Pourya Khaksari

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Fields of Interest			
	Image Processing	Embedded Systems	Robotics and Automation
	Autonomous Driving	Machine Learning	3D Computer Vision

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 (street view for autonomous driving)

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	**Embedded Systems Engineer - Crouse – automotive parts manufacturer (6 months)** **2025 - present**

Embedded Systems Engineer - Crouse – automotive parts manufacturer (6 months)   **2025 - present**

Projects:
-Designed and developed robotic testing devices for validating the functionality of automotive products at the end-of-line production stage.
- Delivered automated test solutions involving communication with automotive ECUs over CAN and LIN bus protocols to simulate real-world operating conditions.
-Delivered vision-based test setups for inspecting LCD panels and LED indicators, verifying display accuracy and color conformity.

Responsibilities and Achievements
-Engineered modular hardware systems using components such as digital/analog IO cards, resistor boxes and etc.
-Programmed and deployed Python-based control logic on Raspberry Pi platforms to manage test sequences and interface with hardware modules.
-Ensured alignment of testing systems with production standards through close collaboration with hardware, software, and production teams.
-Contributed to increased production throughput by automating repetitive test routines.

Technologies Used
Hardware: Raspberry Pi, Modular Cards, STM32 Micro Controllers, Industrial Cameras
Software: Python, Embedded C, OpenCV, Altium Design, Linux-based embedded control systems
Protocols: CAN Bus, LIN Bus, UART, SPI, I2C
Tools & Equipment: Oscilloscopes, Multimeters, Power Supplies, CAN analyzers

Data Analyst - Yas Arghavani – Business Consulting and Services (8 months)   **2024**

Project:
-Integrated machine learning models and Matlab scripts for data processing on a big data platform using Spark and Airflow frameworks.
- Developed a machine learning model to predict customer churn using transaction and behavioral data.

Responsibilities and Achievements:
- Worked on Hadoop Impala big data platform for efficient data storage and processing of large-scale datasets.
- Ensured data quality, validation, and performance of big data applications.

Technologies Used:
- Languages & Tools: Python, SQL, Matlab
- Frameworks: Apache Spark, Airflow, Hadoop, Impala

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.
- 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 & Frontend: Django, Python, Angular, TypeScript

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.

Technologies Used:
- Microcontroller & FPGA: Arduino, C, VHDL

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