Yajnavalkya Bandyopadhyay

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Dynamic professional with expertise in Remote Sensing, Quality Assurance, Data Engineering, AI/ML, and 3D GIS solutions. Skilled in Python, Java, C#, and cutting-edge technologies, driving innovative solutions in engineering and analytics.

Professional Summary

- Built scalable data integration workflows, ensuring seamless data movement across platforms while maintaining high data quality and reliability.
- Collaborated with data scientists to deploy machine learning models on Apache Spark, enabling real-time predictions and insights.
- Developed deep learning models for oncological disorder detection and satellite imagery classification, contributing to healthcare and geospatial analytics.
- Designed geospatial data solutions, including urban planning software using OSM and Google Maps API, Google Earth Engine automation, and CARTO-DEM generation with NASA AMES STEREO PIPELINE.

Professional Experience

AI/QA Engineer
Quantech Associates(Fourth Dimension)
April 2025-Present

- AI-based testing of web applications
- AI Based solutions for E-Commerce Clients
- Automation of E2E QA using Playwright, Typescript and Azure DevOps

Principal Engineer
Debahuti Tech Private Limited
June 2022–January 2023, May 2023-Present

- Developed Deep Learning models for Oncological Disorder Detection Systems
- Developed Deep Learning models for Satellite Imagery classification and AOI detection
- Developed Software for Urban Planning aided by OSM and Google Maps API
- Developed Python Scripts for easier access and manipulation of Google Earth Engine Data
- Data Pipeline Orchestration with Apache Airflow
  - Configure and manage the Apache Airflow infrastructure,
  - Develop and maintain ETL workflows

  Data Warehouse Optimization with PySpark and SQL
  - Analyse and optimize the data warehouse schema,
  - Implement partitioning and indexing strategies,
  - Fine-tune SQL queries for performance,
- Granted 10 Copyrights

Project Associate
Indian Institute of Technology, Roorkee
February 2023 – April 2023

- **Developed a system for the generation of CARTO-DEM products using NASA AMES STEREO PIPELINE**

Software Architect
Agnyshala Makerlabs Private Limited
February 2020 – July 2020

- **Developed a tool using Javascript, JQuery and Node.js, for cognitive improvement of Technical and Artistic drawing.**

Junior Software Developer
Rigvaimaniki Technologies Private Limited
August 2019 – January 2020

- **Leaded development for writing device drivers for ESP32 and Arduino backed up Drone UAV using C and Python.**

Web Development Intern
Friends Of Kolkata's Elderly
Dec 2016 - Apr 2017

- **Responsible for deploying their new website as an Intern using pHp, JS and JQuery**

Summer Research Intern
Malaviya National Institute of Technology Jaipur
Jul 2017 - Aug 2017
- **Worked with Dr. Pooja Nigam, Assistant Professor, Department of Architecture and Planning to develop a plugin for Grasshopper for Rhinoceros 3D for spatial network analysis**

Education

Birla Institute of Technology, Mesra
July 2020 - May 2022
Master's Degree in Remote Sensing (GPA: 8.69/10)

Maulana Abul Kalam Azad University of Technology, West Bengal
August 2014 - May 2018
Bachelor's Degree in Civil Engineering (GPA: 7.7/10)

Skills

- **Language –** C, Java, Python, Javascript, Typescript
- **Libraries and Tools -** MySQL, Pandas, PySpark, Scikit Learn, Tensorflow, Keras, Seaborn, OpenCV, **CUDA**, Google Earth Engine, Amazon Web Services(AWS), Apache Airflow, Databricks, Playwright, Selenium, TestNG
- **Software -** QGIS, Autodesk AutoCAD, Rhinoceros 3D, MATLAB, ArcGIS, BrowserStack, UIPath
- **Analytics techniques**
- **Data modelling**

Books Authored

1. Bandyopadhyay, Y.,2024, **Introduction to Computational Fluid Dynamics**, ISBN - 978-93-341-6535-7
2. Bandyopadhyay, Y.,2024, **Introduction to Machine Learning**, ISBN - 978-93-341-2915-1
3. Bandyopadhyay, Y.,2024, **Introduction to Digital Image Processing**, ISBN - 979-8327368224
4. Bandyopadhyay, Y.,2024, **Introduction to Remote Sensing**, ISBN – 978-9334083163
5. Bandyopadhyay, Y.,2025, **Numerical Solutions of Ordinary and Partial Differential Equations,** ISBN – 979-8305563474
6. Bandyopadhyay, Y., 2025, **Calculus for Engineers,** ISBN - 979-8310818842
7. Bandyopadhyay, Y., 2025, **Calculus for Engineers,** ISBN - 979-8286866090

Pre-Prints

1. Bandyopadhyay, Yajnavalkya. "**Multiobjective Optimization for Optimal Water Resource Allocation**." *EarthArxiv*. https://doi.org/10.31223/X5B40W.
2. Bandyopadhyay, Yajnavalkya. 2024. "**Advancements in Computer Vision: Exploring Deep Learning and Transformer-based Models for Enhanced Visual Perception**." OSF Preprints. November 1. doi:10.31219/osf.io/rzsxj.
3. Bandyopadhyay, Yajnavalkya. "**Lunar Crater Detection Using YOLOv8 Deep Learning**." (2024). EarthArXiv, DOI - https://doi.org/10.31223/X5J69V
4. Yajnavalkya Bandyopadhyay, Barun Das. "**Comparison of A Fuzzy Supply Chain Model with learning effect using Evolutionary Algorithms**".*Authorea.* DOI: 10.22541/au.170147003.39178826/v1
5. Bandyopadhyay, Yajnavalkya and Patel, Nilanchal, **"Time Series Analysis of terrain and climatic parameters data retrieved from Terraclimate dataset: A case study in Ranchi and Khunti district, Jharkhand, India"**, DOI - https://doi.org/10.31223/X5NH27

