Sanwal Khan

Contact: Info@botmer.io
Role: Sr. AI Engineer
Price per month: $2500
Price per hour: $30

ABOUT ME

I am a dedicated professional specializing in Artificial Intelligence and Machine Learning. With a strong foundation in AI and ML, I am committed to harnessing these technologies to drive innovation and solve complex challenges. I thrive on staying up-to-date with the latest developments in the field and am passionate about creating intelligent solutions that positively impact businesses and society. I am eager to contribute my expertise to exciting projects.

WORK EXPERIENCE AI-Engineer

SOC Solutions LLC [26/09/2020 – Current]

City: karachi | **Country:** Pakistan

As a seasoned Lead AI Engineer, I specialize in the development and deployment of advanced AI and Machine Learning (ML) solutions, with a strong focus on Generative Adversarial Networks (GANs), Deep Learning, and Natural Language Processing (NLP). My primary expertise lies in generating high-quality images of shoes and clothing from textual descriptions, leveraging deep learning techniques to drive innovation in the fashion industry.
Key Responsibilities and Achievements:

1. **Deep Learning & GANs**: Developed state-of-the-art GAN models for creating realistic images from text inputs, significantly enhancing product visualization and design processes.
2. **Data Preprocessing**: Expert in data cleaning, augmentation, and transformation to ensure high-quality datasets for training robust AI models.
3. **Cloud-Based Deployment**: Successfully deployed AI models on cloud platforms, ensuring the scalability, reliability, and accessibility of AI solutions.
4. **Team Leadership**: Led diverse project teams, fostering collaboration, and driving project success through strategic planning and effective communication.
5. **Innovative Solutions**: Delivered cutting-edge AI applications that revolutionized fashion design workflows and product development.
6. **Speech Disorders AI Models**: Recently expanded expertise to include developing AI models aimed at analyzing and improving speech patterns, contributing significantly to assistive technologies in speech therapy.

Tools and Technologies: Python, TensorFlow, NumPy, Docker, YOLO, Postgresql , GCP ,AWS ,Pandas, the Stable Diffusion Model,Natural Language Processing (NLP),Transformer and Computer Vision

AI-Engineer

FAST-National University CFD [17/01/2019 – 25/08/2020]

City: Chiniot | **Country:** Pakistan

As an AI Engineer and Research Assistant at FAST University's Chiniot Campus, I am actively involved in a cutting-edge project designed to improve person detection, tracking, and counting in live camera streams. My responsibilities include developing sophisticated algorithms for precise identification and offering research-based insights to propel innovation in surveillance technology and data analysis. This role allows me to apply my expertise in AI to real-world challenges, contributing significantly to advancements in smart surveillance solutions
Tools and Technology: Python with OpenCV ,TensorFlow, Pandas, Numpy, Convolutional Neural Networks (CNNs),Recurrent Neural Networks (RNNs),YOLO

AI/ML Engineer

Nurobotx [10/02/2018 – 15/12/2018]

City: Faisalabad | **Country:** Pakistan

Developed a generative AI model for fashion trend forecasting, analyzing social media, current events, and fashion week data to predict upcoming trends. This tool aids designers in staying ahead of the fashion curve.
Tools and Technology: Social media APIs, image recognition libraries, Python, and predictive analytics models

EDUCATION AND TRAINING

Bachelor of Science in Computer Science

Government College UniversityFaisalabad [15/09/2014 – 25/09/2018]

City: Faisalabad | **Country:** Pakistan | **Website:** www.gcuf.edu.pk | **Field(s) of study:** Computer Science | **Final grade:** 3.57/4

Object-oriented programming, Artificial intelligence, Database Systems, Theory of Automata, Web Development, Application Development, Fundamental of Data Mining, Parallel and Distributed Computing, Data Structure and Algorithms

Artificial Intelligence Developer

PresidentialInitiative ArtificialintelligenceandComputing(PIAIC)

City: Karachi | **Country:** Pakistan | **Website:** https://www.piaic.org/ | **Final grade:** A+

I completed a prestigious one-year Artificial Intelligence course from the Presidential Initiative for Artificial Intelligence and Computing (PIAIC), a program initiated by the President of Pakistan. Selected from over 5,000 applicants, I gained comprehensive skills in
Python for Data Science

1. Machine Learning
2. Deep Learning
3. Computer Vision
4. Natural Language Processing
5. Docker and Git

DIGITAL SKILLS

Artificial Intelligence

Machine learning/ Computer Vision/ Deep Learning

Languages and Framework

Python / Numpy / Matplotlib / Pandas / Keras / OpenCV / Python FastAPI / NLP libraries: NLTK, SpaCy / Flask / Tensorf low / C/C++

