

Mohammad Shammakhi

R&D Applied Engineer

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SUMMARY OF QUALIFICATIONS

- PhD in Electrical Engineering specializing in Optical Communication Systems.
- +8 years of experience in designing and developing communication system products, spanning various hardware platforms including FPGAs and GPUs.
- Proficient in Wireless Communication, Signal Processing, SW/HW Development , and AI.
- Strong knowledge of wireless communication protocols such as LTE, Bluetooth, WiFi, DVBS2X, DVBT2, IoT, 3G/4G, GNSS/GPS physical layer, data-link layer, and channel coding.
- Extensive proficiency in the development of SDRs, radio links, and customized transmitters and receivers.
- Extensive expertise in MATLAB and Python ML and DL using [Tensorflow](#) and [PyTorch](#)
- Strong skills in FPGA and [GPU programming](#), [C/C++](#) and Qt, MATLAB, [Python](#), and Git.
- Dedicated professional, problem-solving mindset, and attentive to quality and detail.

EXPERIENCE

- **Principal Wireless Engineer** Sep 2023 - Jun 2024
Bluvec Technologies Vancouver, Canada
 - **R&D Applied:** Engaged in research and development for drone detection, with a focus on GPU and CPU implementation. Additionally, actively involved in the creation of a post-processing engine using Golang. Researched and developed LTE, WiFi (802.11 a/b/g), BLE, OcuSync and different single carrier based receivers.
- **Senior Applied R&D** Feb 2023 - Sep 2023
Qualinx and NextIO .B.V Delft, Netherlands
 - **System Designer and Developer:** Redesigned and developed various processing blocks for a GNSS receiver for GPS, GLONASS, Galileo, and BeiDou satellites. Implemented the solution in C++ as the RTL reference model.
- **Project Manager and Applied Research and Development** Feb 2020 - Feb 2023
Sunyar Co Tehran, Iran
 - **Satellite and Wireless Communication System Designing:** Developed real-time satellite and wireless communication systems for various projects, encompassing the design and implementation of systems such as the GMR satellite receiver, [GPU-Based Software Defined Radio \(SDR\)](#), [DVBS](#), [DVBS2](#), and [DVBS2X receivers](#), and a customized communication link for video transmission. The Design meets specific requirements and employed GPUs or FPGAs based on project demands.
 - **System Developer:** Experienced in developing different aspects of products such as real-time software using Qt or C++, implementing mutliprocessor system engines, developing GPU based process, FPGA based processes and designing the chains to implement the physical layer and data link layer of communication links, encompassing various types of channel encoding/decoding, interleaving, scrambling, and source encoding/decoding, in both the transmitter and receiver sides.
 - **AI-Based System Developer:** Designed/Implemented ML and DL based AMR and QoT estimations systems.
 - **Other Responsibilities:** Established this company and Managed more than ten projects in about three years.
- **Project Manager and Applied R&D** Feb 2015 - Feb 2020
Farateif Pouya Technology Tehran, Iran
 - **System Designer:** Developed diverse communication systems tailored for implementation in FPGAs and GPUs, employing both fixed-point and floating-point architectures to meet specific requirements.(Sep 2018 - Mar 2020)
 - **Senior Software and Hardware Developer:** Implemented CPU and GPU-based projects utilizing Qt, C++, and CUDA for efficient real-time data processing. Additionally, designed GPU-FPGA based projects employing CUDA, system generator, and VHDL to leverage the power of parallel processing.
 - **FPGA Developer:** Executed multiple projects utilizing Xilinx FPGAs with the System Generator tool and occasionally VHDL to construct advanced wideband communication systems.(Feb 2016 - Sep 2018)

EDUCATION

- **Ph.D. in Communication Systems** 2017 – 2023
Amirkabir University of Technology
Thesis: Quality of Transmission Estimation Based on Machine Learning Methods,
Specialization: AI in Optical Networks *Tehran, Iran*
- **M.Sc. in Electrical Engineering, Communication Systems** 2014–2016
Amirkabir University of Technology
Thesis: Sparse Modeling Methods based on Machine Learning (19.4/20),
Specialization: Signal Processing Based on Machine Learning *Tehran, Iran*
- **B.Sc. in Electrical Engineering, Electronics** 2010 – 2014
Shahid Rajaei University
Thesis: Differential Research of SPECK Block Cipher (20/20),
Specialization: Cryptography *Tehran, Iran*

SKILLS

- **GPU Programming:** CUDA (Expert), cuFFT, cuBLAS, Multistream
- **Engineering Tools:** System Generator(SysGen), Xilinx Vivado & ISE, Proteus, CodeVision, MATLAB
- **AI and Signal Processing:** Machine Learning (scikit-learn), Neural Network and Deep Learning (**Tensorflow**, Pytorch), Signal Processing (Scipy), **Image processing and Computer Vision**(OpenCV, scikit-image, PIL), Video Streaming (FFMPEG, GStreamer), **Parallel Processing**(Cupy, Numba), and Numpy
- **Programming Languages and IDEs:** C(Advanced), **C++(Expert - IKM score: 83)**, Qt(Expert), Assembly(Beginner), **Python (Advanced - IKM score: 82)**, R(Intermediate), **CUDA**(Expert) and Go(Intermediate)
- **Operating Systems:** Windows, Linux
- **FPGA Programming:** System Generator (Expert), VHDL(Intermediate), HLS(Beginner)
- **Other Utilities:** L^AT_EX, Microsoft Office, Git
- **Human Languages:** Persian(Native), English(Intermediate)

PUBLICATIONS

- M.H. Shammakhi, P. Haji Faraji , **"Gb/Sec Frame-Based Phase Locked Loop on Gpu "**, 2022.
- M.H. Shammakhi, P. Haji Faraji, M. Mohammadi, M. Hoseinzadeh , **" GPU-Based Parallel Algorithm for Wide-band Signal Timing Recovery"**, Turkish Journal of Computer and Mathematics, 2021.
- M. Soltani, M.H. Shammakhi, S. Khorram, H. Sheikhzadeh , **" Combined mRMR Filter and Sparse Bayesian Classifier for Analysis of Gene Expression Data"**,, 2016 2nd International Conference on Signal Processing and Intelligent Systems 13-15 Dec. 2016
- M.H. Shammakhi , V. Ghanbari, "In Persian Title," , 2016 1st International Conference New Perspective in Electrical and Computer Engineering, Sep. 2016
- M.H. Shammakhi , V. Pourahmadi ,P. Khavari , A. Mirzaei , **"Combined mRMR-MLPSVM scheme for high accuracy and low cost handwritten digits recognition"**, 2015 9th Iranian Conference on Machine Vision and Image Processing (MVIP). IEEE, 18-19 Nov. 2015

REFERENCES

The list of references will be provided to recruiters on demand.