Copyrights

1. Yajnavalkya Bandyopadhyay, "**Software to detect Water Bodies in satellite images using Deep Learning**", Indian Copyright SW-17796/2023(December 2023)
2. Yajnavalkya Bandyopadhyay, "**Software to detect and classify the type of Tumors from MRI images using Convolution Neural Networks and Deep Learning**", Indian Copyright, SW-17810/2023 (December 2023)
3. Yajnavalkya Bandyopadhyay, "**Software to Mask Settlements in UAV or Satellite Images using Deep Learning**" Indian Copyright, SW-17942/2023 (December 2023)
4. Yajnavalkya Bandyopadhyay, "**Software to detect and segment Breast Tumors using Ultrasound Images and Deep Learning**", Indian Copyright, SW-18163/2024
5. Yajnavalkya Bandyopadhyay, "**Software to detect Ocular Disease from Colour Fundus Photography using Deep Learning", Indian Copyright**, SW-18228/2024 (January, 2024)
6. Yajnavalkya Bandyopadhyay, Somnath Majumder "**Software to develop engineered drawings and computational results for the construction of Gantry Girder and Plate Girders**.", Indian Copyright, SW-18468/2024(March, 2024)
7. Yajnavalkya Bandyopadhyay "**Geospatial Image exporter in batch for Google Earth Engine data Catalogue**" Indian Copyright, SW-18510/2024(March, 2024)
8. Yajnavalkya Bandyopadhyay "**Software to export spatial pixel-wise data over time series from Google Earth Engine Data Catalogue**" Indian Copyright, SW-18458/2024(March, 2024)
9. Yajnavalkya Bandyopadhyay "**Software to evaluate residential connectivity to utilities using a geospatial approach**", Indian Copyright, SW-18710/2024(May 2024)
10. Yajnavalkya Bandyopadhyay, "**Bone Marrow biopsy cell classification using Convolutional Neural Networks**", Indian Copyright, SW-19127/2024(June 2024)
11. Yajnavalkya Bandyopadhyay, "**Semantic Segmentation of Building Footprints from Satellite Images using Convolutional Neural Networks**", Indian Copyright, SW-19074/2024(June 2024)
12. Yajnavalkya Bandyopadhyay, "**AI and Web Application based Poet**", Indian Copyright, SW-19745/2024(November 2024)
13. Yajnavalkya Bandyopadhyay, "**Deep Learning based Lump identification software from Ultrasound imageries**", Indian Copyright, SW-19847/2024(December 2024)

Conference Publications

1. Parthiba Chakraborty, Yajnavalkya Bandyopadhyay and Anuva Chowdhury, "**Mapping the water vulnerability in Peri-Urban areas of Bhubaneshwar using Remote Sensing Indices**" Conference – 3rd International Conference on Recent Developments in Sustainable Infrastructure, 2023
2. Yajnavalkya Bandyopadhyay, Parthiba Chakraborty and Anuva Chowdhury, "**A study and trend analysis of environmental air pollution changes in Bhubaneshwar with reference to its Peri-Urban area**" Conference – 3rd International Conference on Recent Developments in Sustainable Infrastructure, 2023
3. Bandyopadhyay, Yajnavalkya and Roy, Sandip and Chatterjee, Siddhartha, "**Predicting Stock Market Prices Using Deep Learning by Tensor Flow**" (February 15, 2019). Lecture Notes in Networks and Systems (LNSS, volume - 41), ISBN - 978-981-13-3122-0, Springer, 2019 Conference – ETES 2018 at Asansol Engineering College, 2018
4. Yajnavalkya Bandyopadhyay, Barun Das, "**Comparative Study of an Integrated Supply Chain by NSGA-II and ACO**" Conference - 3rd Regional Science & Technology Congress, 2018
5. Yajnavalkya Bandyopadhyay, Sanat Kr. Mahato, "**An application of Pentagonal Fuzzy Numbers in Reliability Redundancy Allocation Problem using Genetic Algorithm**" Conference - 3rd Regional Science & Technology Congress, 2018

Journal Publications

1. Bandyopadhyay, Yajnavalkya. "**Glass Defect Detection and Sorting Using Computational Image Processing**." *International Journal of Emerging Technologies and Innovative Research* 2 (2015): 73-75.
2. Bandyopadhyay, Yajnavalkya. "**Determination of Physical Quality of Rice Using Image Processing**." *International Journal of Emerging Technologies and Innovative Research*, Vol. 3, Issue 8 (August 1, 2016): 70-72. ISSN: 2349-5162.
3. Bandyopadhyay, Yajnavalkya, and T. M. Chowdhury. "**Predicting Bitcoin Price Using Deep Learning**." *Journal of Computer Engineering and Information Technology* 10 (2021).