Computer Vision

Object Detection / Face Recognition / YOLO Object Detection Algorithm / Image Preprocessing and Image Classification / image segmentation

Others

Git / Google colaboratory / Linux (main OS) / GCP - Google Cloud Platform / MySQL, SQL, SQLite, PostgreSQL / Set up AWS , GCP , Digital Ocean environments / Microsoft Office (Outlook, Excel, Word, PowerPoint) / Anaconda (for Python)

PROJECTS

[26/09/2023 – Current]

AI Speech Therapist I spearheaded the collaborative endeavor of developing the AI Speech Therapist project, with a central focus on addressing a spectrum of voice disorders such as stammering, stuttering, and voice disfluency. My pivotal contribution lay in crafting a robust machine learning model capable of accurately identifying these disorders from input audio samples. Furthermore, I designed personalized exercise plans tailored to each diagnosed disorder, offering patients a targeted approach to enhance their speech patterns. A standout feature of our project was the integration of an interactive avatar system, which significantly boosted patient engagement and adherence to

therapy exercises. Our achievements include successfully detecting and distinguishing voice disorders, leading to tangible improvements in speech patterns and confidence among users. Additionally, we contributed to the academic sphere by publishing our research findings, detailing the project's methodology and outcomes. Through the utilization of machine learning algorithms and innovative avatar technology, the AI Speech Therapist project marks a significant advancement in leveraging artificial intelligence for transformative healthcare and therapeutic interventions.
Tools and Technologies: (Google Colab+GPU, Python , Tensorflow, Wav2Vec2 , Computer Vision, Audio Synthesis)

[Current]
Innovative AI-Powered Shoe and Apparel Design Platform using GANs I and my team members are currently working on a groundbreaking solution that marries the world of fashion design with the cutting-edge capabilities of artificial intelligence. Our project harnesses advanced technologies like Generative Adversarial Networks (GANs) and text-to-image generation to craft one-of-a-kind designs for shoes and apparel. Our vision is to actively involve users in the design process, reimagining how high-quality fashion is created. This innovative platform seamlessly integrates AI into the design workflow, utilizing text and images as primary tools to rapidly generate exceptional designs.
Tools and Technologies: (Google Colab+GPU, Python , Tensorflow, Stable Diffusion Model(DALL-E), Pytorch)

Potato Leaf Disease Classification(Final Year Project) As my final year project, I am currently working on a computer vision project titled ”Potato Leaf Disease Classification.” The objective of this project is to develop a robust machine learning model using computer vision techniques to accurately identify and classify different types of potato leaf diseases. Through the utilization of the Keras framework, I am training the model to classify leaves into four classes: healthy, early blight, late blight, and invalid cases. In addition to model development, I am also creating a website and mobile application to provide a user-friendly interface for making predictions on the presence of diseases in potato leaves using computer vision algorithms. This project showcases my skills in both computer vision and application development.
Tools and Technology: (Python, OpenCV, Training models on the custom dataset, Google Colab+GPU, Flask, Tensorflow Matplotlib)

Link:

https://github.com/Sialsanwal/Potato-leaf-Disease-Classification-WebApp-Complete-Project-End-to-End

Fruit and Vegetable Detection Using Computer Vision techniques I have been actively involved in a project where I contributed to the development of a food object detection model. This model successfully detects various food items and provides predictions for recipe combinations based on the detected objects. With a total of 120 food classes, ranging from seafood and vegetables to fruits and dry fruits, the model offers valuable insights for restaurant operations. Through my participation, I have gained hands-on experience in object detection algorithms, recipe recommendation systems, and data management in the context of the food industry.
Tools and Technologies: (Google Colab+GPU, Python, Tensorflow, YOLOV8, Object Detection and Computer Vision.)

Predictive Maintenance in Manufacturing

1. **Mission**: To enhance the reliability and efficiency of manufacturing operations by predicting equipment failures before they occur.
2. **Description**: This project involves developing machine learning models that analyze sensor data from manufacturing equipment to predict potential failures. By implementing these models, the goal is to enable timely maintenance, reduce unplanned downtime, and extend the lifespan of machinery. Research focuses on feature selection, model optimization, and integration with existing maintenance systems.
3. **AI Skills Used**: Time series analysis, anomaly detection, predictive modeling, data preprocessing, feature engineering, and machine learning algorithms.

