

Ashutosh Kumbhar?

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SUMMARY

Dedicated and skilled Software Developer with experience in full-stack application development. Passionate about learning new technologies, with keen interests in Knowledge Graphs, Applied Artificial Intelligence, Generative AI, and Retrieval-Augmented Generation (RAG). Committed to delivering high-quality, innovative software solutions.

EDUCATION

Master of Software Engineering

Arizona State University

August 2024 - May 2026

Tempe, AZ, USA

Coursework: Semantic Web Engineering, Software Process Management, Fundamentals of Software Engineering, Software Security

Bachelor's in Computer Science

Savitribai Phule Pune University

August 2019 - May 2023

Pune, MH, INDIA

Coursework: Database Management and Optimization, Web-Based Applications, Software Design, Artificial Intelligence, NLP

EXPERIENCE

Software Developer - Western Union Financial Services

January 2023 – August 2024

- Spearheaded development of an internal POS Utility tool, enabling proxy connections between env, boosting developer productivity by **30%**.
- Engineered the WUPOS Database-Compare tool to automate configuration comparisons, reducing troubleshooting time by **25%**.
- Resolved critical application bugs, improving system stability and performance by **15%** through root-cause analysis.
- Implemented **Test-Driven Development (TDD)** using **Playwright**, increasing test coverage by **40%** across **5+ SCRUM** teams.
- Participated in SCRUM activities like Sprint Planning, Sprint Retrospective, Sprint Review and worked in an Agile model environment.
- Migrated the legacy retail POS application developed in Apache Tapestry to a modern tech-stack of Angular 14 and Spring Boot.
- Optimized and maintained Oracle database schemas, enhancing query performance and ensuring data integrity across enterprise applications.
- Experience Letter: <https://shorturl.at/B5ZL8>
- Certificate: <https://shorturl.at/Mub5t>

Full-Stack Software Developer (Part-Time) - MindsClik Digital Solutions

January 2022 - January 2023

- Architected a flagship white-label **eCommerce** platform using **Flutter SDK**, enabling cross-platform compatibility and reusability.
- Engineered intuitive, reusable UI components in **Flutter**, enhancing user experience and achieving a **4.8/5** satisfaction rating in usability.
- Enhanced data retrieval and API interactions with **GraphQL** using **PostgreSQL**, achieving a **60%** improvement in response times.
- Orchestrated cloud deployment on **AWS EC2** and **S3**, optimizing asset delivery speeds by **40%** while reducing infrastructure costs by **20%**.
- Optimized and increased reusability of test suite and implemented BDD using Cucumber, resulted in reduction of manual efforts of testing.
- Experience Letter: <https://shorturl.at/oZpY4>

Software Development Intern - LinkCode Technologies

January 2021 - November 2022

- Designed architecture for the LinkCode LMS, driving organization's digital transformation and resulting in a **35%** increase in revenue.
- Developed dashboards using **D3.js**, **Chart.js** for data analytics of Course Completion Rates, Assessment performance
- Established DevOps CI/CD pipelines with Jenkins and GitHub Actions optimizing dev workflows and deployment processes.
- Constructed a desktop application leveraging Electron.js to manage enrollments, payroll and attendance.
- Led a team of 8 developers. Engaged in team building activities and played a role of SCRUM master and practiced Agile within the team.

Software Engineering Intern - Aitheon

April 2020 - September 2020

- Pioneered a no-code app builder operating **Node-RED** and **Vue.js**, diminishing development time by **50%** for non-technical users.
- Developed an automatic **P-12 Certificate** generation & installation on machine leveraging C#.
- Constructed drivers to connect retail peripheral devices Pin-pad, VeriFone, DSP to host application.
- Certificate: <https://shorturl.at/VtRYv>

PROJECT EXPERIENCE

KG-ITP: Intelligent Travel Itinerary Planner - <https://travel-path-chi.vercel.app/>

- Developed a GeoSPARQL-powered intelligent travel itinerary planner that generates personalized itineraries based on user preferences such as food, transport, and places of interest, enhancing user experience and satisfaction.
- Built a responsive frontend using React, providing an intuitive user interface for planning trips, with seamless integration of query results for itinerary suggestions.
- Designed and implemented a dynamic query generator using Python, leveraging Fast API for backend request processing, with WebSocket communication enabling real-time interaction between frontend and backend.
- Modeled the ontology using Protégé to define relationships and concepts accurately, facilitating precise GeoSPARQL queries and enhancing recommendation accuracy.

