Informatics Institute of Technology

Department of Computer Science

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COMPUTER SCIENCE AND ENGINEERING INDUSTRIAL PLACEMENT

FINAL PLACEMENT REPORT

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Organization: Sri Lanka Telecom PLC

Placement Period: August 2024 - July 2025

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01. INTRODUCTION

This report provides a thorough summary of my current internship as a software developer at Sri Lanka Telecom PLC, where I am currently doing my industrial placement. July 2025 is the planned completion date for the placement, which started in August 2024. My undergraduate degree program, which aims to combine academic knowledge with real-world work experience, depends heavily on it.

Throughout this placement, I have been actively engaged in various aspects of software development within a professional telecommunications environment. This experience has provided me with valuable exposure to industry-standard tools, development practices, and collaborative workflows, significantly enriching my technical and interpersonal skill sets.

The following sections of this report outline my responsibilities and contributions, the skills I have developed, the challenges I have encountered, and the insights I have gained during this period. Additionally, I reflect on how this placement is shaping my academic development and influencing my future career goals in the field of software engineering.

02. PLACEMENT BACKGROUND

Sri Lanka Telecom PLC (SLT) is a prominent player in the nation's ICT industry and the country's national telecoms service provider. Fixed-line and mobile phone services, broadband internet, cloud services, IPTV, and enterprise solutions are just a few of the many services that the company offers. Contributing significantly to Sri Lanka's digital infrastructure, SLT keeps pushing innovation and digital transformation across the country.

The SLT Talent Development division is in charge of overseeing training and internship initiatives that are meant to develop the next generation of ICT workers. The Digital Platform unit, a crucial section in charge of creating, maintaining, and improving SLT's internal platforms and digital services, is where I was chosen for a placement through this program.

To support SLT's operational and customer-facing systems, the Digital Platform team focuses on developing software solutions that are user-centric, secure, and scalable. I worked on several phases of software development as an intern, including requirements analysis, design, implementation, testing, and digital solution deployment. I was exposed to agile development methodologies, gained practical experience in real-world projects, and had the chance to collaborate with seasoned experts from a variety of disciplinary teams in this capacity.

I have been able to utilize and broaden the information and skills I have acquired via my academic studies, as well as gain important insight into the operations and structure of a large-scale technology firm, thanks to this placement.

03. ROLE(S) AND ACTIVITIES

3.1 Incident Management System – MERN-Stack Developer

- **Onboarding & Handoff:**
    - Joined one week after project kick-off, picked up where the senior team left off in the Figma design.
    - Reviewed existing designs and codebase to understand component structure and styling conventions.
- **Requirements Gathering & Design Collaboration:**
    - Liaised with UI/UX designers to clarify feature requirements and scope modifications to the Figma mockups.
    - Drafted a prioritized feature backlog based on stakeholder interviews and sprint goals.
- **Front-end Development (85% complete):**
    - Built React components for incident reporting forms, dashboards, and notification panels.
    - Integrated Redux for state management of live-incident data streams.
    - Ensured responsive design using Tailwind CSS and React Bootstrap grid utilities.
- **Back-end Kick-off:**
    - Prepared API specification (Swagger) for upcoming Node.js/Express endpoints.
    - Set up initial MongoDB schemas for incidents, users, and audit logs.
    - Collaborated with back-end lead to define authentication flows and role-based access control.

3.2 Internship Management System – MERN-Stack Developer

- **Front-end Lead (90% complete):**
    - Owned end-to-end React implementation of intern application forms, progress trackers, and reporting widgets.
    - Leveraged React Router for multi-step form navigation and dynamic dashboard routes.
    - Wrote unit tests to cover form validation and conditional rendering.
- **Back-end Contributions (80% complete):**
    - Designed and implemented core Express.js routes for CRUD operations on interns, managers, and evaluations.
    - Defined Mongoose models for intern profiles, project assignments, and feedback entries.
    - Integrated file-upload middleware (Multer) for resume/CV attachments and project deliverables.
- **Cross-Functional Collaboration:**
    - Held weekly syncs with QA to triage defects and refine acceptance criteria.
    - Documented API endpoints and data contracts in a shared Confluence space.
    - Conducted code-review sessions to enforce linting, performance optimizations, and security best practices.

Key Technologies & Practices

- **Front-end:** React, Redux, React Router, Tailwind CSS, React Bootstrap
- **Back-end:** Node.js, Express.js, MongoDB/Mongoose, Multer
- **Testing & CI/CD:** Jest, React Testing Library, GitHub Actions pipelines
- **Agile Workflow:** Daily stand-ups, bi-weekly sprint planning, peer code reviews, and sprint retrospectives

This structure highlights the evolution of my role—starting with front-end delivery, expanding into back-end responsibilities, and actively collaborating across design, QA, and DevOps to drive both systems toward completion.