AI-Driven Personal Finance Management

1. **Mission**: To empower individuals with AI tools that provide personalized financial advice and help manage personal finances more effectively.
2. **Description**: This project focuses on creating AI systems that analyze users' spending patterns, income, and financial goals to offer tailored financial advice, budgeting tips, and investment suggestions. Research includes developing sophisticated recommendation algorithms, user behavior modeling, and secure data handling techniques.
3. **AI Skills Used**: Natural language processing (NLP), recommendation systems, user behavior analysis, data privacy and security, machine learning.

Autonomous Vehicle Navigation

1. **Mission**: To develop safe and reliable self-driving car technology that can navigate complex urban environments.
2. **Description**: This project involves designing and training algorithms that enable autonomous vehicles to recognize objects, make real-time driving decisions, and navigate through traffic safely. Research areas include sensor fusion, real-time processing, and ethical considerations in autonomous decision-making.
3. **AI Skills Used**: Computer vision, deep learning, sensor fusion, real-time processing, reinforcement learning, ethical AI, path planning algorithms.

Healthcare Diagnostics with AI

1. **Mission**: To improve early disease detection and diagnosis accuracy using advanced AI models. 2. **Description**: Utilizing deep learning models to analyze medical images, such as X-rays and MRIs, to assist in diagnosing conditions like cancer, Alzheimer's, and cardiovascular diseases. Research focuses on improving model accuracy, reducing false positives/negatives, and ensuring robust performance across diverse patient populations.
3. **AI Skills Used**: Deep learning, image processing, medical image analysis, data augmentation, transfer learning, evaluation metrics.

Natural Language Processing for Legal Document Analysis

1. **Mission**: To streamline legal research and contract review processes using advanced NLP algorithms. 2. **Description**: This project develops NLP models that analyze and extract relevant information from legal documents, helping lawyers quickly find case precedents, legal arguments, and contract clauses. Research involves improving natural language understanding, domain-specific language processing, and building user-friendly interfaces.
3. **AI Skills Used**: Natural language processing, named entity recognition (NER), text classification, information extraction, topic modeling, semantic analysis, legal language processing.

Machine Learning Projects

1. Diabetes Prediction(machine learning)
2. Heart Disease Detection(machine learning)
3. Diabetes Prediction(machine learning)
4. Froud Detection system(machine learning)
5. Sales analysis(machine learning)
6. Spam Mail Detection(machine learning)

HONOURS AND AWARDS

[22/12/2023] Deeplearning.ai(Coursera)

Neural Networks and Deep Learning

1. **Foundational Knowledge of Neural Networks:** Developed a strong understanding of the fundamentals of neural networks, including their architecture and principles.
2. **Practical Experience with Neural Networks:** Gained hands-on experience in designing and implementing neural networks for various machine learning tasks.
3. **Problem-Solving with Deep Learning:** Acquired the ability to apply deep learning techniques to solve complex problems and extract valuable insights from data.
4. **Fundamental Skills in Deep Learning:** Established a solid foundation in deep learning concepts, paving the way for further specialization in this cutting-edge field.
5. **Enhanced Data Science Expertise:** Strengthened technical skills in the domain of data science, particularly in the area of machine learning and artificial intelligence.

Link: https://coursera.org/verify/L4BYSBJQP5LG

[20/12/2023] Deeplearning.ai(Coursera)

Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization

1. **Mastery of Hyperparameter Tuning:** Proficiency in optimizing model performance by tuning hyperparameters like learning rates and batch sizes.
2. **Effective Regularization Techniques:** Expertise in applying regularization methods such as L2 and dropout to prevent overfitting and improve model generalization.
3. **Optimization Strategies:** Understanding and implementation of optimization algorithms like gradient descent variants and RMSprop for efficient model training.
4. **Structuring Machine Learning Projects:** Ability to set up machine learning projects effectively, including data splitting, error analysis, and handling mismatched data.
5. **Advanced Model Evaluation:** Skills to analyze and improve model performance through error analysis and evaluation metrics.
6. **Experience with Practical Applications:** Knowledge of applying deep learning to real-world problems and structuring machine learning projects effectively.

Link: https://coursera.org/verify/Z94K2Q5QXWTW

[31/12/2023] Deeplearning.ai(Coursera)

Convolutional Neural Networks

1. **Convolutional Layers:** Understanding the fundamentals of convolutional layers and their role in feature extraction.
2. **Pooling Layers:** Proficiency in pooling layers and how they reduce spatial dimensions while preserving important features.
3. **CNN Architectures:** Knowledge of various CNN architectures such as LeNet, AlexNet, and VGG, and their applications.
4. **Object Detection:** Familiarity with object detection techniques using CNNs, including single-shot detection (SSD) and region-based CNNs (R-CNNs).
5. **Image Classification:** Skills in image classification tasks using CNNs and transfer learning from pre-trained models.
6. **Deep Learning for Vision:** Ability to apply deep learning to computer vision problems and create effective solutions.

