

Sahil Dadhwal

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EDUCATION

University of California, Davis <i>Master of Science in Computer Science</i>	Sept. 2024 – June 2027 (Expected) Davis, CA
University of California, San Diego <i>Bachelor of Science in Computer Science — A.S. in Applied Mathematics & Economics</i>	Sept. 2019 – June 2023 San Diego, CA

RESEARCH & TECHNICAL PROJECTS

Dimensionality Reduction for CNN Features <i>PyTorch, Deep Learning</i>	Oct. 2025 – Nov. 2025
<ul style="list-style-type: none">Conducting comparative research on neural network-based dimensionality reduction (Autoencoders vs. Transformers) for compressing 2048-D ResNet50 features to 128-D while preserving image classification accuracy on CIFAR-10/100 datasetsArchitected novel transformer-based compression model with 4 layers and 8 attention heads using self-attention mechanisms to identify discriminative computer vision features, hypothesizing 2-4% higher accuracy than autoencodersImplemented end-to-end machine learning pipeline with comprehensive evaluation framework measuring classification accuracy, reconstruction quality, and interpretability across multiple compression ratios (32D-256D)	
Bird Species Distribution Tracker <i>Python, React, FastAPI, MongoDB, ML, GIS</i>	April 2025 – May 2025
<ul style="list-style-type: none">Built full-stack dashboard analyzing 5M+ bird observation records to visualize climate change impact on species migration patterns using GBIF and PRISM climate APIsImplemented machine learning forecasting models predicting future species distribution shifts with interactive geographic heatmaps and seasonal analysis visualizationsArchitected FastAPI backend with MongoDB for processing multi-gigabyte geospatial datasets and React frontend with real-time data filtering across 10+ North American species	
AI Toxicity Detection in Developer Communities <i>Python, BERT, NLP</i>	Jan. 2025 – March 2025
<ul style="list-style-type: none">Analyzed correlation between toxic communication and developer productivity across GitHub repositories using GitHub Archive data and Incivility Dataset with 1M+ interactionsImplemented BERT-based natural language understanding model with API rotation system for toxicity detection, processing repository metrics, commits, and issue resolution patternsConducted statistical analysis (Spearman/Pearson correlations) revealing significant relationships between communication patterns and project outcomes in software engineering teams	

EXPERIENCE

Data Engineer Intern <i>BTIS</i>	April 2024 – Present Sacramento, CA
<ul style="list-style-type: none">Engineered Python ETL pipelines processing 15+ GB datasets from 50+ MongoDB collections to SQL Server, reducing data inconsistencies by 90% through software engineering best practicesDesigned end-to-end CI/CD pipeline using Jenkins, Vault, and Orkes Conductor, automating ETL deployment across 3+ environments with containerization and scheduled orchestrationDeveloped 50+ Power BI dashboards for CTO using Snowflake data warehouse, supporting \$10M+ in strategic decisions while leading coordination among 15+ stakeholders across 8 critical migration projectsBuilt comprehensive data validation framework and architected WCPOLS compliance solution processing 2M+ weekly records	

TECHNICAL SKILLS

Programming Languages: Python, SQL, Java, JavaScript, C++, HTML/CSS
Data Engineering: ETL/ELT, Data Modeling, MongoDB, PostgreSQL, SQL Server, Snowflake, Power BI, Tableau
Machine Learning: PyTorch, scikit-learn, BERT, Transformers, NLP, Computer Vision, Deep Learning, Statistical Analysis
Tools & Frameworks: Jenkins, Docker, Vault, Orkes Conductor, Git, pandas, NumPy, FastAPI, React, REST APIs, CI/CD