Dr. Arun Aniyan

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Date of Birth	7^{th} March 1985		
Nationality	Indian		

Personal Profile

Multidisciplinary Machine Learning Specialist with extensive experience (15 yrs) having worked in Nobel Prizes-winning institutes and projects delivering data science products with both scientific and commercial value. Wide range of expertise including Deep Learning, Computer Vision, Natural Language Processing, and Knowledge Systems. Extensive experience in designing data science and machine learning solutions from end to end. Exposure to domains like Neuroscience, Space Technology, Astrophysics, BFSI, Health sciences, and Cyber security.

Core Skills

- Machine Learning
- Deep Learning
- Natural Language Processing
- Computer Vision
- Knowledge Representation
- MLOps

Employment History

Aug 2021-Present **Deep Alert Ltd., London, UK**
Head of Artificial Intelligence

Responsibilities

- Lead the AI research and development at Deep Alert.
- Design and development of novel computer vision techniques.
- Design and development of video analytics algorithms.

Nov 2018 - July 2021 **Persistent Systems Ltd., Pune, India**
Architect - Machine Learning & AI

Responsibilities

- Perform role of Chief Data scientist in various data science projects.
- Architect technologies based on general Machine Learning & NLP.
- Technology design for customer data science requirements,
- Design Data science solutions for health systems, Cyber Security, and Access Management Systems.
- Led a group of Data scientists and Data engineers for solution development.

Key Achievements

- Designed Anti Money Laundering System using NLP and Knowledge Graphs.
- Designed Knowledge graph-based contact tracing and risk modeling system for COVID-19.
- Algorithm design for medical data processing.
- Designed data science solution for cyber security platform.
- Designed data science solution for Physical Access Management Systems.
- Invited speaker at Big Data Africa School, Cape Town South Africa, 2019.
- Model Agnostic Meta-Learning for Classification of Radio Galaxies, NeurIPS 2018.

Jan 2015 - June 2018 **SKA South Africa and Rhodes University, Cape Town South Africa**
SKA Postdoctoral Fellow

Responsibilities

- Lead machine learning projects at SKA South Africa Project office.
- Development of machine learning techniques for Radio data processing, calibration, and imaging.
- Work with IBM Research Lab to develop novel machine learning tools for SKA data challenges.
- Supervise and manage research students' thesis and SKA Young Professionals in the machine learning team.
- Mentor SKA Young professionals to lead data science projects.

Key Achievements

- Developed first application of Deep Learning for Radio Astronomy.
- Developed Deep Learning technique to classify calibration artifacts in radio images.
- Developed world's first information retrieval and recommendation system for astronomy for Nobel Prize-winning Science Project (LIGO).
- Filed patent for novel algorithm developed along with IBM Research Lab.
- Co-authored development of Genetic Algorithm package in Tensorflow.
- Published 3 papers in reputed international journals and two conference proceedings including NeurIPS.
- Supervised thesis of 4 students, one of them being the winner of the NIPS Travel Award 2017.

- Built data science capabilities at the SKA office and formed the first team for machine learning.

May 2014 - Dec 2014 **African Institute for Mathematical Sciences, Cape Town, South Africa**
Postdoctoral Fellow

Responsibilities

- Lead development of machine learning activities and mentor young scientists on data science.
- Design of Deep Machine Learning Techniques for Big Data in Astronomy and Cosmology.

Key Achievements

- Developed Machine Learning technique for classifying radio frequency interference (RFI) in radio data.
- Managed a team of 3 to develop machine-learning techniques for RFI detection.
- Supervised Master's Thesis for the development of Genetic Algorithm package in Python.

May 2013 - May 2014 **California Institute of Technology, Pasadena, CA, USA**
Graduate Visitor

Responsibilities

- Development of Machine Learning methods for Transient Astronomy.
- Work on large-scale image processing algorithms for astronomy and real-time astronomy data processing.

Key Achievements

- Developed feature extraction and selection strategies for classifying optical transients with improved accuracy.
- Developed GPU-based feature extraction pipeline for light curves.

March 2010 - March 2014 **Mahatma Gandhi University, Kerala India**
Research Scholar

Responsibilities

- Feature Extraction and Analysis of Scientific Data.
- Development of data science pipelines for neuroscience.
- Development of machine learning pipelines for astronomy.
- Development of real-time machine learning reporting system.

Key Achievements

- Developed Wavelet-based feature extraction for EEG Signal processing.
- Developed feature selection strategies for classifying data with missing values with high accuracy.
- Developed highly parallelizable feature extraction pipeline for cluster and GPU environments.
- Developed Analysis method for EEG signal processing.

April 2009 - April 2010 **Indian Space Research Organization - RESPOND Project, Kerala India**
Research Fellow

Responsibilities

- Development of Machine learning pipeline for Astronomy.
- Maintain a High Performance Computing System.

Key Achievements

- Developed pipeline for astronomy data processing.
- Designed GPS correlator for space technology.

Education

2010-2014 **PhD in Physics** - Mahatma Gandhi University, Kerala, India
Specialization in ***Machine Learning and Signal Processing***

2006-2008 **MSc. Applied Electronics** - Mahatma Gandhi University, Kerala, India
First Class with Distinction

Software Engineering Skills

- **Methodology**
  Agile
- **Programming Languages**
  Python, C, C++, FORTRAN, MATLAB, R
- **Machine Learning Tools**
  Scikit-Learn, WEKA, Caffe, Keras, Tensorflow, Theano, NLTK, SpaCy, PyTorch
- **Big Data Tools**
  PySpark
- **Cloud Technologies**
  Amazon Web Service, Azure
- **MLOps**
  MLFlow, DVC, Quilt
- **HPC**
  CUDA, MPI
- **Miscellaneous**
  MySQL, Neo4J, Docker, MongoDB

Publications

1. Meta-Learning for Classification of Radio Galaxies, S. Zitha, **A.K. Aniyan**, NeurIPS 2018 [*Poster Presentation*].

2. ZCal - Machine Learning for Calibrating Radio Datasets, S. Zitha, **A.K. Aniyan**, NeurIPS 2017 [*Poster Presentation*].
3. Classification of Radio galaxies with Convolutional Neural Networks, **A.K. Aniyan** and K.Thorat, T*he Astrophysical Journal Supplement Series 230.20 (2017): 15pp.*

See full list at Google Scholar Profile.

Patents

1. Identification of RFI (Radio Frequency Interference), US Patent Application Number: 15/853883), 2019.

Referees

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