# MohammadHasan Shammakhi

Telecommunications Engineer

Location: Vancouver, British Columbia, Canada Phone Number:+1(604)3963537
Email: mh.shammakhi@gmail.com
Professional links: PersonalWebsite |LinkedIn | StackOverflow | GitHub

## Summary of Qualifications

- Over 7 years of experience in Electronic, Communication Systems, and Algorithm design and implementation of digital hardware
- Strong background in Communication Systems, Signal Processing, and Machine Learning
- Good knowledge of Satellite Communication, Wireless Communication, LTE, and GPU.
- Proven skills in FPGA Programming, GPU programming, C++ and Qt, MATLAB, and Python
- MSc graduate of Electrical Engineering and Communication System from Amirkabir Univerity of Technology
- Skilled in team-working and Project management
- Dedicated professional, Problem solver, and attentive to quality and detail

## Experience

- **Project Manager and Applied Research and Development** Mar 2020 - Apr 2023
  *Sunyar Co*
  - **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, IDIRECT satellite receiver, and a customized communication link for video transmission.The Design meets specific requirements and employed GPUs or FPGAs based on project demands.
  - **Software Developer**: Experienced in designing real-time voice software using Qt or C++, involving the implementation of various processes, system controls, and GUI management.
  - **Hardware Developer (GPU)**: Implemented the physical layer and data link layer of communication links, encompassing various types of channel coding, decoding, interleaving, scrambling, and source encoding/decoding, in both the transmitter and receiver sides.
  - **Hardware Developer (FPGA)**: Implemented SDRs and satellite receivers, Additionally, implemented combined GPU-FPGA-based systems.
  - **AI-Based System Developer**: Designed and implemented deep learning based automatic modulation recognition system
  - **Other Responsibilities**: Established this company and Managed more than ten projects in about three years.
- **Project Manager and Applied R&D** Sep 2018 - Mar 2020
  *Farateif Pouya Technology*
  - **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.
  - **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.
  - **Tutor**: Mentored and trained over ten individuals in the field of software and hardware engineering, in addition to fulfilling other responsibilities.
- **Software and Hardware Developer** Feb 2015 - Sep 2018
  *Farateif Pouya Technology*
  - **C++ and Qt Developer**: Developed projects using Qt, C++, and occasionally C# to handle real-time data processing, data visualization, and GUI management.
  - **FPGA Developer**: Executed multiple projects utilizing Xilinx FPGAs with the System Generator tool and occasionally VHDL to construct advanced wideband communication systems.

- **Communication System Advisor** Aug 2018 - Nov 2018
  *Sepehran*
  - **FPGA-Based System Advisor**: Addressed longstanding challenges that persisted within the company for over a year by successfully implementing an enhanced anti-jamming algorithm as a subblock for their radar project.

## Education

- **M.Sc. in Electrical Engineering, Communication Systems** 2014–2016
  *Amirkabir University of Technology* *Tehran, Iran*
  Thesis: Sparse Modeling Methods based on Machine Learning (19.4/20),
  *Specialization: Signal Processing Based on Machine Learning*

- **B.Sc. in Electrical Engineering, Electronics** 2010 – 2014
  *Shahid Rajaee University* *Tehran, Iran*
  Thesis: Differential Research of SPECK Block Cipher (20/20),
  *Specialization: Cryptography*

## Skills

**GPU Programming:** CUDA (Expert), cuFFT, cuBLAS, Multistream

**Engineering Tools:** System Generator(SysGen), Xilinx Vivado & ISE, Proteus, CodeVision, MATLAB (Machine Learning Toolbox, Optimization Toolbox, Signal Processing Toolbox, Image processing Toolbox, Neural Network and Deep Learning Toolbox, Control System Toolbox),

**Programming Languages and IDEs:** C(Advanced), C++(Expert), Qt(Expert), Assembly(Beginner), Python(Advanced), R(Intermediate), CUDA(Expert)

**Operating Systems:** Windows, Linux (Certification:LPIC II)

**FPGA Programming:** System Generator (Expert), VHDL(Advanced), HLS(Beginner)

**Typesetting:** LaTeX, Microsoft Office

**Source Control:** Git(Intermediate)

**Human Languages:** Persian(Native), English(Intermediate)

## Publications

- P. Haji Faraji, M.H. Shammakhi, H. Sheikhzadeh , **" Joint Feature-Sample Selection for Facial Expression Recognition",**, Computer Vision and Image Understanding, Elsevier . **2023** (Submitted)(It can be found in my Github page)
- 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.