Pourya Khaksari

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Fields of Interest

Image Processing | 3D Computer Vision | Robotics and Automation
Algorithms & Data Analysis | Machine Learning | IoT

Education

K. N. Toosi University of Technology 2020-2023
M.Sc. in Computer Engineering – Hardware Engineering (GPA: 3.42)

University of Tehran 2014-2019
B.Sc. in Computer Engineering – Hardware Engineering (GPA: 2.42)

Allame Helli 3 High School 2010-2014
Diploma of Mathematics and Physics

Research Experiences

Research Assistant – K. N. Toosi University of Technology- supervisor: Masoud Dehyadegari 2023 -2024
Working on a Survey paper on 3D computer vision.
- The paper, submitted to the prestigious journal *Transactions on Visualization and Computer Graphics*, covers various state-of-the-art techniques, methodologies, and applications in the field of 3D computer vision. We recently received reviewer comments and are in the process of revising the paper for publication.

Master Thesis – K. N. Toosi University of Technology - supervisor: Masoud Dehyadegari 2022-2023
Implementing deep learning-based method for 3D Object Detection
using Transformer neural network and using noise removal methods to preprocess the point cloud for speed up.
- Transformer Neural Networks, Convolutional Neural Networks (CNN)
- MMlab engines, MMDet3D, MMCV
-Ground Segmentation for point cloud data
-Kitti Dataset

Data Analyst - Hoodad – Caspian Smart Products - supervisor: abdollah eshghi 2021
our paper "an intelligent method for detecting gambling transactions using random forest" has been accepted in 7th International Conference on Industrial and Systems Engineering.
-Random Forest Algorithm using python for real-time transaction classification tasks

Bachelor Thesis - University of Tehran – supervisor: Saeed Safari 2019
Deep learning-based Pedestrian-Detection for cars,
Computer Vision and Pattern Recognition with python.
- Various deep learning frameworks (e.g., TensorFlow, PyTorch)
-implement and test YOLOv3

Teaching Experiences

K. N. Toosi University of Technology
TA: Advance Computer Architecture 2022

University Of Tehran
TA: Micro Processor Lab 2019
TA: Introduction to Computing Systems & Programming 2015

Relevant Courses

Computer Architecture: Saeed Safari	16.47/20	Parallel Programming: Saeed Safari	17.9/20
Computer Aided Digital System Design: mostafa ersali	16.2/20	Cloud Computing: Saeed Sedighian	17.5/20
Hardware/Software Codesign: mostafa ersali	19/20	Logic Circuits Design: Zainalabedin Navabi Shirazi	15.2/20
Real time Embedded system: Mehdi Kargahi	16.5/20	Advance Computer Architecture: Masoud Dehyadegari	18/20

Publication

1. **Title:** "3D Point Cloud Processing: A Survey"
   Authors: Alireza Dehghanpour, Zahra Sharifi, Pourya Khaksari, Negin Rajabi, Masoud Dehyadegari, Hoda Roodaki
   Journal: *IEEE Transactions on Visualization and Computer Graphics*, **Year:** *2024*
   Status: Revise (Jun 2024)

2. **Title:** "Introducing a random forest based intelligent method for detecting suspicious illegal gambling transactional patterns"
   Authors: Narjes shafiei bavani, Alireza badamchi, Ali naghavi, Pourya khaksari, Negin khamseh,Ghazaleh Shahidi
   Conference: 7th International Conference on Industrial and Systems Engineering, **Year:** *2021*

Working Experience

Data Analyst - Hoodad – Caspian Smart Products (2 year & 2 months) : abdollah eshghi 2020 - 2022

Project:

-Developing Fraud Detection System for Banks to Detect suspicious clients and transactions to prevent anti money laundering using machine learning methods and designing a dashboard for monitoring the system.

Responsibilities and Achievements:

- Conducted data extraction and manipulation tasks using SQL to obtain relevant information from the Oracle database.
- Developed the backend of the application using the Python Django framework, ensuring efficient data processing and management.
- Implemented a responsive and interactive user interface for the BI panel using Angular TypeScript, enhancing the overall user experience.
- Applied the Random Forest machine learning method to identify trends and patterns within the dataset

Technologies Used:

- Database: Oracle, SQL
- Backend: Django, Python
- Frontend: Angular, TypeScript
- Machine Learning: R, Python

Micro Controller Developer - Samim Group - Media & Communications Technology (4 months) 2019

Project:

-Implementing bootloader for LPC1768 NXP ARM Microcontroller to be
Updatable by network (UDP packets).

Responsibilities and Achievements:

- Engineered a custom bootloader in C for NXP ARM microcontrollers, enabling remote updates through network connectivity.
- Implemented a secure and efficient update mechanism using UDP packets for seamless transmission of new code to devices. integrated C# components for sending update signals and transmitting code over the network.

Technologies Used:

- Microcontroller: NXP ARM, C
- Network Communication: C#, UDP

Intern - University of Tehran – System on Chip lab (4 months) : mostafa ersali 2018

Project:

-Accelerating robot processes with navigation and obstacle
crash avoidance by ARMFPGA+Arduino board.

Responsibilities and Achievements:

- Orchestrated the integration of Arduino and FPGA to create a cohesive control system for the robot.
- Offloaded computationally heavy processes to the FPGA, optimizing the robot's overall performance.

Technologies Used:

- Microcontroller: Arduino, C
- FPGA: VHDL

Skills

Programing Languages:
C, C++, Python, Java, TypeScript,
SQL, HTML, CSS, Verilog (Intermediate), VHDL

General:
Excellent problem-solving abilities, Algorithm Design, Data Structures, Graph Theory, OOP,
LPC NXP ARM Microcontrollers, code vision AVR, Arduino, Raspberry pie, DXP Altium designer,
Socket Programing, bootstrap, angular, android, OpenCV,
Tensorflow, pyTorch, Django

Academic Projects

Microprocessor: Use Bluetooth to control light switch (USART-I2C)
Computer Architecture: Implement MIPS on FPGA (Xilinx spartan3 – Verilog)
Computer Aided Design: Neural Network on FPGA (ISE – VHDL)
Parallel Programming: Accelerating Image processing with SIMD methods (C++ - OpenCV - Cuda)
Hardware/Software Codesign: Accelerating Neural Network with adding custom instruction (Nios II)
Programming Languages and Compilers: Implementing compiler for “toorla” programming language

Awards

3rd Place at Junior's soccer (Open weight**)** Robo Cup Iran Open competitions 2012
(Qualified for International Robo Cup 2012 Mexico)
2nd Place at Kharazmi soccer Robo Cup competitions 2011
3rd Place at Junior's Robo Cup Farzcup competitions 2012
3rd Place at Junior's Robo Cup Farzcup competitions 2013

Languages

Persian (native),
English: TOEFL iBT (Total: 98 – Reading: 26, Listening: 29, Speaking: 22, Writing: 21)

Hobbies

Football, Volleyball, Movies, Hiking