Course Recommendation System

Team Members

Sachchida Nand Tiwari (M23CSA527)
Balakrishna Kariveda (M23CSA511)
Ritesh Lamba (M23CSA544)

Course Recommender System

Designed to recommend courses based on user preferences and course history.

Backend:

- Built with **Django.**
- Handles data management, API exposure, and recommendation logic.

Frontend:

- Developed with **React.**
- Provides a dynamic and responsive user interface.

Deployment:

- Deployed using **Docker**.

Deployment Decisions

➔ Initially, the system used a monolithic architecture where backend components (backend, database) resided in a single codebase.

➔ The system, using SQLite, supported around 50 concurrent users before performance degradation.

➔ PostgreSQL was deployed as a microservice, allowing for independent scaling and isolated failures. The system's components (user management, recommendation engine, course management) were separated into distinct services.

Monolithic vs. Microservices

Aspect	Monolithic	Microservices
Scalability	Limited	High (independent service scaling)
Fault Isolation	Low (failure in one part affects all)	High (isolated failures)
Maintainability	Difficult with large codebase	Easier (small, independent services)

Containerization vs. Virtualization

Aspect	Containers (Docker)	Virtualization (VMs)
Startup Time	Fast (~5 seconds)	Slow (~50-60 seconds)
Resource Efficiency	High (shared OS kernel)	Low (each VM requires its own OS)

Cloud vs. Non-Cloud Setup

Aspect	Cloud Setup (AWS)	Non-Cloud (Local)
Scalability	Auto-scaling with AWS ECS	Manual scaling
Performance	Consistent under high load	Degrades under heavy load

Course Recommendations

Course suggestions based on user preferences and Course history. It displays a curated list of recommended courses, allowing users to explore options tailored to their academic and career goals.

NEW RECOMMENDATION

Course Recommendation: Quantum Computing

As someone with a background in Computer Science and an interest in the intersection of technology with real-world applications, enrolling in a course on Quantum Computing could be an excellent choice for you. Quantum Computing is a cutting-edge field that is revolutionizing the way we approach computational problems. In this course, you will have the opportunity to delve into both the theoretical foundations of quantum mechanics and the practical skills required to develop and implement quantum algorithms.

Theoretical Knowledge and Practical Skills

Quantum Computing is a unique field that combines principles from quantum mechanics, computer science, and mathematics. By studying Quantum Computing, you will gain a deep understanding of quantum phenomena such as superposition and entanglement, which form the basis of quantum algorithms. This theoretical knowledge will not only broaden your understanding of the underlying principles of computation but will also challenge you to think in a fundamentally different way compared to classical computing.

Furthermore, Quantum Computing courses typically include hands-on practical components that allow you to work with quantum computing platforms and tools. You will have the opportunity to write and run quantum algorithms, simulate quantum circuits, and gain experience in programming languages commonly used in quantum computing, such as Qiskit or Cirq. These practical skills are invaluable in preparing you to tackle real-world problems using quantum algorithms.

Specialization and Career Opportunities

Enrolling in a Quantum Computing course can also pave the way for specialization in a rapidly growing and evolving field. As quantum technologies continue to advance, companies and research institutions are increasingly investing in quantum computing research and development. By acquiring specialized skills in Quantum Computing, you position yourself as a valuable asset in a competitive job market.

Career opportunities in Quantum Computing are diverse and exciting. Graduates with expertise in Quantum Computing can pursue roles in quantum algorithm development, quantum software engineering, quantum hardware design, quantum cryptography, and more. Whether you aim to work in industry, academia, or research, the demand for quantum computing experts is on the rise, opening up a world of possibilities for your career growth and advancement.

Emerging Technologies and Innovation

Quantum Computing represents one of the most promising frontiers in technology, with the potential to revolutionize fields such as cryptography, optimization, machine learning, and more. By immersing yourself in the world of Quantum Computing, you gain exposure to cutting-edge research and innovation that is shaping the future of computing.

Studying Quantum Computing will enable you to stay ahead of the curve and be at the forefront of technological advancements. As quantum technologies continue to mature and become more accessible, the skills and knowledge you acquire in a Quantum Computing course will equip you to contribute to groundbreaking research and drive innovation in the tech industry.