- Integrated GNIS Linked Data and Yelp datasets to provide comprehensive, location-based recommendations for users, enhancing the relevance and quality of itinerary planning.
- Performed extensive ETL (Extract, Transform, Load) operations using Pandas for data cleaning, transformation, and preparation, ensuring high-quality datasets ready for efficient SPARQL querying.

ApplyRight: Job Applications made easy

- Developed a job application automation tool that scrapes job descriptions from various platforms using **BeautifulSoup (bs4)** and **Puppeteer**, enabling efficient extraction of relevant information.
- Integrated **LLM (ChatGPT)** to dynamically tailor resumes according to specific job descriptions, saving them as LaTeX documents and exporting them as polished PDFs for professional presentation.
- Automated personalized cover letter generation targeting hiring managers, ensuring alignment with job requirements and enhancing application effectiveness.
- Implemented an **SMTP** server to automate the process of sending cold emails to recruiters, streamlining the outreach process and improving response rates.
- Created '**My Persona**' using **Eliza OS**, a personalized assistant that maintains knowledge about the user's skills, experiences, and preferences to generate highly relevant and effective resumes and cover letters.

Restaurant Point of Sale Application (POS): <https://tasteandtwist.co.uk/>

- Engineered **Angular NX** powered Mono-repo POS app, streamlined restaurant workflows via Firebase Cloud Functions and Firestore.
- Conceptualized and implemented a loyalty program system with integrated **Email/SMS** marketing capabilities, boosting customer retention.
- Devised a client-facing kiosk application mirroring **McDonald's** self-service functionality, simplifying staff workload by **30%**.
- Negotiated and finalized sale of application to a United Kingdom (London) based startup Taste and Twist.
- Implemented **CI/CD** pipelines using **GitHub Actions** for automated testing, building, and deployment, ensuring rapid and reliable delivery of application updates.
- Developed an intuitive Admin Panel for managing products, categories, and orders, providing seamless control over application content and user interactions.

Temple Donation Collection Application: <https://shivparvatidevasthan.in/>

- Engineered **Angular NX** powered Mono-repo POS app, streamlined restaurant workflows via Firebase Cloud Functions and Firestore.
- Developed a donation collection website for **Shiv Parvati Devasthan Trust** using Django, providing a seamless platform for donors to contribute to the temple's cause.
- Integrated the **Razorpay** payment gateway to securely process donations, offering users a variety of **payment** methods and ensuring a smooth donation experience.
- Implemented donor record management, allowing the system to store and maintain detailed donor information for future reference and reporting purposes.
- Used **PostgreSQL** as the database for reliable and scalable data storage, ensuring efficient handling of donor records and transaction history.
- Leveraged **Django ORM** to model the database, making it easier to interact with the database and simplifying database operations.

Code-Studio – Lab as Service based Online Compiler and Web IDE: <https://hub.docker.com/r/8766834856/compiler>

- Built a cloud-based IDE with Linux terminal supporting **10+** languages, serving **200+** students at Modern College of Engineering.
- Optimized resource management by deploying an **on-prem** server using **Docker** and **Nginx**, reducing cloud infrastructure costs.
- Integrated a Learning Management System (LMS) akin to Canvas, specifically designed for coding education, allowing instructors to create, post, and manage coding assignments and tasks effortlessly.
- Enabled automatic notifications for students upon assignment postings, ensuring timely awareness of tasks and deadlines within the coding-focused portal.
- Built an interactive coding platform where students can write, compile, execute, and submit code directly, streamlining the entire submission process.
- Facilitated real-time assessment by allowing instructors to access students' coding environments, review their work, provide feedback, and grade assignments through the same interface.

Wolverine - Diagnostic Center Management System: pawnaaidiagnosticcenterpatan.netlify.app

- Developed a comprehensive system to manage patient referrals and resources, improving productivity by **80%** at **Unique Diagnostic Center** through streamlined operations and efficient data handling.
- Built the frontend using **Vue.js** and **Electron**, delivering a seamless **Progressive Web App (PWA)** experience for desktop users with enhanced accessibility and performance.
- Integrated Firebase for real-time data synchronization and secure cloud storage, ensuring data consistency and accessibility across multiple devices.
- Worked closely with medical staff to gather requirements and tailor the system to meet critical operational needs, resulting in enhanced workflow efficiency and user satisfaction.
- Implemented user authentication and role-based access control using **Firebase Authentication**, ensuring secure and personalized access to sensitive medical data.
- Designed intuitive dashboards and reporting tools to help medical staff track patient referrals, monitor resources, and optimize resource allocation, improving decision-making processes.

