

# Bhuvan Veeravalli

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## Objective

Analytical innovator passionate about designing **intelligent systems** that merge **data-driven modeling**, predictive analytics, and statistical learning. Experienced in optimizing **temporal architectures** and deep neural pipelines for real-world forecasting, **anomaly detection**, and automation challenges. Excels at transforming raw information into high-impact, scalable insights.

## Education

**BSc Computing Science Specialization | GPA: 3.8/4.0**

Expected May 2027

*University of Alberta*

*Edmonton, AB*

- **Relevant Courses:** Foundations of Computing I & II, Machine Learning I & II, Reinforcement Learning, Search & Planning in AI, Natural Language Processing, Algorithms I, File & Database Management, Software Engineering, Web Applications & Architecture, Numerical Methods, Formal Systems & Logic, Applied Statistics I & II, Linear Algebra I & II, Calculus III.

## Work Experience

**ML Research Assistant**

Jan 2025 – Present

*Renewable Thermal Energy Lab*

*Edmonton, AB*

- Developed **multi-head attention LSTM model** to predict 10-point thermal storage temperature profiles from dynamic sensor data, achieving  $R^2 = 0.98$  and **MAE**  $< 0.5^\circ\text{C}$  across 150+ experimental configurations.
- Engineered automated **data ingestion pipeline** integrating real-time sensor streams with residual analysis workflows, reducing model validation time by **40%**.
- Implemented **adaptive error-tracking** system to identify optimal test configurations, improving diagnostic precision and accelerating identification of performance thresholds.

**Undergraduate Teaching Assistant — STAT 252: Applied Statistics II**

Sep 2025 – Present

*University of Alberta*

*Edmonton, AB*

- Evaluated **250+ student submissions** on statistical modeling and data analytics, applying consistent grading rubrics across regression analysis, hypothesis testing, and inferential statistics.
- Provided **one-on-one academic support** to students, clarifying regression techniques and data-driven decision-making methodologies to improve comprehension.
- Coordinated tutorial sessions and managed grading workflows under tight deadlines, demonstrating strong organizational skills and maintaining quality standards.

## Projects

**IntelliDocs — Document Intelligence System | Lead AI Engineer**

- Technical organizations frequently struggle to navigate and extract specific knowledge from thousands of unstructured documents, leading to significant information silos and delayed decision-making processes.
- Architected a **RAG system** using **Mistral-7B** and hybrid retrieval (BGE/BM25), fine-tuned with **QLoRA** on synthetic Q&A pairs and human-annotated examples.
- Achieved **0.89 NDCG@10**, improved answer relevance by **35%**, and reduced hallucinations by **40%**.

**FlightPredict — Delay Prediction System | ML Systems Engineer**

- Travelers and airline operators face substantial financial and logistical burdens due to unpredictable flight delays caused by complex, overlapping variables such as historical patterns and real-time weather conditions.
- Built a **multi-target PyTorch MLP** integrating **BTS** and **NOAA** datasets and deployed a **FastAPI/Spring Boot** dual-service architecture.
- Achieved **85% prediction accuracy** with **sub-500ms latency** for scalable API integration.

**SocialDistribution — Distributed Social Platform | Backend Engineer**

- Modern social media landscapes are dominated by centralized platforms that restrict user data ownership, lack cross-platform interoperability, and provide limited transparency regarding visibility controls and security.
- Implemented a **federated social platform** with cross-node posting and HTTP Basic Auth using an inbox-based push model.

- Successfully enabled standardized JSON object exchange and visibility controls (public/unlisted/friends-only) across distributed nodes.

**Android Mood Tracker — Backend Sync System** | *Full Stack Developer*

- Users requiring emotional tracking tools often face data loss or lack of accessibility in remote areas, necessitating a platform that maintains full functionality without a persistent internet connection.
- Developed an **offline-first architecture** using **Firebase Authentication** and **Firestore** real-time synchronization.
- Ensured 100% data integrity and automatic conflict resolution across multi-device sessions.

**Skills**

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- **Programming Languages:** Java, JavaScript, Python, C++, C, C#
- **Frontend Technologies:** ReactJS, HTML, CSS, Tailwind CSS, Flask
- **Backend & APIs:** Spring Boot, FastAPI, Node.js, Express.js, Django, REST APIs, GraphQL, Microservices, .NET, J2EE
- **Databases:** PostgreSQL, MySQL, MongoDB, Redis, DynamoDB, Vector Databases
- **Cloud & DevOps:** AWS (Lambda, S3, RDS, Cognito, Bedrock), Docker, Kubernetes, Jenkins, CI/CD, GCP, Git, GitHub, Unix/Linux
- **AI/ML & GenAI:** PyTorch, TensorFlow, LLMs, RAG, LangChain, NLP, Embeddings, Model Fine-tuning, Prompt Engineering, Claude, Copilot, Google Mediapipe
- **Big Data Technologies:** Hadoop (MapReduce), Spark, Kafka, Data Pipelines
- **Security & Authentication:** OAuth, JWT, AWS Cognito, Secure API Design
- **Software Engineering:** Agile Methodology, SDLC, Version Control, JIRA, Data Structures, Algorithms, A/B Testing, Performance Tuning, Site Reliability Engineering
- **Languages:** English, Arabic, Hindi, Telugu

**Certifications**

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- **Generative AI for Software Development** — DeepLearning.AI *Oct 2025*
- **Google Cloud Data Analytics Certificate** — Google *Sep 2025 – Sep 2028*
- **Introduction to Data Analytics** — IBM *Jul 2025*

**Awards & Scholarships**

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- **NSERC Undergraduate Student Research Award** *Apr 2025*
- **Dean’s Honor Roll** *Jun 2024, Jun 2025*
- **University of Alberta Undergraduate Scholarship (International)** *Sep 2024*
- **University of Alberta Gold Standard Scholarship** *Aug 2023*
- **University of Alberta International Admission Scholarship** *Aug 2023*
- **University of Alberta Regional Excellence Scholarship** *Aug 2023*

**Volunteer Experience**

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- Edmonton’s Food Bank** | *Volunteer* Sep 2024 – Nov 2024
  - Assisted in sorting and organizing food donations, assembling hampers, and supporting distribution efforts.
- The Mustard Seed** | *Volunteer* Sep 2024 – Nov 2024
  - Helped organize donations and engaged with community members experiencing poverty and homelessness.
- Hope Mission** | *Volunteer* Sep 2024 – Nov 2024
  - Assisted with meal preparation and service, creating a welcoming environment for individuals facing poverty.