AI– Driven Excellence In Electronic Medical Records

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GTECHNOLOGIES
Pty Ltd
Innovating Healthcare through Artificial Intelligence

Introduction

During my practicum at GTechnologies Pty Ltd, I contributed to the development of an enhanced Electronic Medical Record (EMR) system aimed at improving healthcare data management and operational efficiency. My work involved designing a scalable database architecture, optimizing backend processes for faster data retrieval, developing a user-friendly React-based frontend, and implementing HIPAA-compliant security measures to protect sensitive patient information. This project focused on making patient data more accessible to healthcare providers, supporting clinical decision-making, and streamlining clinical workflows. This practicum allowed me to bridge academic knowledge with real-world challenges, developing solutions that had a direct impact on healthcare operations.

Practicum Scope

The project focused on designing a structured MySQL database to manage patient and clinical data efficiently, alongside developing secure API endpoints for backend integration using Node.js. A responsive React.js frontend was created to streamline healthcare workflows and enhance user experience. HIPAA-compliant security measures, including encryption and role-based access controls, were implemented to safeguard sensitive information. System performance was optimized through iterative testing and user feedback. The practicum emphasized delivering a scalable, secure, and user-centered EMR solution to support improved healthcare operations.

Preceptor Details

Organization: GTechnologies Pty Ltd
Preceptor: Rajeshwar Reddy Konkisa
Position: Director
Mission: To revolutionize healthcare through AI-driven digital solutions that enhance diagnostics, streamline workflows, and ensure secure, real-time access to patient data.

Learning Objectives

- Build expertise in SQL database design, management, and optimization for secure healthcare data systems.
- Develop proficiency in React application setup, configuration, and responsive user interface design.
- Apply Python libraries for data cleaning, preprocessing, and transformation to support seamless system integration.
- Strengthen communication skills through active collaboration with stakeholders and the incorporation of user-driven feedback.

Timeline

January – February:
Project initiation, software installation, and MySQL database schema design.

February – March:
Backend development , API creation for database communication, and initial frontend setup.

March – April:
Data loading, system integration, testing, and final documentation.

Practicum Duties

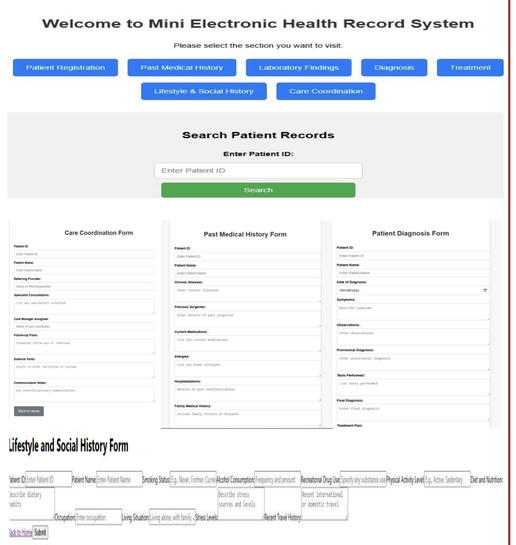
Task:
Developed and integrated clinical data modules for an Electronic Medical Record system.
Objectives:
Enhance healthcare data accessibility, streamline clinical workflows, and strengthen technical development skills.
Methodology:
Agile iterative development with continuous testing, user feedback incorporation, and user-centered design.
Specific Tasks:

- Designed and implemented the Care Coordination and Lifestyle & Social History modules.
- Developed MySQL database schemas for patient data storage and retrieval.
- Built frontend forms using React.js to enable efficient clinical data entry.
- Integrated APIs for backend communication and database updates using Node.js.
- Conducted data preprocessing and cleaning using Python libraries to support system functionality.
- Performed usability testing and incorporated feedback to refine form layouts and functionality.

Tools Used:
MySQL Workbench , Node.js , React.js , Python , Visual Studio Code

Practicum Outcomes – Professional

- Designed and developed the Care Coordination and Lifestyle & Social History forms, improving patient data capture and clinical workflow efficiency.
- Built a scalable database structure in MySQL, enhancing data organization, integrity, and retrieval speed for clinical operations.
- Integrated frontend and backend components, enabling seamless communication between user forms and the database.
- Improved overall system usability by creating intuitive data entry forms, reducing clinician workload and saving operational time.
- Contributed to the delivery of a more secure, accessible, and user-centered EMR platform, aligning with GTechnologies' goal of advancing healthcare technology .



Practicum Outcomes – Learning Objectives

- Strengthened technical skills in SQL database management, React application development, and Node.js backend integration.
- Gained hands-on experience in designing user-centered EMR forms to improve healthcare data accessibility and workflow efficiency.
- Enhanced data processing and transformation abilities using Python libraries to support system integration.
- Improved collaboration and communication skills by working closely with stakeholders and incorporating user feedback into system enhancements.
- Developed strong documentation practices, ensuring future maintainability and scalability of the EMR system.

Conclusion

My practicum at GTechnologies Pty Ltd was instrumental in strengthening my skills in healthcare informatics. Contributing to the development of a user-centered EMR system helped me understand how digital solutions can improve patient data management, clinical workflows, and healthcare delivery.
Continuous learning and adaptability are essential to meet evolving healthcare and technology needs. I am committed to applying these skills in future healthcare innovation projects.
Acknowledgments: I sincerely thank Mr. Rajeshwar Reddy Konkisa and Dr. Eshwar Madas for their mentorship and support throughout the practicum. Special thanks to Prof. Zeyana Hamid and Prof. Gary Schwebach for their academic guidance and encouragement.