**Sri Lanka Institute of Information Technology**

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**Research Project**

**IT4010**

B.Sc.(Hons) in Information Technology

LOG BOOK

Group ID: R24-066

Registration Number: IT21016066

Full Name:

Specialization: Data Science

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# Introduction

In the competitive realm of apparel manufacturing, maintaining impeccable quality standards while simultaneously maximizing productivity and efficiency is essential. Recognizing this imperative, MAS Linea Aqua, a prominent player in the industry, is fully aware of the pivotal role that real-time monitoring and feedback mechanisms play in achieving these goals.

Currently, the company relies on labor-intensive manual quality checks, which not only strain resources but also pose a risk of hindering production targets due to delayed defect detection and resolution. To tackle these challenges head-on and usher in a new era of efficiency, MAS Linea Aqua is embarking on an innovative project focused on developing and implementing an advanced IoT device for real-time detection and prediction of garment seam defects.

At the core of this pioneering initiative is a state-of-the-art IoT device meticulously engineered to scrutinize garment seams with unparalleled precision. By harnessing cutting-edge sensors and computer vision technology, this device offers a thorough examination of each seam, capable of identifying a wide array of defect types ranging from open seams to stitching irregularities. Its real-time capabilities empower production teams with instantaneous feedback, enabling swift resolution of issues and proactive prevention of further complications. Seamlessly integrated into a cloud-based database system, this device facilitates a streamlined workflow, laying the groundwork for enhanced productivity and top-tier quality assurance.

The project adopts a multifaceted approach, leveraging fog-cloud computing for efficient data augmentation and storage, while concurrently developing machine learning models for real-time defect prediction. Moreover, by incorporating worker demographics and machine-specific data into the analysis, the project aims to optimize production processes through comprehensive defect analysis and trend identification. Through this holistic amalgamation of cutting-edge technology and data-driven insights, MAS Linea Aqua endeavors to establish new benchmarks in apparel manufacturing, striving for flawless adherence to quality standards while maximizing operational efficiency.

# Project Logbook

## Month 01 – November 2023

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| --- | --- |
| **Date** | **Description** |
| 01st November 2023 | Created the research group with four members; Thilakarathne M.A.M.V, Weerasinghe C.C, Kasthurirathne K.K.I and , Samaraweera G.P.M.D |
| 19th November 2023 | Met in person with supervisor Mr. Samadhi Chathuranga Rathnayake to discuss research topics.  A screenshot of a chat  Description automatically generated |
| 25th November 2023 | We recently had an online meeting with my supervisor, Mr. Samadhi Chathuranga Rathnayake, to discuss potential research topics.  A screenshot of a chat  Description automatically generated |
| 26th November 2023 | Review the research papers and summarize the literature.  A screenshot of a chat  Description automatically generated |
| 28th November 2023 | Participated in a workshop aimed at providing essential preliminary information necessary for a successful start to the Research Project.  A screenshot of a cellphone  Description automatically generated |

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Mr. Samadhi Chathuranga Rathnayaka Date

(Supervisor)

## Month 02 – December 2023

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| **Date** | **Description** |
| 07st of November 2023 | Completed the comprehensive group registration process for the Research Project within the module. Key details include:   * Supervisor: Mr. Samadhi Rathnayake * Co-Supervisor: Ms. Supipi Karunathilaka * Group members: * Kasthurirathne K.K.I – IT21077692 (Designated Group Leader) * Weerasinghe C.C – IT20229016 * Thilakarathne M.A.M.V – IT21044922 * Samaraweera G.P.M.D – IT21016066   A screenshot of a group contact  Description automatically generated  A screenshot of a chat  Description automatically generated  A screenshot of a group of people  Description automatically generated  A screenshot of a phone  Description automatically generated |
| 11th December 2023 | Conducted a meeting with representatives from MAS Holdings to discuss the Research Project and exchange ideas regarding potential topics. |
| 21st December 2023 | Field Visited MAS Linea Aqua (pvt) Ltd. for an on-site observation and discussion regarding Research Project (RP) topics and ideas. Engaged in conversations with the team and gained insights into their working procedures and product line.  A group of people standing in a room  Description automatically generated  A group of people posing for a photo  Description automatically generated  A group of people in a room |

