

MUHAMMAD QASIM

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TECHNICAL ARSENAL

Languages: Java (Advanced/Systems), C++ (Memory Mgmt), Python (NumPy/Pandas), SQL
Core Concepts: Distributed Systems, O(1) Inverted Indices, Vector Space Models, ACID Compliance, DDD
AI & ML: TensorFlow, Keras, LSTMs, Temperature Sampling, Custom Tokenization, TF-IDF Ranking
Developer Tools: Arch Linux (Hyprland), Neovim (100 WPM), Git Flow, Maven, Inno Setup, LaTeX

ENGINEERING PROJECTS

DevShelf | *Java, DSA, Cloud Streaming, JavaFX* [Code]

Engineered a **distributed search engine** (78MB footprint) for CS literature, implementing a custom **Positional Inverted Index** to achieve **O(1)** keyword lookup speeds without external dependencies (Lucene/Elastic).

Designed a **Hybrid Ranking Algorithm** fusing TF-IDF scores with behavioral signals (Popularity + Ratings) and **Levenshtein Distance** for fuzzy matching/typo correction.

Architected a **Domain-Driven Design (DDD)** system, decoupling the Core Search Engine from the UI, enabling a unified backend for both CLI and GUI interfaces.

Implemented an **O(L) Trie-based Autocomplete** system and a "Serverless" content delivery network using GitHub raw content for dynamic index updates.

Lead Architect for a 3-person team; managed code reviews, marketing (QR adoption campaign), and product roadmap based on user feedback loops.

Baby GPT | *Python, TensorFlow, Keras, LSTM* [Code]

Built a character-level **Generative Text Model** from first principles, avoiding pre-trained transformers to master the mathematics of Next Token Prediction.

Constructed a **Dual-Stack LSTM** network with a custom tokenizer trained on *Alice in Wonderland*.

Engineered a custom **Temperature Sampling** inference loop to dynamically control generation stochasticity (creativity vs. coherence).

MQ Banking Core | *C++, Qt, File I/O* [Code]

Developed a high-performance financial ledger system using direct **File I/O** for ACID-style persistence.

Implemented manual memory management strategies to prevent heap fragmentation and ensuring stability under high-transaction simulations.

The Digital Eye | *TensorFlow, CNN, Computer Vision*

Designed a Convolutional Neural Network (CNN) for digit recognition, achieving **98% accuracy**.

Implemented input normalization, **Dropout (0.2)** regularization, and Early Stopping to prevent overfitting.

LEADERSHIP & EXPERIENCE

DevShelf Project Lead

Lead Engineer & Product Manager

University Project Competition

2025 – Present

Led a cross-functional team of 3 engineers to launch a production-ready Windows executable.

Executed a campus-wide marketing strategy (QR/Direct) resulting in widespread peer adoption.

Integrated "Request Book" feedback loops (Google Forms pipe) to drive data acquisition strategy.

EDUCATION

Bachelor of Computer Science

Specialization in Systems Engineering & AI

[Sukkur IBA]

[2028]

Relevant Coursework: Data Structures & Algorithms, Operating Systems, Artificial Intelligence, Linear Algebra.