Jacob Matthew Cael Rafal

AI Solutions Engineer

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Profile

As an AI Solutions Engineer, I specialize in AI Solutions, Machine Learning, and Data Science. With hands-on experience on projects at Sevron Ltd, Sparks PH, Omdena, GDSC-PUP Main, and personal projects. I excel in solving business problems by leveraging AI Solutions to streamline the process. My ability to translate complex data into actionable insights is well-suited for part-time roles where efficiency and impact are paramount.

Professional Experience

AI Solutions Engineer, *Sevron Ltd* ↗   07/2023 – present
  United Kingdom

- Designing and developing tailored AI solutions to address company-specific challenges and objectives.
- Conducting in-depth research on Artificial Intelligence (AI) and Machine Learning (ML) methodologies to identify their practical applications within ongoing and upcoming projects.
- Gathering, cleaning, and preprocessing relevant datasets to ensure quality inputs for model training and evaluation.
- Building interactive demo interfaces using tools like Gradio to showcase AI solutions to stakeholders.
- Aligning development efforts with company preferences, such as implementing AI-powered chatbots integrated into platforms like Microsoft Teams.
- Enhancing development productivity and code quality through the use of AI code editors, including Cursor, Windsurf, and GitHub Copilot.
- Gaining proficiency in AI low-code/no-code platforms such as Flowise, N8n, and LangFlow to accelerate prototyping and deployment.
- Integrating third-party APIs, including Monday.com and Microsoft Graph, to access and utilize essential project data efficiently.
- Applying AI technologies strategically to fulfill defined project requirements and deliver optimal outcomes.
- Performing Exploratory Data Analysis (EDA) to extract insights, supported by data visualization and storytelling techniques for comprehensive reporting.
- Engineering and selecting relevant features from datasets to enhance model performance.
- Training, validating, and selecting machine learning models based on performance metrics to ensure the best fit for project needs.
- Creating client-facing, user-friendly interfaces for AI solution demonstrations and feedback collection.
- Deploying trained models to hosting platforms such as Hugging Face Hub and Streamlit for easy access and scalability.

Projects

Loki, *(Learning Optimization and Knowledge Innovation)*
- Created an AI application that generates full learning experiences—courses, scripts, storyboards, and videos—starting from a simple topic input
- Designed customizable input options including reference materials, preferred titles, and learning goals for tailored content generation
- Utilized large language models (LLMs) with advanced prompt engineering to build intelligent content creation pipelines
- Built a reusable AI workflow using low-code tools like **Flowise**, adaptable for other content creation projects
- Integrated tools such as **ElevenLabs**, **Heygen**, **DeepFaceLab**, **Wav2Lip**, **Midjourney**, **LeonardoAI**, **Runway**, and **Hailuo** for voice synthesis, avatar generation, and visual media creation
- Replicated parts of Heygen functionality using DeepFaceLab and Wav2Lip for custom avatar video production
- Solely responsible for the entire project lifecycle, including **pipeline development**, **UI/UX design**, and **tool integration**

The ISDSC AI Administrator
- Engineered an AI to automate the processing of Safety Data Sheets, improving data management and response accuracy.
- Implemented categorization algorithms to sort and respond to inquiries, boosting operational efficiency.
- The AI system will improve efficiency, streamline communication, and ensure timely management of SDSs.

RizalAI
- Developed a conversational AI modeled after Jose Rizal, enhancing user engagement and educational content delivery.
- Optimized machine learning techniques to improve the AI's response quality within resource constraints.
- Researched and experimented with open source LLMs.
- Fine tuned and implemented RAG to enhance the knowledge of the LLM.