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Mr. Samadhi Chathuranga Rathnayaka Date

(Supervisor)

## Month 03 – January 2024

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| **Date** | **Description** |
| 02nd January 2024 | Conducted a face-to-face meeting with both the Supervisor and Co-Supervisor to deliberate on the various components of the project and to review the progress made thus far. |
| 05th January 2024 | Visited MAS Linea Aqua (pvt) Ltd. and gained insights into the variety of machines present in their training center, which are utilized on the production floor. Identified the distinct defect types associated with each machine. Additionally, engaged in discussions regarding potential components to categorize the topic into, reaching a mutual understanding about several different areas within the topic.  A display of various machines  Description automatically generated with medium confidence  A group of people in a room  Description automatically generated  A group of people posing for a photo  Description automatically generated |
| 11th January 2024 | Topic Assessment Form (TAF) submission. |
| 15th January 2024 | Engaged in a conversation with the supervisor regarding issues related to project components. |
| 16th January 2024 | Underwent TAF evaluations and received acceptance with minor adjustments required in one component. |
| 25th January 2024 | Conducted a rehearsal session with the supervisor to prepare for the Proposal Presentation, receiving guidance on enhancing the presentation delivery.  May be an image of 4 people, people smiling, newsroom and text  A screenshot of a chat  Description automatically generated |
| 29th January 2024 | Visited MAS Linea Aqua to examine current quality monitoring methods and gain a comprehensive understanding of the production process from order acquisition to product exportation. Discussed the project's initiation process and determined the starting point for implementation.  A group of people working in a factory  Description automatically generated  A group of men in a factory  Description automatically generated |

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Mr. Samadhi Chathuranga Rathnayaka Date

(Supervisor)

## Month 04 – February 2024

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| **Date** | **Description** |
| 19th February 2024 | Conducted practice sessions with both the supervisor and the co-supervisor to prepare for the proposal presentation. Reviewed the presentation for any errors or areas requiring clarification. |
| 20th February 2024 | Conducted a rehearsal for the final presentation with the supervisor to ensure readiness and polish before the actual presentation. |
| 21st February 2024 | Delivered the Proposal Presentation at SLIIT, presenting to a panel consisting of Dr. Jeewanee Bamunusinghe, Ms. Wishalya Tissera, and Mr. Samadhi Rathnayaka.  A group of people standing together  Description automatically generated |
| 26th February 2024 | Initiated regular weekly meetings with the supervisor to review the ongoing progress of the Research Project and discuss other relevant matters.  A person in a suit  Description automatically generated |

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Mr. Samadhi Chathuranga Rathnayaka Date

(Supervisor)

## Month 05 – March 2024

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| Date | Description |
| 04th March 2024 | We have our weekly meeting to talk about how things are going and what we need to do next. We discussed the specifics of each component and how to tackle them, and I've also requested meetings with MAS as part of our plan.A screenshot of a cell phone  Description automatically generated |
| 05th March 2024 | In today's online meeting, we provided guidance on how to proceed next and detailed our progress for the upcoming week in our research project. |
| 13th March 2024 | Today, we held a meeting with MAS to outline our future and establish a work timeline for the next four weeks. During the discussion, we addressed the upcoming PP1, outlined data collection requirements, and discussed the necessary funding for acquiring equipment.  A screenshot of a computer  Description automatically generated |
| 17th March 2024 | We have a meeting coming up with MAS and our supervisor to go over the project and iron out some details about the research module requirements at SLIIT. |
| 24th March 2024 | Had a face-to-face meeting with my supervisor to discuss how the research project is going and what steps to take next. |

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Mr. Samadhi Chathuranga Rathnayaka Date

(Supervisor)

## Month 06 – April 2024

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| Date | Description |
| 02nd April 2024 | We visited MAS Linea Aqua to gather seam defect data and other relevant information for our project. We successfully captured the seam defect data and requested their demographic dataset to enhance our project analysis. |

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Mr. Samadhi Chathuranga Rathnayaka Date

(Supervisor)

## Month 07 – May 2024

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Mr. Samadhi Chathuranga Rathnayaka Date

(Supervisor)