04. SKILLS DEVELOPMENT

As a MERN stack developer on placement, I greatly improved my technical and professional skill sets. My knowledge of JavaScript, specifically with React on the front end and Node.js with Express.js on the back end, has grown as a result of working throughout the entire stack. Working directly with MongoDB to integrate RESTful APIs and create scalable web applications improved my abilities to create reliable and maintainable systems.

Regular teamwork, code reviews, and seminars for information exchange helped me cultivate important graduate qualities like:

- The capacity to quickly adapt to shifting project needs and pick up new frameworks is known as adaptability.
- Solving problems entails figuring out technological issues both individually and in groups.
- Clearly explaining complicated topics to stakeholders who are technical and those who are not during sprint meetings and documentation assignments is an example of effective communication.

I also independently investigated and applied new technologies, such PHP and basic machine learning principles, to broaden my technical horizons. This showed that I was dedicated to lifelong learning and professional development, which is a crucial quality in the rapidly changing IT sector of today.

Overall, my placement helped me connect academic knowledge with practical applications, giving me the soft skills and technical proficiency I need to succeed in the software development industry.

05. CHALLENGES

During my placement as a MERN stack developer, I encountered several challenges that contributed to my professional and personal growth:

Challenge 1: Getting Used to an Ongoing Project (Incident Management System)

Some components of the Figma design were finished and development had already started when I joined the Incident Management System project. It was difficult for me to comprehend the partially developed structure and to match my work with the team's current vision.

Resolution:

In order to coordinate feature requirements and make clear design goals, I set up meetings with team members. I also compiled a thorough summary of the Figma design changes that were required. This proactive approach enhanced my planning and teamwork abilities while also helping to synchronize the front-end development work.

Challenge 2: Balancing Front-end and Back-end Work (Internship Management System)

As development progressed, I was tasked with contributing to both front-end and back-end codebases. Managing two layers of the stack simultaneously while maintaining quality and meeting timelines was difficult initially.

Resolution:

I created a task breakdown for each component and prioritized work based on dependencies and deadlines. I also maintained consistent communication with back-end developers to avoid integration issues. This helped me improve time management and cross-functional coordination skills.

Challenge 3: Limited Exposure to Backend Technologies

Although I had some familiarity with JavaScript, working with Node.js, Express, and MongoDB was relatively new to me. Developing backend APIs and handling data models posed a steep learning curve.

Resolution:

I dedicated extra hours to learning through online resources and hands-on experimentation. My team lead also offered guidance during backend reviews. Over time, I became confident in building and integrating backend logic, improving my technical depth as a full-stack developer.

These challenges not only tested my technical abilities but also strengthened critical soft skills such as communication, time management, and adaptability—skills essential for thriving in dynamic development environments.

06. ACADEMIC CONTEXT

6.1 Relevant Modules

Highly Relevant

- **Server-Side Web Development (Year 2):**
    - Improved my knowledge of secure session management, middleware patterns, and RESTful API design—skills I used immediately when developing Node.js/Express back ends.

- **Database Systems (Year 2):**
    - Covered query optimization, normalization, and schema design in both SQL and NoSQL contexts, which served as the foundation for my work with MongoDB and guided my choices about data modeling.

- **Client-Server Architectures (Year 2):**
    - Explored the interaction patterns between front-end clients and back-end servers, including WebSocket and HTTP protocols, directly aligning with my full-stack development tasks.

- **Advanced Client-Side Development (Year 2):**
    - Focused on state management, component design, and contemporary JavaScript frameworks—concepts I utilized to manage Redux state, create React components, and guarantee responsive user interface.

Moderately Relevant

- **Web Design and Development (Year 1):**
    - Introduced HTML, CSS, and rudimentary JavaScript, laying the foundation for all ensuing front end development. Despite being simple, it was quite helpful in my rapid acquisition of Reacts JSX syntax and stylistic rules.

6.2 Suggested Module Improvements

1. **Modern JavaScript Frameworks:**
    - Introduce a dedicated module on React, Vue, or Angular to accelerate mastery of component-based front-end development.
2. **DevOps & Deployment Practices:**
    - Incorporate hands-on CI/CD pipeline workflows, containerization (Docker), and cloud deployments (AWS/GCP/Azure) to mirror real-world delivery processes.
3. **Agile Project Simulation:**
    - Embed a mini-project module that runs multiple sprint cycles, complete with sprint planning, daily stand-ups, and retrospectives, to provide practical agile experience.
4. **API Design & Integration:**
    - Offer a focused module on designing, documenting (e.g., Swagger/OpenAPI), and consuming RESTful and GraphQL APIs, reflecting current industry standards.

07. FUTURE DEVELOPMENT AND CAREER

Career Aspirations

I was able to establish a clear professional path thanks to my placement experience as a MERN Stack Developer. My long-term objective is to advance into a position as a technical architect, and I am passionate about being a full-stack developer. I really liked working on systems that required secure application architecture and organized data flow, which fueled my interest in fintech applications, a subject that places a high emphasis on technical accuracy and domain knowledge.

