surface irrigation system design based on volume balance model and multi-objective evolutionary optimization algorithms, Agricultural Water Management · Apr 1, 2021
- A Smart Surface Irrigation Design Based on the Topographical and Geometrical Shape Characteristics of the Land, Agricultural Water Management, Under Review (Received Major Revised)
- Optimizing an irrigation treatment using an evolutionary algorithm and a knowledge discovery framework based on Deep models, Applied Soft Computing, Under Review

Research Scope (Interest Scope)

- Smart Farming
- Digital Agriculture
- Virtual Field Modeling
- Precision Agriculture
- Twin System
- Mining Massive and Big Data
- Intelligent App for Virtual Farming
- Video and Image Processing
- Deep Learning

Hobbies:

- Badminton
- Table Tennis
- Swimming
- Watching Fiction and Comic Movies
- Playing with my beautiful son