RAGHAVA BALLIPARTHY

**Mobile:(+1)763-353-5209**

# Professional Summary

[**raghav.balliparthy@gmail.com**](mailto:raghav.balliparthy@gmail.com) **linkedin.com/in/raghava-balliparthy**

* **Data Scientist/Analyst** with 23+ years of experience in data analytics, Data Science, AI/ML, reporting platform development, data warehousing, Project Management, Deployment Management, Technical Consultancy in multiple business domains.
* Designed, developed **python-based AI/ML** use cases in multiple domains.
  + Calculate remaining useful life of critical equipment in the sugar industry.
  + Optimization of technician utilization in Telecom operations.
  + Production optimization in the chemical industry.
  + Marketing planning use-case, to meet the sales targets in the construction domain.
  + NLP/LLM models and GenAI applications.
* Experience in deploying AI/ML and BI applications on Azure cloud and on-premises infra
* Established **Global Reporting Platform** and automated reporting requirements of NEC (Avaloq), Switzerland. It had transformed NEC into a **data-driven organization**.
* Developed multiple **dashboards to provide insights** and enable operational decisions for the Sugar industry.
* Developed/maintained complex **BI applications in Tableau and Power BI**.
* Experience in development, execution and maintenance of Data warehousing and **Data mart systems using ETL and ELT technologies.**
* Adept in end-to-end development of software products from requirement analysis to system study, designing, coding, testing, de-bugging, documentation, implementation, and maintenance.
* Master’s in technology in **Data Science and Engineering** from Birla Institute of Technology and Science, **BITS-Pilani**.

# Certifications

* AI900 - Azure AI fundamentals
* AZ900 - Azure fundamentals
* DP900 - Azure Data Fundamentals
* IBM DB2 701 certified
* Data science using Python from TechM Data Science Academy in collaboration with AnalytixLabs.

# Skills

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| --- | --- |
| **Category** | **Skills** |
| Primary Skill category | Python, Machine Learning (ML), Deep Learning, NLP, LLM, Tableau, PowerBI, SQL, Excel, Azure, Graph QL, MongoDB, Pinecone, GenAI, Hugging Face, BERT, OpenAI, Prompt Engineering, Stable Diffusion Model, Retrieval Augmented Generation  (RAG) |
| Secondary Skill category | Oracle Data Integrator (ELT), Ab Initio® (ETL), Vision Plus®, Connex-FIS®, Ab Initio®, Transformer Architecture, Project Management, Deployment Management, Mainframes, Snowﬂake, SAS |

**Work Experience #1**

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| Project Domain | Telecom |
| Project Name: | Advanced Data Analytics |
| Role | Data Scientist/Analyst |
| Duration | 2022 Apr – Till date |

## Project Description

OppoAnalytics is an Azure-based ML-OPS application, developed in Python. The primary objective is to predict the number of marketing opportunities/events to be planned/budgeted to achieve the sales targets across the region on a monthly basis. The application takes most inputs from Azure Snowflake and a few data from D365. The project involved in developing AI/ML logic and establishing Azure pipelines for data flow to the AI/ML application.

## Contribution

* Perform Python-based exploratory data analysis, feature engineering for impactful feature selection.
* Analyze data residing in Azure snowflake for data pre-processing, business intelligence and data analysis/problem solving.
* Work with data engineering team to establish pipelines for data I/O
* Try multiple algorithms and select the best one. Hyperparameter tuning.
* Data extraction/analysis using Graph QL
* Develop BI reports for business/domain experts.
* Maintain/monitor scheduled pipelines.
* Container Registry, Storage Account, Key Vault, Application Insights Services were some of the resources used as part of this project

# #2

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| Project Domain | Telecom |
| Project Name: | Resource Planning, AT&T USA |
| Role | Data Scientist/Analyst |
| Duration | 2021 Apr – 2022 Apr |

## Project Description

AT&T customers raise various site-visit requests to install/fix a new/existing service. Planners will have to assign technicians based on the request type & distance and other factors. As it involved high logistics, an ML-based planning tool has been developed in Python, based on the Dijkstra’s algorithm. The application saved over a million dollars in a span of 4 years when compared to manual excel-sheet based planning. Developed NLP based models to customer feedback assessment and self-help application.

