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OBJECTIVE

A highly motivated engineer, skilled in design and multiphysics simulation of photonic/electromagnetic devices, and familiar with artificial intelligence; with 2 years' experience in cutting-edge research.

EDUCATION

MSc in Electrical Engineering – Fields and Waves | University of Tehran 17.00 / 20 2017 – 2020

Thesis: Realization of Optical Beam Steering for Integrated Lidars. (more detail [here](#))

Defended on 15 Sep 2020 with "Excellent" grade.

Advisor: Dr. Leila Yousefi

BSc in Electrical Engineering - Telecommunications | Azad University 18.08 / 20 2012 – 2016

Final Project: Study and Simulation of OFDM systems.

EXPERIENCE

Research Assistant | Nanophotonics and Metamaterial Research Group – University of Tehran 2018 – 2020 (<http://www.nanophotonics.ir>)

- ✓ Designed a novel tunable metasurface using phase change materials and graphene for beam steering in the near-IR range.
- ✓ Designed a novel tunable metasurface using transparent conducting oxides for 2-dimensional beam steering in the near-IR range.
- ✓ Performed a thorough literature review about suitable beam-steering methods for integrated lidars.
- ✓ Achieved a solid background in machine learning (especially deep learning) to use it in further researches e.g., inverse design, optical neural networks.
- ✓ Performed numerous numerical Multiphysics analysis on nanophotonic structures (electromagnetic, AC/DC, Thermal, and semiconductor analysis).
- ✓ Collaborated with other students in the lab or research meetings.
- ✓ Redesigned and updated group website.

Chief Teaching Assistant | University of Tehran (Engineering Electromagnetics) 2019- 2020

- ✓ Chief teaching assistant in engineering electromagnetics course for undergraduate students.
- ✓ Designed homework problems.

Teaching Assistant | University of Tehran (Circuit laboratory) 2017-2018

- ✓ Teaching assistant in circuit laboratory course for undergraduate students.

Microcontroller programming Intern | Nira System. 2016

- ✓ Learning fundamentals of microcontrollers and helping senior engineers for programming AVR Microcontrollers.



PUBLICATIONS

1. Abed, O., Yousefi, L. "Tunable metasurfaces using phase change materials and transparent graphene heaters". *Optics Express* 28.23 (2020): 33876-33889. <https://doi.org/10.1364/OE.404103>
2. Abed, O., Yousefi, L. "Free Space Beam Shaping Using phase-change Reconfigurable metasurfaces". Accepted in 3rd West Asian Symposium on Optical and Millimeter-wave Wireless Communications. ([researchgate link](#))

Manuscripts in preparation

Abed, O., Yousefi, L. "Double-Axis Optical Beam Steering Enabled by Voltage Controlled Tunable Metasurface". (Abstract in [here](#))



SKILLS

- COMSOL MULTIPHYSICS
 - ✓ High frequency simulations
 - ✓ AC/DC simulations
 - ✓ Semiconductors Simulations
 - ✓ Heat Transfer Simulations
- PYTHON
 - ✓ Numpy
 - ✓ Pandas
 - ✓ Sklearn
- MATLAB
 - ✓ 5 years' experience in scientific programming
- OTHER
 - ✓ Lumerical FDTD
 - ✓ CST studio suite
 - ✓ Microsoft Office
 - ✓ Adobe illustrator



SELECTED COURSES DURING MASTER PROGRAM

- Theory of Electromagnetics
- Adv. Eng. Mathematics
- Fundamentals of Photonics
- Metamaterials
- Fourier Optics
- Terahertz Technology
- Adv. Antennas
- Numerical Methods in Electromagnetics



SELECTED PRESENTATIONS

- LiDAR and Its applications in autonomous cars
- Graphene and its applications in nanophotonics
- Computer generated holography
- Wave propagation in circular tunnels
- Backward wave oscillators
- Design and Simulation of Leaky Wave Antennas



HONORS

- Achieved rank 25 in national university entrance exam (Konkur) for MSc in electrical engineering, among more than 30,000 competitors (in top 0.1%).
- Former member of Iran rowing national team. Winner of a bronze and a silver medal in Asian Junior Championships.



SCHOLARSHIPS

Elite athletes Scholarship for domestic bachelor studies | Azad University (2012-2016)

Governmental scholarship for domestic master studies | University of Tehran (2017-2020)



CERTIFICATES

Silicon Photonics Design, Fabrication and Data Analysis

✓ Conducted by Sharif University of Technology ([certificate](#))

Deep learning Specialization

✓ Conducted by Coursera ([certificate](#))

Machine Learning

✓ Authorized by Stanford University – Conducted by Coursera ([certificate](#))



LANGUAGES

English: Fluent

TOEFL Score: 104

(Reading: 28/30 – Listening: 28/30 – Speaking: 22/30 – Writing: 26/30)

Persian: Native



REFERENCES

Dr. Leila Yousefi

Associate Professor, University of Tehran (Tehran, Iran)

lyousefi@ut.ac.ir

<http://nanophotonics.ir/>

She was my master's thesis advisor.

Dr. Mohammad Neshat

Assistant Professor, University of Tehran (Tehran, Iran)

mneshat@ut.ac.ir

<http://thz-photoelectronics.com/index.htm>

One of my university professors. I passed two important courses offered by him.

Dr. Roholla Hafezifard

Assistant Professor, Azad University (Eslamshahr, Iran)

r.hafezifard@iiu.ac.ir

One of my university professors. I passed four courses offered by him.