


# Bismillah Kani

Bengaluru

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## Summary

Researcher with strong background in Artificial Intelligence, Machine Learning and Deep Learning technologies. My area of expertise is in computer vision and color technology.

## Experience

### Researcher at AkzoNobel

Aug 2014 - Present

- Developed a method for surface texture analyses of powder coating using image analysis and machine learning techniques.
- Developed a method to visualize the texture of powder coatings on display using Perlin Noise.
- Developed a machine learning model to predict textures from the toner and concentration.
- Built a software tool for color matching of multi-layer coatings.

### AI Researcher at CellStrat

Jan 2020 - Present

- Implemented an AI based Chest X-ray solution as a support tool to radiologist in medical diagnosis of various disease including COVID-19.
- Implemented Grad-CAM for visualization of model prediction as an explanation to radiologist.
- AWS Developer of AI product team. Trained and deployed the Chest X-ray model using AWS Sagemaker.

### Sr. Engineer - Image Research at Buhler Group

Sep 2011 - Aug 2014

- Research & Development of image processing & analysis algorithms for measuring the quality of granular food particles.
- Built an inline machine vision system prototype and a software tool for automatic analysis of granular food particles.

## Education

### University of Eastern Finland

Master of Science (MSc), Computer Science, Spectral Imaging Science

2010 - 2011

### Université Jean Monnet Saint-Etienne

Master of Science, OIV (Optics, Image & Vision), Color Imaging Science

2009 - 2010

### College of Engineering, Guindy

Bachelor of Engineering, Printing Technology

2001 - 2005

## Projects

### Surface texture analyses

Python | Scikit-Learn | OpenCV | Keras

- Implemented image processing algorithms in Python to compute surface texture parameters of the powder texture samples using 3D topography data.
- Using the surface texture parameters, built a machine learning pipeline that classifies a powder texture sample as visually pass or fail.
- Developed an image processing pipeline to simulate surface texture for visualization using Perlin noise model and model parameter prediction using CNN regression models.

### Effect texture predictive modelling

Python | Pandas | Keras

- Implemented a predictive model to predict textures from toner and its concentration.
- The predictive model outperformed the previous statistical models.

## Indian Sign Language Interpretation

*Python | Keras*

- Implemented a multi-class image classification method using custom CNN architecture and pre-trained CNN models to interpret Indian Sign Language (ISL).
- Collected datasets for Indian sign language and evaluated the model accuracy on the ISL datasets.
- Extended the image classification model to video classification using 3D CNN with pre-trained Resnet3D as backbone.

## Detecting COVID-19 from chest X-ray images

*Python | Keras | Fastai | AWS*

- Implemented an image classification using pre-trained models to detect COVID-19 using chest X-ray images. The method can identify COVID-19 vs Normal vs Pneumonia to enough accuracy.
- Implemented an image segmentation model using U-net and Resnet50 as backbone.
- Trained the model on NIH dataset with 1.12L images and 14 diseases.
- Implemented Grad-CAM visualization of model prediction.
- Deployed the model in AWS using AWS Sagemaker.

## Classification of imbalanced dataset

*Python | Scikit-Learn | Imblearn*

- Presented a webinar on different techniques used for classification of imbalanced dataset.
- Code demo comparing different data sampling techniques like SMOTE, ADASYN, Tomek links, Near Miss etc.

## Explainable AI with Grad-CAM

*Python | PyTorch | Fastai*

- Workshop on explainable AI with Grad-CAM. Presentation of Grad-CAM method with code-demo.

## Certifications

- **Data Scientist with Python** - DataCamp 20246
- **Neural Networks and Deep Learning** – Coursera UMYNS6VMUS56
- **Convolutional Neural Networks** - Coursera KEWXPS88NWU2
- **Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization** - Coursera SKD5KRGDQEL8
- **Structuring Machine Learning Projects** - Coursera FQ7W8SQ9XE86
- **Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning** - Coursera YDLTG8AWZZ8X
- **Natural Language Processing in TensorFlow** - Coursera WYDMTM38GNAJ
- **Convolutional Neural Networks in TensorFlow** - Coursera 7F46F2FA64T6

## Honors & Awards

Erasmus Grant for exchange students by European Union

Grant Explora Scholarship by Région Auvergne-Rhône-Alpes

## Patents & Publications

- “Method and an arrangement for measuring the gloss of grains”, WO2015102011A1, 2015-07-09
- “Method and an arrangement for measuring the smoothness of grains”, WO2015102012A1, 2015-07-09
- “Color Correction: A Novel Weighted Von Kries Model based on Memory Colors” Third Computational Color Imaging Workshop Milano, Italy, April 20-21, 2011

## Skills

Machine Learning | Deep Learning | Image Processing | Computer Vision | Python | MATLAB | C# | TensorFlow | Keras | Scikit-Learn | Fastai | AWS Sagemaker | PyTorch