Link: https://coursera.org/verify/7ZYRTFJ3RUBL

[10/04/2023] Presidential Initiative Artificial intelligence and Computing (PIAIC)

Artificial Intelligence I completed this 1 year course from Presidential Initiative Artificial Intelligence and Computing (PIAIC).

Skills acquired include:

1. Python for Data Science
2. Machine Learning
3. Deep Learning
4. Computer Vision
5. Natural Language Processing

[13/04/2020] Coursera

Crash Course on Python Here's a list of topics covered in the "Crash Course on Python" course on Coursera:

1. Basic Python Data Structures
2. Fundamental Programming Concepts
3. Object-Oriented Programming (OOP)

Link: coursera.org/verify/KFYEUNXR97J6

[11/04/2020] Coursera

AI For Everyone here's a list of topics covered in the "AI for Everyone" course on Coursera:

1. Introduction to AI
2. AI in Business
3. AI in Society
4. Building an AI Strategy
5. Machine Learning (basic concepts)
6. AI and Data
7. AI and You (impact on individuals and careers)

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[12/01/2024] Deeplearning.ai(Coursera)

Sequence Models

1. **Recurrent Neural Networks (RNNs):** Explored the architecture and applications of RNNs for processing sequential data.
2. **Long Short-Term Memory Networks (LSTMs):** Mastered the workings of LSTMs, particularly suited for handling long-range dependencies in sequences.
3. **Natural Language Processing (NLP):** Applied sequence models to tasks such as language modeling, text generation, and sentiment analysis.
4. **Time Series Analysis:** Developed expertise in using RNNs and LSTMs for time series forecasting and anomaly detection.
5. **Hands-on Projects:** Implemented various sequence models using frameworks like TensorFlow and PyTorch, enhancing my ability to apply these techniques to real-world problems.

Link: https://coursera.org/share/d14bdf13a8b43e7ed602e2d7e4107201

[12/01/2024] Deeplearning.ai(Coursera)

Structuring Machine Learning Projects

1. **Project Management:** Learned best practices for setting up, organizing, and managing machine learning projects to ensure efficiency and productivity.
2. **Evaluation Metrics:** Explored different evaluation metrics and techniques to measure the performance of machine learning models accurately.
3. **Bias/Variance Analysis:** Mastered techniques for diagnosing and addressing issues related to bias and variance in machine learning models.
4. **Model Selection:** Developed skills in selecting appropriate models and algorithms based on project requirements and data characteristics.
5. **Machine Learning Strategy:** Learned strategies for prioritizing and iterating on machine learning projects to achieve optimal results.
6. **Case Studies and Applications:** Analyzed case studies and real-world applications to understand how to apply structured approaches to various machine learning tasks.

Link: https://coursera.org/share/7b8326c8493e68e6f1c1b070aba22adc

[06/07/2024] Deeplearning.ai(Coursera)

Generative AI for Everyone Key aspects covered in this course include:

1. **Generative Models:** Exploration of different types of generative models such as Variational Autoencoders (VAEs) and Generative Adversarial Networks (GANs).
2. **Applications:** Understanding how generative AI is used in various fields including art, music, text generation, and image synthesis.
3. **Hands-on Projects:** Practical implementation of generative AI techniques using frameworks like TensorFlow and PyTorch.
4. **Ethical Considerations:** Discussions on ethical implications and considerations when working with generative AI models

Link: https://coursera.org/share/3616aa58e4900a0802944669d9410659

[28/03/2024] Google Cloud

Google Cloud Fundamentals: Core Infrastructure

1. **Cloud Computing Overview:** Introduction to cloud computing concepts and advantages.
2. **Google Cloud Platform (GCP):** Exploration of core GCP services such as Compute Engine, Storage, and Networking.
3. **Identity and Access Management (IAM):** Understanding IAM principles for managing access control within GCP.
4. **Resource Management:** Techniques for efficient resource allocation and management using GCP.
5. **Security and Compliance:** Overview of security measures and compliance standards in GCP.
6. **Hands-on Labs:** Practical exercises to gain hands-on experience with deploying and managing infrastructure on GCP.

Link: https://coursera.org/share/5a6a00aada19ba62d54079c48b48a7bc