Conclusion

In conclusion, enrolling in a course on Quantum Computing is a strategic and rewarding choice for someone with a background in Computer Science and a passion for technology applications. By gaining a solid foundation in theoretical concepts, honing practical skills, pursuing specialization, and exploring emerging technologies, you set yourself on a path towards a successful and fulfilling career in Quantum Computing.

Take the leap into the world of Quantum Computing, embrace the challenges and opportunities it offers, and embark on a journey of discovery and innovation that will shape the future of computing.

NEXT RECOMMENDATION

Login Page

Provides a simple interface for users to log in to the system using their email and password. Registered users can access personalized recommendations.

Login

Email *

Password *

LOGIN

Register

Enables new users to create an account by entering their name, email, and password. The page simplifies the registration process and includes a link for existing users to log in.

Register

Name *

Email *

Password *

REGISTER

Already have an account? Login here

localhost:3000/register

Add Running Courses

Add new courses to the system by entering a course title and description. The page also includes a button to list all existing courses. User will get recommendations as per their running courses

Course List

Displays all available courses. The "Add New Course" button allows users to add current courses. Each course card contains a brief description to help users understand the course content.

Course Recommendation System

Course List

ADD NEW COURSE

QUANTUM COMPUTING
Investigating the intersection of quantum computing and artificial intelligence, this field explores how quantum technologies could potentially transform AI's capabilities by processing information in fundamentally new ways, potentially solving complex problems that are currently intractable.

Recommendations

Presents detailed course recommendations personalized for each user. It includes sections highlighting theoretical knowledge, career opportunities, and emerging technologies for the suggested course.

NEW RECOMMENDATION

Course Recommendation: Quantum Computing

As someone with a background in Computer Science and an interest in the intersection of technology with real-world applications, enrolling in a course on Quantum Computing could be an excellent choice for you. Quantum Computing is a cutting-edge field that is revolutionizing the way we approach computational problems. In this course, you will have the opportunity to delve into both the theoretical foundations of quantum mechanics and the practical skills required to develop and implement quantum algorithms.

Theoretical Knowledge and Practical Skills

Quantum Computing is a unique field that combines principles from quantum mechanics, computer science, and mathematics. By studying Quantum Computing, you will gain a deep understanding of quantum phenomena such as superposition and entanglement, which form the basis of quantum algorithms. This theoretical knowledge will not only broaden your understanding of the underlying principles of computation but will also challenge you to think in a fundamentally different way compared to classical computing.

Furthermore, Quantum Computing courses typically include hands-on practical components that allow you to work with quantum computing platforms and tools. You will have the opportunity to write and run quantum algorithms, simulate quantum circuits, and gain experience in programming languages commonly used in quantum computing, such as Qiskit or Cirq. These practical skills are invaluable in preparing you to tackle real-world problems using quantum algorithms.

Specialization and Career Opportunities

Enrolling in a Quantum Computing course can also pave the way for specialization in a rapidly growing and evolving field. As quantum technologies continue to advance, companies and research institutions are increasingly investing in quantum computing research and development. By acquiring specialized skills in Quantum Computing, you position yourself as a valuable asset in a competitive job market.

Career opportunities in Quantum Computing are diverse and exciting. Graduates with expertise in Quantum Computing can pursue roles in quantum algorithm development, quantum software engineering, quantum hardware design, quantum cryptography, and more. Whether you aim to work in industry, academia, or research, the demand for quantum computing experts is on the rise, opening up a world of possibilities for your career growth and advancement.

Emerging Technologies and Innovation

Quantum Computing represents one of the most promising frontiers in technology, with the potential to revolutionize fields such as cryptography, optimization, machine learning, and more. By immersing yourself in the world of Quantum Computing, you gain exposure to cutting-edge research and innovation that is shaping the future of computing.

Studying Quantum Computing will enable you to stay ahead of the curve and be at the forefront of technological advancements. As quantum technologies continue to mature and become more accessible, the skills and knowledge you acquire in a Quantum Computing course will equip you to contribute to groundbreaking research and drive innovation in the tech industry.

Conclusion

In conclusion, enrolling in a course on Quantum Computing is a strategic and rewarding choice for someone with a background in Computer Science and a passion for technology applications. By gaining a solid foundation in theoretical concepts, honing practical skills, pursuing specialization, and exploring emerging technologies, you set yourself on a path towards a successful and fulfilling career in Quantum Computing.