## Contribution

* The application is developed in Python. My contribution involves the application of functional changes like technicians’ skill updates, route updates, extend the application to new divisions, algorithm training/re-training etc. on the existing functionality.
* Developed Python-based NLP model to review customer feedback and provide self-help on service requests using techniques like Hugging Face, LLM etc.
* Develop new reports as per the business’ need.
* Maintain the existing reports.
* Data extraction/analysis from Pinecone vector database.
* Prompt engineering and model improvement.

# #3

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| Project Domain | Banking |
| Project Name: | Data Analytics & Report Automation, NEC (Avaloq) Switzerland |
| Role | Data Scientist/Analyst |
| Duration | 2020 Jan – 2021 Apr |

## Project Description

Run-ReportingX is an initiative to transform Avaloq (NEC) into a data-driven organization. The initiative comprises establishing the global data warehouse layer and the BI-Layer. The functionality of several business-critical logics/transformations have been achieved using the Python integration, available in PowerBI. It also aims at extracting business insights for strategic decisions at a global level. Avaloq serves customers across three geographic regions across the globe. Publish the reports on Azure cloud and handle the operations in terms of report refresh, report distribution, access restrictions on the basis of AAD and security groups.

## Contribution

* Design regional and global data warehouse in line with local data security and regulations.
* Developed Python code for achieving complex business logics and transformations and integrated in PowerBI.
* Build Automate the existing reporting requirements and develop new reports using Power BI
* Develop insights reports to CXOs, various application owners and regional heads.
* Convert reports developed using other tools to Power BI
* Publish the reports as apps in Azure cloud.
* Manage/maintain report distribution using AAD based access privileges.

# #4

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| Project Domain | Manufacturing – Chemical Industry |
| Project Name: | Maximize plant production, ThyssenKrupp India Ltd, TKI. |
| Role | Data Scientist/Analyst |
| Duration | 2019 Jul – 2019 Dec |

## Project Description

Sodium Chlorate chemical production is dependent upon various parameters. It is a Python based AI/ML solution that aims at studying the parameters and establish the correlations among various parameters to derive the ideal parametric (Electricity, Voltage, Temperature, Brine Concentration, gap between the electrodes etc.) values to optimize the Sodium Chlorate Production at TK-Uhde plant, near Mumbai. The input data is collected from various sensors and from their laboratory.

## Contribution

* Data analysis, cleaning, correlations, anomaly detection and feature engineering using Python.
* Build and train multiple models to obtain the maximization mix of parameters.
* Developed PowerBI dashboard to enable various operational views.

# #5

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| Project Domain | Manufacturing – Sugar Industry |
| Project Name: | Predictive Health Management of Equipment Wear, TKI |
| Role | Data Scientist/Analyst |
| Duration | 2018 Jan – 2019 Jul |

## Project Description

Pre-processing equipment in a typical sugar plant consists of CSDE, HoC & Shredder. They play a critical role in the overall efficiency of a sugar plant. The wear/damage to internal parts like knife-tips and hammer-edges of the above equipment would impact the production efficiency in terms of high-power consumption and reduction in the Sugar output quantity. The pre-processing equipment exists in hard metal casing and operates at high RPM.

The entire plant has be completely stopped for 1-2 days to fix any issue. Considering the short crushing season (3-4 months/year) and the high competition among various plants in the region, the plant owners cannot aﬀord breakdowns/maintenance-halts. To address these practical operational challenges, an IOT-based AI tool is developed to predict the wear/damage of equipment with the help of various features like power consumption, equipment vibrations, laboratory data etc. Several sensors were installed to capture the power and vibration data points.

