AYUSH BHUSAL

Machine Learning Engineer | Data Scientist | Building Scalable AI Systems for Real-World Impact

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ML Engineer and Data Scientist with 1+ years of experience delivering scalable AI solutions, predictive models, and automated analytics pipelines. Experienced in deploying ML systems in production, improving operational efficiency, and translating complex data into actionable insights.

Proven track record in automating workflows, optimizing media campaigns, and building end-to-end ML pipelines.

University of New Haven, West Haven, CT
Master of Science in Computer Science,
Expected Dec 2025 | GPA: 3.97
Projects: NLP-based feedback system, AWS-hosted ML deployment.

Coventry University, Coventry, UK
Bachelor of Science in Computer Science,
Sep 2019 – Jul 2023 |Graduated with First Class.
Projects: Constraint-based faculty scheduler, cross-platform mobile app (MusicMate).

Experience

University of New Haven, West Haven, CT
Graduate Research & Teaching Assistant | Jan 2025-Present

- Conduct research on multi-class segmentation, data visualization, and model interpretability (PyTorch).
- Co-author academic papers through literature review, analysis, and visualization prototypes.
- Assist in teaching Data Structures and Introduction to AI: hold office hours, grade, and mentor students.

MediaLab Group, London, UK
Data Scientist | Jun 2021-Jul 2022

- Refactored workflows and legacy codes, boosting system efficiency 20% and reducing dashboard errors 30% (Python, SQL).
- Led "Automate or Eliminate," cutting manual reporting 55%, saving ~5 analyst hrs/week confirmed via team feedback.
- Built predictive models (Scikit-learn, XGBoost) improving media targeting, CTR +12%, conversion lift +8%.
- Applied Media Mix Modeling for non-profits, optimizing campaign ROI.
- Developed dashboards in Adverity/Power BI, reducing report turnaround time 40%.
- Automated AWS batch workflows for 24/7 data processing

Skills

- **Programming:** Python (Advanced), R, SQL, C++, C#, HTML/CSS, JavaScript
- **Machine Learning & AI:** Scikit-learn, XGBoost, PyTorch, U-Net (Instant Segmentation), Semantic Segmentation, OpenCV, COCO Format, TensorFlow (basic), NLP (LDA, Sentiment Analysis), Media Mix Modeling
- **Data Analysis & Visualization:** Pandas, NumPy, Tableau, Matplotlib, Seaborn, A/B Testing, Data Cleaning, EDA
- **Cloud & DevOps:** AWS (S3, EC2, Lambda, SageMaker, Amplify, CloudWatch, IAM, RDS), Terraform, Docker, Kubernetes, Auto-scaling, CI/CD Pipelines
- **Tools:** Git, GitHub, Airflow, API Integration, Flask, Django, OOP, Unit Testing

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Projects

- **TrashNet-Vision: Multi-Class Segmentation**| *PyTorch, COCO Annotations, Instant Segmentation, U-Net*
  Built a U-Net segmentation pipeline on 60-class TrashNet masks using COCO-format polygons. Achieved 88%-pixel accuracy and 72% mIoU with boundary-preserving outputs.
- **Feedback System for YouTube Creators** | *Python, OpenAI API, Pandas, Scikit-learn, Seaborn*
  Extracted video transcripts and comments, performed sentiment analysis and topic modeling (LDA), and provided automated feedback. Automated visualizations with Seaborn and deployed interactive summaries..
- **Census Income Prediction (ML Pipeline)** | *Scikit-learn, XGBoost, GridSearchCV, Jupyter*
  Trained classifiers (SVC, Logistic Regression, Random Forest, Gradient Boosting) on UCI Adult dataset. Achieved 87% accuracy with Gradient Boosting and built modular ML pipelines.
- **Automated Client Reporting Framework** | *Python, Excel(Visual Basic), PowerPoint, Airflow*
  Reduced manual reporting by 5 hours/analyst/week via automated client decks and A/B test summaries.
- **MusicMate: Cross-Platform Companion App** | *C#, .NET MAUI, MVVM, REST API*
  Developed mobile-first app with real-time lyric search, playlist management, and API integration. Implemented MVVM architecture and deployed to Android & Windows via CI pipeline.
- **Sudoku Solver** | *C++, OOP, Backtracking*
  Built a C++ Sudoku solver with dynamic board allocation, constraint-based logic, and puzzle validation. Enhanced project readability and debugging efficiency by streamlining testing and error logging.