Take the leap into the world of Quantum Computing, embrace the challenges and opportunities it offers, and embark on a journey of discovery and innovation that will shape the future of computing.

NEXT RECOMMENDATION

New Recommendations

You can generate new recommendations by clicking on 'New Recommendation' and view the next recommendation by clicking on 'Next Recommendation'.

NEW RECOMMENDATION

Course Recommendation: Quantum Computing

As someone with a background in Computer Science and an interest in the intersection of technology with real-world applications, enrolling in a course on Quantum Computing could be an excellent choice for you. Quantum Computing is a cutting-edge field that is revolutionizing the way we approach computational problems. In this course, you will have the opportunity to delve into both the theoretical foundations of quantum mechanics and the practical skills required to develop and implement quantum algorithms.

Theoretical Knowledge and Practical Skills

Quantum Computing is a unique field that combines principles from quantum mechanics, computer science, and mathematics. By studying Quantum Computing, you will gain a deep understanding of quantum phenomena such as superposition and entanglement, which form the basis of quantum algorithms. This theoretical knowledge will not only broaden your understanding of the underlying principles of computation but will also challenge you to think in a fundamentally different way compared to classical computing.

Furthermore, Quantum Computing courses typically include hands-on practical components that allow you to work with quantum computing platforms and tools. You will have the opportunity to write and run quantum algorithms, simulate quantum circuits, and gain experience in programming languages commonly used in quantum computing, such as Qiskit or Cirq. These practical skills are invaluable in preparing you to tackle real-world problems using quantum algorithms.

Specialization and Career Opportunities

Enrolling in a Quantum Computing course can also pave the way for specialization in a rapidly growing and evolving field. As quantum technologies continue to advance, companies and research institutions are increasingly investing in quantum computing research and development. By acquiring specialized skills in Quantum Computing, you position yourself as a valuable asset in a competitive job market.

Career opportunities in Quantum Computing are diverse and exciting. Graduates with expertise in Quantum Computing can pursue roles in quantum algorithm development, quantum software engineering, quantum hardware design, quantum cryptography, and more. Whether you aim to work in industry, academia, or research, the demand for quantum computing experts is on the rise, opening up a world of possibilities for your career growth and advancement.

Emerging Technologies and Innovation

Quantum Computing represents one of the most promising frontiers in technology, with the potential to revolutionize fields such as cryptography, optimization, machine learning, and more. By immersing yourself in the world of Quantum Computing, you gain exposure to cutting-edge research and innovation that is shaping the future of computing.

Studying Quantum Computing will enable you to stay ahead of the curve and be at the forefront of technological advancements. As quantum technologies continue to mature and become more accessible, the skills and knowledge you acquire in a Quantum Computing course will equip you to contribute to groundbreaking research and drive innovation in the tech industry.

Conclusion

In conclusion, enrolling in a course on Quantum Computing is a strategic and rewarding choice for someone with a background in Computer Science and a passion for technology applications. By gaining a solid foundation in theoretical concepts, honing practical skills, pursuing specialization, and exploring emerging technologies, you set yourself on a path towards a successful and fulfilling career in Quantum Computing.
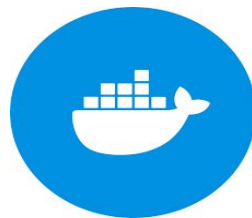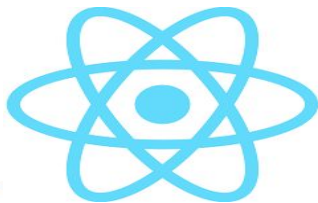
Take the leap into the world of Quantum Computing, embrace the challenges and opportunities it offers, and embark on a journey of discovery and innovation that will shape the future of computing.

NEXT RECOMMENDATION

Scalable CRS with React, Django, PostgreSQL, and Docker

built using **React** for the frontend to create a dynamic and responsive user interface, while **Django** serves as the backend, handling data management and API logic. **PostgreSQL** is used as the database to store user data, course information, and recommendations. The entire application is containerized with **Docker**, ensuring easy deployment and scalability across different environments.

Thank You