

## Ali Alavi

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- **University of Tehran** Iran, Tehran  
*M.Sc., Communication Engineering, Field and Wave* *Sep. 2017 - Sep. 2020*
  - Thesis: New method for Monte Carlo simulation of polarization sensitive optical coherence tomography using parallel programming
    - \* Supervisor: Dr Mahmoud Mohammad-Taheri
    - \* Advisor: Dr Mahmoud Shahabadi

Last 2 semesters GPA: 3.57
- **Ferdowsi University of Mashhad** Iran, Mashhad  
*B.Sc., Electrical and Electronics Engineering* *Sep. 2012 - Mar. 2016*
  - Final Project: LNA compensator with Labview and Xmega microcontrollers
    - \* Supervisor: Dr Mohammad Taherzadeh
  - Teacher Assistant: Computer programming course
  - Teacher Assistant: Logic circuits course
  - Teacher Assistant: Coordinator for computer architecture lab

GPA: 3.33

## Work Experience

- **Ferdowsi University of Mashhad** Iran, Mashhad  
*Research Assistant* *Jul. 2015- Oct. 2015*
  - Worked as a research assistant on an IC with biomedical application under supervision of Dr Mohammad Taherzadeh
- **Tarashe Sanat-e Pishro** Iran, Mashhad  
*High Speed Circuit Designer* *July. 2016- Sep. 2016*
  - Designed a FPGA high speed board with DDR3 SDRAM, Ethernet and multiple peripherals
- **Payafanavar** Iran, Mashhad  
*Electrical Engineer* *Jan. 2019 - Aug. 2019*
  - Worked on a C# 3D reconstruction project
- **AI-bridge** Hamburg, Germany  
*Consultant* *Oct. 2019 - Mar. 2020*
  - Implementation and design of state of art deep learning applications with Tensorflow and Pytorch

## Extracurricular Activities

- Entrepreneurship Center, *Ferdowsi University of Mashhad 2015-2016. (Coordinator and assistant)*
- ICEE Conference, *Ferdowsi University of Mashhad 2015. (Student volunteer)*

## Skills

**Programming Languages:** C/C++, C#, Python( numpy, panda, scikitlearn, numba, . . . ), MATLAB, CUDA, Labview

**Digital Systems:** VHDL, Verilog, ARM Cortex-M MC

**Deep Learning:** Tensorflow(v1 v2), Pytorch, Keras

**Communication Systems:** Hardware defined radio with MATLAB on FPGA

**Electromagnetism** CST, ADS, Lumerical, COMSOL

**Electronics** Cadence IC, Virtuoso

**Web Development** HTML, CSS, PHP, Javascript, React, SQL

**Game Developement** Unreal Engine 4, Unity

**Electrical Content Creation** Fusion360, Houdini

**Others** Linux, LATEX, git

## Research Projects

- Gaussian RBF for image classification, deep pose using DNN based regressor, fault detection using autoencoder network, sentiment analysis with BERT and GloVe embedding followed by LSTM layers, speech recognition with attention network, medical image segmentation with SegAN network on BraTS dataset. Under supervision of Prof. Reshad Hoseini.
- Image enhancement with Tenet, body part segmentation with PGAN, image colorization with residual encoder, image super resolution with ESRGAN application developement in AI-bridge Company.
- Various paper implementation in the topics of image and text classification and segmentation, body part segmentation, speech recognition, time series prediction, NLP, etc.
- License plate recognition based on novel networks architecture using CNN and LSTM and CTC loss.
- Body transform network based on Nvidia's vid2vid network in pytorch.
- SFM 3D reconstruction in C# software and GUI for a 3D laser scanner.
- Research on deep learning based feature extraction methods for 3D reconstruction applications under supervision on Dr Reza Zoroufi.
- Fourier optics MATLAB simulations under supervision of Prof. Mohammad Neshat.
- Bounded mode plasmon-polariton waveguide, nanowire waveguide, plasmonic waveguide in a thin metal, silicon based hybrid plasmonic waveguide, waveguide-fed optical hybrid nano antenna, leaky wave optical nano antenna, thin film solar cell enhancement with metasurface lens simulations in COMSOL under supervision of Dr. Leila Yousefi.
- Design of LNA balanced amplifier in ADS software at microwave band under supervision of Prof. Shahabadi.
- Design and simulation of magic T in HFSS under supervision of Prof. Mahmoud Kamarei.

- Research review on application of metamaterial for microstrip antenna radiation pattern improvement under supervision of Dr Karim Mohammadpour Aghdam.
- Research on RLC interconnects in VLSI under supervision of Prof. Jalil Agha Rashed Mohassel.
- LNA IC design in cadence IC as a research assistant under supervision of Dr. Mohammad Tehrzadeh.
- Extensive experience in antenna design, metamaterial and metasurface design, Fourier optics.
- Various physics and electromagnetics communication papers implementations.
- RPG game developement with Unreal Engine 4 (including asset creation with Houdini)(personal project).

## **Publications**

**Neural network for estimation of optical characteristics of optically active and turbid scattering media using Monte Carlo simulation** [Download](#).

## **Notable Graduate Courses**

Deep learning and applications

Machine Vision

Metamaterial

Nano photonics

## **Languages**

**Persian:** Native Language

**English:** Full proficiency (TOEFL iBT:101)

**Arabic:** Basic Proficiency