ALEC IBARRA

SOFTWARE ENGINEER

CONTACT

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EDUCATION

May 2025
B.S. Computer Science
University of Texas at Dallas

PROGRAMMING

- JavaScript
- TypeScript
- HTML / CSS
- Python
- Java
- BASH
- C++
- C#

TOOLING

- MS Office
- Windows
- Linux
- VSCode
- Git
- Docker
- IntelliJ IDEA
- PyCharm
- Figma
- Blender
- Unity Engine

HARDWARE

- PC Building
- Raspberry Pi
- Arduino
- ESP32
- VEX Robotics
- Verilog
- Xilinix FPGA
- Multimeters
- NI Multisim

LANGUAGES

- English
- Spanish

REFERENCES UPON REQUEST

ABOUT ME

I am a detail-oriented software engineer with strong skills in learning, leadership, and teamwork, driven by a passion for solving complex problems. I earned my B.S. in Computer Science from UTD, where I developed a solid foundation in software development, system design, and applied machine learning. I am seeking opportunities in full-stack, backend, or frontend development where I can build scalable, high-performance software that makes a meaningful impact.

LEADERSHIP

Team Lead / Lead Developer — **2024**
QueryQuest Team, University of Texas at Dallas — Richardson, TX

- Led a 6-member team in an accelerated 1-month sprint to deliver a functional web-based trivia game, ensuring alignment with project goals.
- Managed the integration of team contributions, ensuring consistent functionality, quality, and seamless collaboration across all components.
- Authored extensive documentation and reports, detailing project architecture, design decisions, and technical processes for clarity and future reference.

Team Lead / Lead Developer — **2024**
Fintasy Team, University of Texas at Dallas — Richardson, TX

- Led a team of 7 members, taking charge of the design, architecture, and technical development of a paper trading platform (semester project).
- Directed frontend and backend development efforts, ensuring seamless integration, timely feature delivery, and extensive documentation.
- Managed team coordination, driving progress, resolving conflicts, and ensuring alignment with project goals and deadlines for successful delivery.

Team Co-Lead — **2019 - 2021**
TIDAL Special Projects Team, Texas A&M University — College Station, TX

- TIDAL performs research into machine learning, engaging students in projects that address real-world challenges.
- Worked on building machine learning models to judge a storm's severity from limited data, such as lightning strikes.
- Identified, collected, and processed candidate data, including lightning strikes and other environmental factors, to create clean, structured datasets for effective model training, evaluation, and performance optimization.

PROJECTS

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TAMU Grades — **2022 - Present**

- Built a web app to scrape, parse, process, and render information about courses and grade distribution data from Texas A&M's Registrar's Office.
- Designed and optimized a relational database schema to efficiently store and query over 181,000 course sections, 12,000 courses, and 8,000 professors.
- Currently processes requests generated by over 5.7k unique users per month with an average latency under 50ms.
- **Utilized Skills**: Full-stack development, database design and optimization, unstructured data extraction and processing, UI/UX design, containerization.
- **Built using**: TypeScript, Vue.js, Fastify, PostgreSQL, Docker, Alpine Linux, Cloudflare, Vite, Vitest, Jest, Git.

Harmonic Links — **2025**

- Developed the responsive and interactive user interface of a web-based music discovery game using Next.JS, React and Tailwind CSS.
- Implemented core gameplay features on the client side using dynamic UI components, including elements for joining games, searching for and selecting artists, connection status, and many other real-time multiplayer interactions.
- Collaborated closely with backend developers to consume API endpoints securely and efficiently, ensuring smooth data flow and minimal latency.
- **Utilized Skills**: Frontend development, UI/UX design, React hooks, state management, responsive design, real-time data handling, Agile workflow.
- **Built using**: TypeScript, React, Next.js, Tailwind CSS, Supabase, OAuth, Vercel.

