Justin Lee Morse

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Machine Learning Engineer

Experienced Machine Learning Engineer with a focus on Python, Cloud Services, Generative AI (GenAI), and Large Language Models (LLMs). Over 10 years of experience in developing AI-driven solutions for industries such as e-commerce, healthcare, and military applications. Proven expertise in computer vision, natural language processing, and designing scalable machine learning models for real-time, high-performance applications. Adept at delivering cutting-edge technologies to enhance operational efficiency, security, and user experience.

Work Experience

Nike - Senior Machine Learning Engineer

Jan 2021 - Dec 2024

Led the development of advanced AI-driven solutions for an innovative AI writing assistant designed for novelists and storytellers. (Sudowrite)

- Integrated GPT-3-based models into the Sudowrite platform to assist authors by generating creative prose and suggestions based on plot outlines, improving user engagement by 30%.
- Developed a real-time NLP pipeline using Python and TensorFlow to generate contextually relevant suggestions, enhancing the productivity of authors and storytellers.
- Optimized backend services with AWS Lambda, DynamoDB, and S3 to ensure seamless scaling as user demand increased.
- Built a custom text classification model for understanding user inputs and personalizing content generation.
- Deployed containerized applications using Amazon EKS, ensuring the system's scalability, security, and high availability.

- Collaborated closely with the creative writing community to refine AI tools for creative content generation.
- Tech Stack: Python, GPT-3, TensorFlow, AWS (Lambda, S3, DynamoDB, EKS), NLP, CI/CD (AWS CodePipeline)

Developed cutting-edge machine learning solutions to power a virtual dressing room for an immersive e-commerce shopping experience. (Veesual)

- Implemented computer vision models using OpenCV and Keras to simulate virtual try-ons, increasing user interaction and improving product visualization.
- Built a virtual model rendering system that dynamically adjusted to users' preferences and body types, boosting sales conversion rates by 20%.
- Integrated AWS S3 and Lambda for efficient storage and real-time rendering of virtual clothing items, ensuring quick load times and a seamless user experience.
- Developed a recommender system using Collaborative Filtering to suggest personalized outfits based on user behavior and preferences.
- Created a real-time image classification pipeline to categorize clothing items for accurate virtual try-on recommendations.
- Tech Stack: Python, OpenCV, Keras, AWS (Lambda, S3, DynamoDB), Machine Learning, Computer Vision

Vistendo - Machine Learning Engineer

Oct 2018 - Jan 2021

Abnormality Detection System in Soldiers - Developed an emotion and neurological anomaly detection system for real-time monitoring of military personnel.

- Built a facial recognition model using ResNet architecture, integrated with a deep learning network for detecting brain and nerve abnormalities based on facial expressions and EEG signals.
- Implemented a hybrid deep learning model combining Convolutional Neural Networks (CNNs) with Recurrent Neural Networks (RNNs) for anomaly detection, achieving 95% accuracy in diagnosing mental stress and early-stage neural damage.
- Deployed the system using Raspberry Pi for real-time monitoring on-site, combined with cloud-based processing for deeper analysis using AWS EC2 and Lambda.

- Integrated EEG signal processing with MNE and applied generative models like GPT-2 for generating real-time health status reports based on detected anomalies.
- Tech Stack: Python, OpenCV, Keras, MNE, ResNet, GPT-2, TensorFlow, AWS Lambda, Raspberry Pi

AI-Powered Sleep Stage Analyzer - Developed a military-grade AI system for monitoring sleep stages and identifying sleep disorders in soldiers.

- Designed a sleep stage analyzer based on EEG data, applying Long Short-Term Memory (LSTM) networks for real-time classification of sleep stages with 90% accuracy.
- Utilized TensorFlow for model training and MNE for EEG data preprocessing, enabling real-time data collection and analysis.
- Integrated AWS CloudWatch for monitoring soldier sleep patterns during missions, providing insights into mental and physical health.
- Applied Generative AI using GPT-3 to generate personalized sleep recommendations and alert command centers about irregular sleep patterns in soldiers, optimizing their health in high-stress environments.
- Tech Stack: Python, TensorFlow, Keras, MNE, AWS CloudWatch, LSTM, GPT-3

Ensign Services - Machine Learning Engineer

Mar 2015 - Sep 2018

Generative Code Completion - Developed an AI-powered code completion tool to augment the productivity of developers by predicting and suggesting code snippets.

- Built a custom code completion model using GPT-3/Codex APIs, which significantly reduced development time by offering real-time code suggestions in VS Code.
- Integrated the tool with VS Code via a custom plugin, streamlining the development workflow and increasing coding efficiency by 25%.
- Fine-tuned GPT-3 on specific coding languages and patterns to increase the relevance and accuracy of code suggestions.
- Tech Stack: Python, GPT-3/Codex, VS Code, NLP, API Integration

EDUCATION

Texas Tech University, Texas — Bachelor's Degree in Computer Science

Apr 2010 - Dec 2014

- ICPC Regional Contest Winner (Programming with C/C++/Python)

SKILLS

- Programming Languages: Python, JavaScript, SQL
- Frameworks & Libraries: TensorFlow, Keras, GPT-3, PyTorch, OpenCV, spaCy, NLTK, NumPy, Pandas, SciPy
- Machine Learning & AI: Generative AI, Natural Language Processing (NLP), Computer Vision, Deep Learning, Large Language Models (LLM), Data Science, Recommender Systems
- Cloud & DevOps: AWS (Lambda, S3, DynamoDB, EKS, CloudWatch), Microsoft Azure (Cosmos DB, Data Factory, Azure DevOps), CI/CD Pipelines
- Tools & Technologies: Docker, Kubernetes, VS Code, Raspberry Pi, OpenBCI
- Soft Skills: Problem-Solving, Team Collaboration, Leadership, Client Communication

CERTIFICATIONS

- AWS Certified Machine Learning – Specialty
- TensorFlow Developer Certificate