## Contribution

* Data analysis, cleaning, correlations, anomaly detection and feature engineering using Python libraries.
  + Keras Gated Recurrent Unit model (GPU-enabled).
  + Keras Long-Short Term Memory models (GPU-enabled).
  + Multivariate time series forecasting model using VAR technique.
* Build and trained multiple models which include:
  + Maximum vibrations recorded in a day for all the equipment.
  + Millhouse, process house power consumption ratios.
  + Feature level views across several seasons at various timescales.
* Developed PowerBI dashboard to enable various operational views like:
  + Horsepower consumed per-ton of fiber crushed (HP/TF), by various equipment.

# #6

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| Project Domain | Telecom |
| Project Name: | Telefonica UK – Data & Analytics, Telefonica, UK |
| Role | Lead Analyst |
| Duration | 2017 Jun – 2017 Dec |

## Project Description

As part of the Advanced Data and Analytics team, oﬀered niche data analytical solutions to our esteemed clients to improve efficiency and thereby enhance the user-experience. As part of the initiative, several case studies have been analyzed and helped customers to resolve the business problems. For example, the Telefonica (UK) customer network infrastructure has been analyzed to predict the prospective threats in real time before and prevent them from impacting the network. We have used conventional classification techniques coupled with validation techniques to build the model.

## Contribution

* Data exploration and analysis using excel pivot tables.
* Build graphical representation of insights.
* Provide insights to business to enable decision-making.

# #7

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| Project Domain | Telecom |
| Project Name: | Telefonica UK – Smart Metering Implementation Program. Ab Initio DWH Maintenance, Telefonica UK |
| Role | Lead Analyst |
| Duration | 2017 Feb – 2017 May |

## Project Description

The smart metering equipment installed by energy suppliers will normally consist of a smart electricity meter, a smart gas meter, and a communications hub (which will typically sit on top of the electricity meter). Telefonica is responsible for setting-up WAN infrastructure for south and central regions. The technology used will be cellular radio communication method and mesh-radio communication methodology (for remote and hard-to-reach areas). TechM is awarded the SMIP ETL application to provide an E2E solution to the O2 on Smart Metering business in supply chain and Fault management, SLA, power outages etc. and inputs to the BO reporting application. SKIP-BO application facilitates various performance visualizations. In addition, the CHDB\_CCDB application maintains the communication hub and coverage checker databases. Various APIs have been built to provide data across various interfacing applications.

## Contribution

* Developed Ab Initio graphs for daily cycle for loading, partitioning and populating the data based on business requirements.
* Experienced with PSETS, parameters phases checkpoints and parallelism concepts.
* Created Abinitio DMLs’ and Xfrs as per the file formats.
* Worked with Partition components like partition by Expression and efficient use of multi-file systems to achieve Data Parallelism.
* Performed transformations on source data with Transform components like Rollup, Reformat, Filter-by-Expression etc.
* Supported the SIT team while testing the graphs and in issue resolutions.
* Responsible for the management of internal and external dependencies impacting the project and apply an appropriate governance and escalation process for these impacts.

# #8

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| Project Domain | Banking |
| Project Name: | KS Visa, (VisionPLUS® based), Bank of Nova Scotia, Canada |
| Role | Test lead |
| Duration | 2015 Apr – 2017 Jan |

## Project Description

KS Visa is a VisionPLUS® based system to handle customer on-boarding, new account set-up, bill-day set-up, provide insurance products, plastic (primary/additional/supplementary) card issuance, letters and communication to the customers, various charges and fee calculation, transaction authorization and statement generation, general ledger and accounting, statement dispatch, balance due reminders, delinquency management, pricing rules, charge-oﬀ/write-oﬀ settlements, bundle reporting etc.

## Contribution

* Discuss with BAs to understand the requirements and suggest the improvements where required.
* Estimate the and devise the test strategy.
* Plan and monitor the execution of the tool.
* Manage delivery and Metrics collection.
* Develop automation scripts using Python.

