Hossein Rezaei

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EDUCATION

Bachelor of Optics and laser Engineering 2013 – 2017

Institute/University: Shahid Bahonar University of Kerman, Iran

Project title: SAR Image Denoising

Master of Photonics 2017 – 2020

Institute/University: Shahid Bahonar University of Kerman, Iran

Subject of Master Thesis: Hyperspectral Image Denoising using Deep Learning Methods

Thesis Advisor: Hamidreza Mashayekhi, Associate Professor, mashhr@uk.ac.ir, mashhr@gmail.com

HONORS AND AWARDS

- The first pilot of industrial drone Matrice 210 RTK in Iran.
- The first person who captured picture from electrical towers for power lines inspection in Iran.

INTERESTS

- Machine Learning and Deep Learning
- Remote Sensing
- Signal and Image processing
- Pattern Recognition
- Hyperspectral Images
- Image Fusion
- Optical and Optomechanical Design

TEACHING EXPERIENCES

- Teaching Assistant, Electronics1. Instructor: Dr. Azam Karami, Spring 2017- Fall 2020
- Developed Image Processing lab. instructions for Optics and Laser Engineering students, Fall 2018

WORK EXPERIENCES

National Iranian Copper Industries Co. (NICICO), 2023-now

Artificial Intelligence and Data Science Expert

- Applied machine learning algorithms and data science techniques to optimize operations and improve efficiency.
- Developed predictive models for forecasting production outcomes and identifying areas for process optimization.
- Collaborated with cross-functional teams to integrate data-driven solutions into existing workflows.

Optical Fiber Cable Factory in RIC, 2021-2023

Quality Control Laboratory Expert

- Conducted quality control tests and inspections on optical fiber cables to ensure compliance with industry standards.
- Analyzed test results and provided recommendations for process improvements.
- Collaborated with production teams to troubleshoot quality issues and implement corrective actions.

Kerman Regional Electrical Company (KREC), 2017-2018

Collaborated as a teammate in a research group for **developing a software based on deep learning** to find power lines faults in electrical towers using images taken by drones. Different collaborations were made which they are mentioned as below:

- Worked as the Main Drone Pilot in our team. I was responsible for taking pictures of power lines towers and expanding the database.
- Trained and fine-tuned Microsoft Resnet for power lines towers database.
- Labeled images existed in the electrical towers database to define possible faults to deep neural networks.

Golgohar Mining and Industrial Company, 4th Golgohar Mining Pit, 2016-2017

Collaborated As a teammate in this project where the main purpose was to **create a Matlab toolbox** to enhance the images from mining pit surfaces taken by drones and satellites and extract useful information out of them:

- Introduced a new way to enhance the spatial resolution Hyperspectral images taken by satellites.
- Proposed and implemented a method to reduce noise in 3D models of mining pits which are created by photogrammetry
- Proposed a method to calculate the volume of harvest after the explosion from 3D model.
- Proposed a method to detect toe and crest automatically.

SELECTED ACADEMIC COURSES

- Neural Networks (Elective)
- Digital Image Processing
- Signals and Systems Analysis (Elective)
- Linear Algebra (Elective)
- Pattern Recognition (Elective)
- Optimization (M.Sc)
- Optical Design
- Optical Fibers
- Photonics (M.Sc)

COURSES

- Machine Learning Coursera Link
- Drone Piloting license Link
- Brain Mapping Techniques Link

MASTERED LANGUAGE

- Persian (First Language)
- English (In the process of completing IELTS course)

ADDITIONAL SKILLS

Programming Languages and Finite Element Software:

- MATLAB
- Python
- C#
- C++
- Envi
- Drone Pilot
- 3D Photogrammetry
- Deep Learning
- Machine Learning
- TensorFlow
- Computer Vision
- AVR Microcontrollers
- Pspice
- Proteus
- Raspberry Pi
- Arduino
- Zemax
- Mathematica
- Nest
- Docker

Communication Skills:

- Team Working
- Problem Solving
- Responsibility
- Planning
- Flexible
- Competitive
- Motivated
- Friendly behavior

PUBLICATIONS

1. SAR image denoising using homomorphic and shearlet transforms
   Publisher: IEEE
   Date: July 2017
   Link: ieeexplore.ieee.org/abstract/document/7983022

2. Hyperspectral and Multispectral Image Fusion Based on Spectral Matching in the Shearlet Domain
   Publisher: IEEE
   Date: November 2018
   Link: ieeexplore.ieee.org/document/8518922

ACADEMIC REFERENCES

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