ILOKANO-TAGALOG TRANSLATOR USING EXAMPLE-BASED, RULE-BASEDAND STATISTICAL MODEL MACHINE TRANSLATION, *Undergrad Thesis at Polytechnic University of the Philippines* ⬈
- Created a multilingual translation system using example-based and rule-based statistical methods.
- Managed a team of four, delivering the project within strict time and budget constraints, while fostering resource language preservation.
- Promoted a low-resource language for a thesis study.
- As a team leader, I was responsible ensuring the project met the proposed solution.

tagumpAI, *Hackathon*
- Developed a mobile application that utilizes the GPT model of OpenAI to create a personalized syllabus based on the job related information entered by the user. Then, it also have a feature where it can do mock interviews and it also suggests companies and jobs based on the same information
- https://github.com/DevIsko-Hackathon/tagump.ai

Shopilyzer: Detecting an Industry using Machine Learning, *GDSC Project*
- Formulated a solution for the client's problem.
- Developed a predictive machine learning model for Shopify to categorize a website into its industry category.
- Implemented a supervised machine learning model to predict and categorized the websites.
- Lead a team of 10 data scientists and engineers to complete the project on time.

New Orleans, USA Chapter - Bioinformatics on Breast Cancer Treatment using Machine Learning, *Omdena*

- Developed a predictive bioinformatics model using machine learning techniques to predict a treatment best for the breast cancer.
- Used image segmentation, recognition, and computer vision to medical images for breast cancer to classify its type and predict a treatment and medicine for it.

Devscribe

- Developed a web application that will utilized gpt-3 model of OpenAI for generating a code documentation for developers to use, contribute, and understand.
- Utilized Node.JS to create an API and User experience for the web application.
- Utilized Railway for the deployment of the APIs of the application.

Organizations

Omdena, *Junior Machine Learning Engineer*   11/2022 – present

- Contributed to international machine learning projects with a focus on social impact, preparing to lead a local chapter in the Philippines.
- Engineered a bioinformatics system for breast cancer classification, involving extensive data preprocessing and the deployment of a convolutional neural network model.
- Pioneered data collection and preprocessing protocols, and crafted interactive visualizations to convey insights.
- Applied image processing and computer vision techniques using Python to develop diagnostic models with high accuracy.

Google Developer Students Club, *Head of AI Specialized in NLP*   12/2022 – 08/2023
                                                                                                             Philippines

- Contributed to international machine learning projects with a focus on social impact, preparing to lead a local chapter in the Philippines.
- Engineered a bioinformatics system for breast cancer classification, involving extensive data preprocessing and the deployment of a convolutional neural network model.
- Pioneered data collection and preprocessing protocols, and crafted interactive visualizations to convey insights.
- Applied image processing and computer vision techniques using Python to develop diagnostic models with high accuracy.

Education

Bachelor of Science in Computer Science,   06/2019 – present
Polytechnic University of the Philippines ⧉   Manila, Philippines

- 1.25 GPA
- Thesis Title: "ILOKANO-TAGALOG TRANSLATOR USING EXAMPLE-BASED, RULE-BASEDAND STATISTICAL MODEL MACHINE TRANSLATION"
- Graduating with Latin Honors

Certificates

- Artificial Intelligence Foundations Machine Learning

- Exploring Data with Looker

- Next Generation AI: An Intro to GPT-3

- Nationwide Leadership Training- How to Train and Mentor

- Automata and Language Theory Pumping Lemma for Regular Language

- Processing Text with Python Essential Training

- Microsoft Azure Fundamentals (AZ-900) Cert Prep: 1 Cloud Concepts

Skills

Programming languages
Python, R, Java, C++, SQL, Javascript, HTML, CSS, PHP

Big data technologies
Hadoop, SQL

Software engineering
Git, Agile, Scrum, Jupyter Notebook

Statistics and mathematics
probability, statistics, linear algebra, calculus

Machine learning and data analysis
supervised and unsupervised learning, natural language processing, image processing, computer vision, bioinformatics, neural networks, deep learning, data visualization

Data modeling and database management
SQL, NoSQL

Communication, teamwork, independence
ability to communicate and work in a team and individually

Cloud Computing
AWS, GCP, Azure

References

Jerel John Velarde, *Project Manager,* Sparks PH

Gil Bancud, *Machine Learning Engineer,* Sevron Ltd
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