# #9

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| Project Domain | Banking |
| Project Name: | Cards & Acquiring, Connex (FIS®) & VisionPLUS® - NAB Australia |

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| Role | Sr. Analyst, Delivery/Delivery Lead (BAU) |
| Duration | 2011 Jan – 2015 Apr |

## Project Description

Cards and Acquiring application is one of the critical core-banking applications to manage transaction authorization and settlements. It involves Connex®, as the authorization engine/switch, developed in HLASM and the backend is a VisionPLUS® based system for settlements based on local/foreign currency, merchant-type settlements etc. The scope of our responsibility starts when the transactions are initiated from various channels that are received on Connex® (as AS2805 messages), for authorization in real-time, and post authorization, they are settled at various levels starting from schemes, other financial institutions, merchants and finally with the customers. Apart from the above, various regulatory, compliance and inter-institutional changes were part of the scope.

## Contribution

* AS an oﬀshore lead, successfully completed CPAT, BIN changes, Scheme compliance, Liquid Encryption Changes, Transaction capacity planning tasks, CR (configuration repository change).
* Manage and deliver the rollover of KEK changes with the interchanging partners. This activity happens every quarter.
* Create, update new/existing SAS scripts
* Estimation and project planning, execution, monitoring and control.
* Representation in PMR and PHR meetings.
* Internal/external audits, resource management and ramp-up activities.

# #10

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| Project Domain | Banking |
| Project Name: | Customer Data Management – HSBC Global |
| Role | Consultant Specialist |
| Duration | 2010 Jan– 2011 Jan |

## Project Description

HSBC Holdings plc is a British multinational banking and financial services company headquartered in London, United Kingdom. HSBC has around 6,600 offices in 80 countries and territories across the globe. HSBC is the world's largest bank in terms of assets and sixth-largest public company, according to a composite measure by Forbes magazine. The project is about designing a suite to enhance the customer experience in retail banking and to facilitate a fast and convenient way to complete the account opening formalities.

## Contribution

* Initial analysis and understanding of tasks.
* Estimations and Planning.
* Work allocation within the team.
* Prioritize the issues based on business criticality and the available resources.
* Maintain project documentation and know base.
* Take the project to internal and external audits.

# #11

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| Project Domain | Banking |
| Project Name: | Capsil – NAB Australia |
| Role | Sr. Analyst |
| Duration | 2008 May – 2010 Jan |

## Project Description

MLC is National Australia Bank's wealth management partner providing investment, superannuation, insurance and financial advice to corporate, institutional, and retail customers. It is a vision plus based application suite.

## Contribution

* As a senior analyst, lead the team to obtain the KT from the MLC SMEs
* Recorded the learning and baseline them upon customer signoﬀ.

# #12

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| Project Domain | Healthcare |
| Project Name: | Cigna PPO Claim Engine Upgrade – Cigna USA |
| Role | Project Coordinator |
| Duration | 2007 Jan– 2008 Oct |

## Project Description

CIGNA is one of the top-5 insurance providers in the USA and has significant business in Europe and Asia-Pacific. PPO (Preferred Provider Organization) Claims Acquisition will process all the claims received from the submitters and the clearing houses across the country. The claims will be initially received in X12 format (EDI – 837/835/834). These EDI messages will be parsed to verify the X12 standards. The compliant messages will be processed through the batch cycles of eligibility verification and plan validations and forwarded to the individual application downstream. The project involved upgrading the PPO claim engine to solve many issues. Considering the frequent requirement changes, I have coordinated with the business and the technical teams in prioritizing the requirements and finalizing them for a smooth deployment. The outstanding requirements have been met successfully during the further releases to complete the project.

## Contribution

* Requirements gathering from the client.
* Work estimation and allocation within the team.
* Monitor the team’s performance.
* Maintain internal/external quality process, collection of metrics, risk assessments.
* Maintain project documentation and know base, SCM co-ordination for internal and external audits.