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ALEC IBARRA

SOFTWARE ENGINEER

HARD SKILLS

Development & Architecture:
- Full Stack Development
- Frontend & Backend Dev
- Web Development
- API Design & Development
- Test-Driven Dev (TDD)
- CI/CD & DevOps
- Containerization (Docker)
- Git & Version Control
- Software Architecture

Cloud & Scalability:
- Cloud Computing Arch.
- Scalability & Perf. Optimization
- Load Balancing & Fault Tolerance

Data & Machine Learning:
- Machine Learning & AI
- Data Modeling & Optimization
- SQL (MySQL, PostgreSQL)

UI/UX & Design:
- UI/UX Design
- Responsive Web Design
- Tailwind CSS, Vue.js
- Web Design (CSS, HTML)

Security & Performance:
- Secure Coding & Authentication
- Monitoring & Logging
- Debugging & Troubleshooting

Other Skills:
- Computer Vision
- Natural Language Processing
- Shell Scripting & Linux
- Technical Documentation
- OOP & Functional Programming

SOFT SKILLS

Leadership & Teamwork:
- Team Leadership
- Cross-functional Collaboration
- Delegation & Task Management

Communication:
- Effective Communication
- Technical Documentation & Reporting

Problem-Solving:
- Critical Thinking
- Troubleshooting & Debugging
- Decision-Making Under Pressure

Time Management & Productivity:
- Prioritization
- Deadline Management
- Self-motivation & Initiative

Learning & Growth:
- Continuous Learning
- Self-Improvement
- Willingness to Adapt & Learn

REFERENCES UPON REQUEST

PROJECTS (continued)

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HLT - NLP & Sentiment Analysis — 2025

- Led a 4-member team in designing, implementing, and evaluating multiple language processing models for multiple in-depth course projects.
- Developed probabilistic language models from scratch with smoothing and unknown-word handling, evaluating performance via perplexity metrics.
- Implemented and compared neural network architectures for sentiment analysis, including FFNNs, RNNs, LSTMs, Text CNN, and TinyBERT techniques, analyzing trade-offs in complexity, training time, and accuracy.
- **Utilized Skills**: Natural language processing, machine learning, deep learning, model evaluation, PyTorch, neural network design, data preprocessing.
- **Built using**: Python, PyTorch, NumPy, pandas, scikit-learn, GloVe embeddings, TinyBERT, Jupyter Notebooks, Git.

Fintasy — 2024

- Collaborated on the development of a paper trading platform with competitive social features using real-time stock market data.
- Developed a responsive, scalable frontend, ensuring cross-platform compatibility, fast performance, and faster load times through static file hosting, CDN integration, and optimized resource delivery.
- Designed and implemented RESTful APIs to ensure efficient backend communication, optimizing data retrieval and performance.
- **Utilized Skills**: Full-stack development, database design and optimization, UI/UX design, modular architecture, API development.
- **Built using**: TypeScript, Python, Vue.js, FastAPI, Flask, PostgreSQL, Docker, Alpine Linux, Cloudflare, Vite, Vitest, Jest, Git.

QueryQuest — 2024

- Designed and implemented a PostgreSQL schema to manage users, trivia questions, categories, and leaderboard data efficiently.
- Developed RESTful APIs with FastAPI to handle authentication, core gameplay logic, and real-time score tracking.
- Built an interactive Vue.js frontend with dynamic UI components and smooth game flow for single-player trivia challenges.
- **Utilized Skills**: Full-stack development, database design and optimization, UI/UX design, modular architecture, API development.
- **Built using**: TypeScript, Python, Vue.js, FastAPI, PostgreSQL, Docker, Alpine Linux, Cloudflare, Vite, Naive UI, Git.

RELEVANT COURSEWORK

Artificial Intelligence & Machine Learning
- **Introduction to Machine Learning**: Supervised and unsupervised learning, model evaluation, feature selection, overfitting, and cross-validation techniques.
- **Human Language Technologies (Natural Language Processing)**: Focus on large language models (LLMs), including fine-tuning for tasks.
- **Introduction to Computer Vision**: Image processing, object detection, feature extraction, and basic computer vision algorithms.

Software Development
- **Software Engineering**: Software design principles, development methodologies, testing strategies, version control, and project management practices.
- **Programming Language Paradigms**: Exploration of functional, procedural, and object-oriented programming, along with their design principles and trade-offs.

Systems & Architecture
- **Systems Programming in UNIX**: Shell scripting, system calls, process management, memory management, and inter-process communication.
- **Computer Architecture**: In-depth study of processor components, memory hierarchy, pipelining, caching, and hardware subsystems.
- **Digital Logic and Computer Design**: Design and analysis of digital circuits.

Data & Algorithms
- **Database Systems**: Relational databases, SQL, schema design, query optimization, indexing, transaction management, and performance tuning.
- **Data Structures and Introduction to Algorithmic Analysis**: Core data structures, algorithm efficiency, complexity analysis, and practical problem-solving techniques.
- **Advanced Algorithm Design and Analysis**: Optimization techniques, graph theory, computational complexity, and advanced problem-solving strategies.

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