# Muhammad Rizwan Khalid

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## EDUCATION

**NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY (NUST)** **Islamabad, PK**
*Bachelor of Science (BS), **Computer Science**, Honors* *2016 - 2020*

- CGPA: **3.94/4.00**, Dean's List (Top 3% of the batch)

## EXPERIENCE

**Jr. Data Scientist** **Islamabad, PK**
*Part-Time at Ingenio EC* *July 2020 - Sep 2020*

- Developed text pre-processing pipeline for spanish text
- Trained SVM, MLP, Logistic Regression & Naive Bayes for sentiment analysis
- Developed AWS comprehend API pipeline for spanish text sentiment analysis
- Trained YOLO v3 & v4 for fortnite players detection

**Research Intern** **Remote Internship**
*Koc University Summer Research Program* *July 2020 - Aug 2020*

- Project: Process alarm prediction using deep learning & word Embedding methods
- Learned Distributed Machine Learning with Pytorch
- Skip Gram model trained using Negative Sampling for vectorizing alarm sequences
- Trained LSTM model for predicting the next alarm occurrence

**Research Assistant** **Islamabad, PK**
*TUKL-NUST R & D Center* *Jun 2018 - May 2020*

- Completed multiple online courses for Machine Learning & Deep Learning
- Collaborated with senior students working on their final year projects
- Shortlisted & interviewed inters for Summer'19 internship program
- Supervised lab interns with their learning & projects

**Research Assistant** **Kaiserslautern, DE**
*Embedded System Lab, University of Kaiserslautern* *Jun 2019 - Aug 2019*

- Explored EuroSAT and BigEarthNet archives
- Trained Deep CNNs for Multilabel Classification
- Explored SEN12MS archive having images from 3 different satellite sources
- Trained Deep CNNs on fused multi-source data for multilabel classification

## PROJECTS

- **Forest Cover Change Detection Using Remote Sensing Data** *'Bachelor Thesis'*
  1. Collected 248,000 Synthetic aperture radar images for the area covered under BigEarthNet Dataset
  2. Trained VGG-16 model on fused SAR & Optical images for multi label classification
  3. Achieved **2% accuracy improvement** on fused data
  4. Made Web Application using React and Django
- **Skin Lesion Segmentation and Classification**
  1. Tested multiple segmentation models like UNet, DSNet, Tiramisu DenseNet on ISIC 2018 dataset
  2. Tested multiple loss functions like Cross Entropy, Dice, Tanimoto & Tversky loss functions
  3. Incorporated attention unit of UNet model in Tiramisu DenseNet
  4. Achieved **2% improvement** in IoU metric over DenseNet model
  5. GitHub repo: `https://github.com/mrizwank97/Skin-Lesion`

- **Lip Reading** (**Visual Speech Classification**) *'Semester Project'*
  1. Explored GRID Video Dataset
  2. Extracted frames and segmented the mouth region
  3. Used 3D convolutions for learning spatial & temporal features
  4. Reproduced the results of lip reading paper by Oxford University

## TEACHING ASSISTANTSHIPS

- SE-200 Software Engineering *Fall'19*
- CS-251 Data Structures & Algorithms *Fall'18*
- EE-353 Computer Networks *Spring'19*
- CS-344 Web Engineering *Spring'18*

## ONLINE COURSES

- Deep Learning Specialization, *Coursera*
- Machine Learning for Coders, *fast.ai*
- NLP Specialization, *Coursera*
- Practical Deep Learning for Coders, *fast.ai*

## KEY SKILLS

**Languages:** Python, Java, C/C++
**Database:** MySQL, PostgreSQL, MongoDB
**Additional Tools:** AWS, Git, GitHub
**Web Tools:** HTML5, CSS3, JavaScript, Flask, PHP
**Python Packages:** PyTorch, Keras, TensorFlow, Sklearn, Pandas

## AWARDS AND ACHIEVEMENTS

- Fully funded Research Internship offered by DAAD & University of Kaiserslautern
- Travel Award for KAIST EECamp, South Korea
- NUST Merit Scholarship for 7 semesters