# #13

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| Project Domain | Insurance |
| Project Name | AimsUpdate-Haplex – Statefarm USA |
| Role | Tech Lead |
| Duration | 2005 Nov– 2007 Jan |

## Project Description

State Farm Insurance is one of the major insurance-firms in the US and Canada. The project involved setting up the system to get the daily transactions from AIMS and update the DB2 database. The project consists of extraction of data from AIMS and mapping to corresponding tables onto the HAPLex system. This project demands domain knowledge as well as technical expertise.

## Contribution

* Requirements gathering from the client.
* Work estimation and allocation within the team & monitor the team performance.
* Maintain internal/external quality process, collection of metrics, risk assessments.
* Maintain project documentation, SCM co-ordination for internal and external audits.

# #14

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| Project Domain | Banking |
| Project Name | Advisor Relationship Tracking, American Express USA |
| Role | Techlead |
| Duration | 2003 Nov– 2005 Nov |

## Project Description

Advisor Relationship Tracking (ART) is a cross-platform application used by American Express

Home Office employees, to perform the rating of the advisors on diﬀerent parameters. This consists of three modules namely New Business (CICS screens), Payments and Count. New Business takes care of creating engagements between Clients and Advisors. The engagement mentions the services provided by the advisor to the client. Payments deal with the money movements between the clients and American Express. Counts are utilized to rate the performance of the Advisor. This system interfaces with many other external systems built on the UNIX platform, to get information about the clients, their payments and advisors with the help of CQ-MQ setup. The information is fed to the external systems through ﬂat files via CQ architecture which in turn converts them to the format (viz., SOAP & XML) that can be understood by the external systems and vice-versa. A stream of daily batch jobs will FTP the files to UNIX servers and obtain the feed from servers back to mainframes. Project involves writing Focus scripts as per business requirements and maintenance of the existing scripts.

## Contribution

* Requirements gathering from the client.
* Work allocation within the team.
* Create the change records for work requests from business.
* Drive the internal/external quality process, collection of metrics, risk assessments.

# #15

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| Project Domain | Logistics |
| Project Name | Automated Waybilling Application – CSX USA |
| Role | Trainee/Developer |
| Duration | 2001 Jun – 2003 Oct |

## Project Description

Automated Waybilling System is one of the critical applications for CSX as it manages the waybills which is the moving document for the locomotive. It is the mandatory document required for moving the freight. Considering its criticality the application required 24x7 support as for any reason the waybill has any issues, the support team gets a severity one ticket, and the team reviews the situation and takes the corrective action as defined by the business rules.

## Contribution

* Attend high/severity tickets as a level 2/3 support team. Fix waybill issues as per the business rules.
* Develop new functionalities and fix the maintenance issues per SLAs.
* Create the change records for work requests from business.
* Ensure the internal/external quality processes, collection of metrics, risk assessment inputs for senior leaders.

# ACADEMICS

* M. Tech in Data Science and Engineering, from Birla Institute of Technology & Science, BITS-Pilani.
* Master’s in computer science from Maharshi Dayanand University

# Trainings

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| --- | --- | --- | --- | --- |
| **TYPE** | **TITLE** | **LOCATION** | **ORGANIZED BY** | **DURATION** |
| Application | Connex | Melbourne | KT from client (NAB Australia), 2011 | 8 Weeks |
| Workshop | PM  Practitioners Workshop (PMFP) | Hyderabad | TechMahindra, 2012 | 1 Week |
| Training | Microsoft PowerBI | Webex | TechMahindra, 2014 | 1 Week |
| Training | Ab Initio | In-house | TechMahindra, 2015 | 4 Weeks |
| Training | Data Science using Python | Pune | TechM funded external training (AnalytixLabs), 2018 | 9 Weeks |

**VISAS (active)**

* USA - H1B