Instagram Scraper & YouTube Shorts Uploader

- Developed an ETL pipeline to extract Instagram videos using web crawling techniques, automating the download and deployment process to **YouTube Shorts** for seamless content repurposing.
- Integrated GenAI-powered solutions, including **OpenAI ChatGPT and LangChain**, to generate relevant and SEO-optimized metadata such as titles, descriptions, and tags for YouTube Shorts, enhancing discoverability and engagement.
- Implemented video processing functionality to ensure **Instagram videos** are properly formatted and resized for YouTube Shorts, maintaining video quality and compliance with platform specifications.
- Streamlined the process with automation, allowing batch processing of multiple Instagram videos, reducing manual intervention and improving efficiency in content management.

JSON to TypeScript Converter: <https://2727-ask.github.io/JsonToTypeScript/>

- Developed a web-based JSON to TypeScript converter, providing users with an easy tool to generate accurate TypeScript data models from JSON payloads.
- Crafted a recursive algorithm that efficiently generates **TypeScript interfaces** and types from complex and deeply nested JSON objects, ensuring accurate data modeling.
- Optimized the tool for both performance and accuracy, ensuring it handles various JSON structures, including arrays and deeply nested objects, producing clean and usable TypeScript code for any given input.

RESEARCH AND PUBLICATIONS

KG-ITP: A Knowledge Graph for Intelligent Travel Planning: <https://shorturl.at/Hqps4>

- Developed a Knowledge Graph (KG-ITP) for intelligent travel planning by integrating heterogeneous datasets, including GNIS natural features, IMLS cultural sites, Yelp dining taxonomies, and Valley Metro transit networks using **OWL 2** ontological modeling.
- Implemented **GeoSPARQL** proximity functions and **RDF** for spatial-temporal reasoning, enabling personalized and context-aware itinerary generation with high accuracy.
- Achieved seamless integration of third-party datasets through schema alignment and shared RDF vocabularies, enhancing the system's interoperability and scalability.
- Demonstrated the ability of ontology-driven KGs to outperform traditional keyword-based systems in terms of personalization, efficiency, and accuracy.
- Operationalized the **KG-ITP** using a Fast API backend to dynamically generate **GeoSPARQL** queries, and a React.js frontend for interactive visualizations of travel recommendations.
- Performed ETL processes on datasets using tools like Pandas and modeled ontologies using **Protégé**, ensuring robust data pre-processing and alignment.

LAAS: Lab as a Service (Computation on Demand): <https://ijcrt.org/papers/IJCRT2306291.pdf>

- Developed a Knowledge Graph (KG-ITP) for intelligent travel planning by integrating heterogeneous datasets, including GNIS natural features, IMLS cultural sites, Yelp dining taxonomies, and Valley Metro transit networks using **OWL 2** ontological modeling.
- **Proposed a Lab-as-a-Service (LaaS) framework** that enables students to remotely access virtual labs designed by instructors, enhancing hands-on learning experiences through a middleware approach.
- **Developed a scalable cloud-based system using Kubernetes and Docker**, providing on-demand computation and resource management to support remote labs for various engineering and science courses.
- **Integrated Virtual Machines for creating isolated lab environments**, allowing students to conduct complex experiments remotely while maintaining high reliability and consistency in results.
- **Enhanced the learning experience by providing a Learning Management System (LMS)** around the Virtual Labs, enabling instructors to design and manage lab sessions effectively while ensuring real-time assessment and feedback.
- **Collaborated with multiple stakeholders including instructors, researchers, and students**, ensuring the solution addresses diverse educational needs and promotes knowledge sharing.

SKILLS

Technologies: Java, Python, JavaScript, SQL, HTML, CSS, Algorithms, Data Structures, Object-Oriented Programming, Design Patterns, OS
AI & ML: GeoSparqL, SparQL, Knowledge Graph, Retrieval Augmented Generation, Graph DB, Reinforcement Learning, Ontology, Gen-AI
Backend & Testing: Django, Flask, Spring MVC, Playwright, Node.js, GraphQL, Junit, A/B Testing, E2E Testing, Selenium
Frontend & Mobile Frameworks: Angular, ReactJS, Vue.js, Electron.js, Flutter, React Native
Cloud & DevOps: Git, Amazon Web Services, Google Cloud, Docker, Kubernetes, Jenkins, GitHub, Firebase, Redis, Kafka, Serverless, Agile
Database & Operations: MongoDB, PostgreSQL, Oracle, MySQL, SQLite, Graph DB, Data Engineering, ETL Framework, Job Schedulers

AWARDS & HONORS

- 1) Merit-Based scholarship from Arizona State University worth **\$6000**.
- 2) Won first prize in the **PICT Concepts Impact & Modern College Innovation Hackathon**, receiving a cash award of **\$2,000**.