Skills Development Targets

To achieve my career goals, I plan to build on the following technical competencies before graduation:

- **Cloud Services (AWS/Azure):**
    - Gaining practical knowledge of cloud platforms for managing and deploying scalable web apps.
- **Containerization and DevOps Practices:**
    - Learning how to use Docker and Kubernetes to facilitate contemporary development and deployment processes.
- **Web Application Security:**
    - Enhancing understanding of security principles, such as data encryption, secure authentication, and avoiding typical vulnerabilities.

- **Performance Optimization:**
    - Gaining knowledge of front-end and back-end performance best practices, such as database query optimization, lazy loading, and caching.

Supportive Final Year Modules

The final-year modules I've selected align well with these development goals and will further support my transition into a full-stack development role:

- **Applied Artificial Intelligence:**
    - Improves my ability to solve problems by utilizing machine learning principles that can be used into intelligent online platforms.
- **Cyber Security:**
    - Gives a solid basis for protecting web applications, comprehending dangers, and putting defenses in place—all of which are essential for working in delicate industries like finance.
- **Mobile Native Application Development:**
    - Expands my skill set to include native mobile development, allowing me to contribute to cross-platform full-stack solutions.
- **Advanced Server-Side Web Programming:**
    - Deepens my backend expertise by covering topics such as API optimization, advanced database interaction, and scalable server architectures.

I will be well-positioned for a dynamic and fulfilling future in software development, especially in rapidly changing fields like finance, thanks to these modules, my placement experience, and my personal learning objectives.

08. OVERALL PLACEMENT EVALUATION

Personal Objectives and Expectations

- **Objectives Met:**
    - Gained substantial industry experience through end-to-end development on real client projects.
    - Applied theoretical knowledge from university modules directly to practical tasks, from API design to responsive UI implementation.
    - Explored different areas of software development, allowing me to pinpoint full-stack web development as my ideal specialization.

- **Exceeding Expectations:**
    - The steep learning curve and immersive environment accelerated my growth far beyond academic settings, fostering rapid skill acquisition in modern development practices and teamwork.

Career Impact

- **Clarified Direction:**
    - Confirmed a genuine passion for web application development and solidified full-stack developer as my target role.
    - Discovered a newfound interest in fintech applications, driven by the domain challenges of secure data handling and real-time reporting.

Personal Growth

- **Confidence:**
    - Transitioned from hesitancy to self-assurance when tackling complex technical problems.
- **Initiative:**
    - Learned to proactively identify potential issues and propose effective solutions, rather than waiting for direction.
- **Professional Communication:**
    - Enhanced my ability to convey technical concepts clearly to both technical peers and non-technical stakeholders during stand-ups, demos, and documentation.
- **Resilience:**
    - Developed a mindset of viewing obstacles as opportunities for learning and improvement rather than setbacks.

University Support Evaluation

- **Strengths:**
    - Placement preparation workshops provided practical advice on workplace expectations and project workflows.
    - Mid-placement visit by my academic supervisor offered timely guidance and helped address challenges early.
    - Responsive placement office that efficiently handled administrative and logistical queries.

- **Areas for Improvement:**
    - Introduce more technical prep sessions on industry-standard tools and frameworks to smooth the onboarding process.
    - Provide additional workshops on professional workplace conduct, networking, and stakeholder communication.
    - Schedule more frequent check-ins during the first month to help students overcome initial hurdles.
    - Expand Career Services offerings to include post-placement coaching on translating placement experience into compelling job applications and interviews.

09. CONCLUSION

My experience working as an industrial placement at Sri Lanka Telecom PLC has been life-changing, bridging the gap between professional software development practice and academic theory. I have gained excellent practical experience in the telecom sector from working as a MERN Stack Developer on several projects, which has greatly improved my technical and professional skills.

Through the application and expansion of my full-stack programming experience, I have effectively contributed to the construction of two crucial systems during this placement period: the Internship Management System and the Incident Management System. My knowledge of software development lifecycles, agile approaches, and cross-functional cooperation has increased as a result of my experience working on real-world projects that have a noticeable influence on business operations.

My abilities as a developer have been significantly enhanced by the technical skills I've acquired, which range from Express.js API design and MongoDB data modeling to React component architecture and Redux state management. The professional abilities I have developed, such as flexibility, problem-solving, clear communication, and time management, are as significant and will be crucial to my career.

I've grown resilient and self-assured in my abilities to get past technical barriers in the face of difficulties like joining an ongoing project, juggling front-end and back-end duties, and navigating new technologies. Not only have these experiences improved my professional skills, but they have also greatly aided in my personal development.

My professional goals have become clearer as a result of this placement, which has ignited a special interest in financial applications and validated my love for full-stack programming. Cloud services, containerization, web application security, and performance optimization are some of the specific areas I have identified for future skill development. These topics are all in line with my objective of eventually moving into a technical architect position.

I bring real-world industry insights with me as I return to finish my last year of education, which will enhance my academic experience. My final-year programs complement my placement experience and will help me get ready for the ever-changing and dynamic world of software development.