

Report On Task Management system and TV Dashboard of Nagorik TV

by

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An internship report submitted to the Computer Science and engineering
in partial fulfillment of the requirements for the degree of
B.Sc. in Computer Science

Department of Computer Science and Engineering
Brac University
December 2024

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Declaration

It is hereby declared that

1. The internship report submitted is my/our own original work while completing degree at Brac University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

Student's Full Name & Signature:

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Non-Disclosure Agreement

This Agreement is made and entered into as of October 1, 2023, by and between Nagorik TV and Bushra Yesmeen Anika, a student at Brac University (hereinafter referred to as the "Recipient"). Both parties agree to the following terms:

1. Definition of Confidential Information:
"Confidential Information" refers to any and all non-public information that Nagorik TV has disclosed or may disclose to the Recipient. This includes, but is not limited to, information related to legal matters, broadcasting operations, media content development, business strategies, audience analytics, partnerships, or any other proprietary information not publicly known.
2. Obligations of the Recipient:
 - o The Recipient agrees not to disclose any Confidential Information or any derived information to any third party.
 - o The Recipient further agrees to take all reasonable precautions to safeguard the confidentiality of such information with the same degree of care Nagorik TV applies to protect its own confidential information.
3. Ownership of Confidential Information:
All rights, title, and interest in and to the Confidential Information shall remain with Nagorik TV and/or its licensors. This Agreement does not grant the Recipient any rights to patents, copyrights, trademarks, or trade secrets owned by Nagorik TV.
4. Governing Law and Enforcement:
 - o This Agreement shall be governed and construed in accordance with the laws of Bangladesh.
 - o Failure by either party to enforce their rights under this Agreement at any time shall not be considered a waiver of those rights.

In witness whereof, the parties have executed this Agreement as of the date first written above.

Nagorik TV

Signature _____ Date _____

Bushra Yesmeen Anika

Signature _____ Date _____

Abstract

This report provides an overview of my six-month internship experience at Nagorik TV, where I worked as an intern in the broadcast and IT department. The primary goal of my internship was to develop a software application by implementing both waterfall and agile methodologies, ensuring that every stage of the software development life cycle was adhered to. Over the course of this internship, I have worked on the development and testing of several web applications, gaining hands-on experience in using React to design and build the front end of these applications. In general terms, software refers to a collection of instructions or programs that enable a computer to perform specific tasks. It is an integral part of modern technology, streamlining processes and solving various challenges in everyday life. In the context of a business like a TV channel, software plays a crucial role in optimizing existing systems, introducing innovative solutions, and enabling efficient scalability. This report highlights my contributions to software development during the internship, detailing the technical aspects of my work and the challenges I encountered throughout the process. It also reflects on the importance of software in enhancing operations within the broadcasting industry.

Letter of Transmittal

Mr. Arif Shakil
Lecturer
Computer Science and engineering
BRAC University
66 Mohakhali, Dhaka-1212

Subject: Submission of Internship Report.

Dear Sir,

With due respect, I am delighted to submit my internship report on Nagorik TV, covering the period from October 1, 2023, to March 30, 2024.

This report highlights my experiences at Nagorik TV, detailing my observations, knowledges, and tasks undertaken during the internship. It provides an overview of the company along with its operational processes.

I have made every effort to compile the report with relevant information and thoughtful recommendations, presenting it in a clear, concise, and comprehensive manner. I trust that you will find the report satisfactory and well-structured.
Sincerely yours,

Bushra Yesmeen Anika
19101350
School of Data and Science
BRAC University
Date: December 2, 2024

Acknowledgement

First and foremost, I am deeply grateful to Almighty Allah for granting me the strength and opportunity to complete my internship successfully and without major obstacles.

I would also like to extend my heartfelt thanks to my internship supervisor, Mr. Sunanda Chakraborty, Deputy Manager, Admin and HR at Nagorik TV, for his invaluable guidance and support throughout this journey. His assistance was always available whenever I needed it.

Finally, I owe immense gratitude to my parents for their unwavering support and constant prayers. Their encouragement has been the cornerstone of my achievements, bringing me to the brink of completing my graduation.

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Chapter 1

Introduction

1.1 About Internship

An internship enables pupils and recently graduated individuals to gain exposure to actual work environments and apply their expertise in actual situations. Graduates are given the chance to acquire experiences relevant to their topic of study. This Training effectively assists learners in transitioning through the scholastic to the pragmatic world of work. In addition, the firms will become acquainted with their freshly arrived intern better and will be able to assign the intern to the ideal position for their specific requirements. Bearing every single one of these in mind, an internship also contributes to a student's work experience, which contributes significantly on the intern's CV, increasing its value and offering wonderful career prospects in the future.

Internships are progressively gaining popularity, and certain pupils prefer them over publishing a thesis paper. BRAC University requires students to either do an internship or submit a thesis paper. However, a smaller number of pupils are inclined to intern at BRAC, those who do receive enough assistance from their institution and are encouraged to gain maximum expertise and knowledge from the workplace as possible. Students can select any field of interest for their work experience regardless of how it relates to their degree. Internships must last six months in a respected organization and students must have accumulated more than 72 university credits to be qualified.

As a student at BRAC University, I chose work experience instead of publishing a thesis paper. I chose Nagorik Television as my internship company. Jadoo Media Limited owns Nagorik TV, a Bangladeshi Bengali-language private satellite and cable television station that broadcasts current affairs across Bangladesh. It is a well-known Bangladeshi corporation. I'm aiming to carry every bit of expertise within me as possible so that it will help me later on both academically and professionally.

1.2 About This Report

Because this job experience is considered an obligatory course for completing my bachelor's program, I must submit a report that will be reviewed by BRAC University. Throughout this paper, I discussed the atmosphere and norms at my workplace.

I've also blogged about my learnings and experiences at Nagorik TV. It will offer a full description of my internship and the project on which I worked.

1.3 Objective

The main objectives of the proposed practical study 'Satellite TV Broadcasting System at Nagorik TV' are as follow:

1. TV Studio with Equipment
2. Studio Production Control Room (PCR)
3. Master Control Room (MCR) 4 Play out Automation
4. Newsroom Automation
5. Local and International Feeds (CNN, APTN etc.)
6. Digital Satellite News Gathering (DSNG) Van
7. Digital Mobile News Gathering (DMNG)
8. Live Telecast Technology by Backpack

1.3.1 General Objectives

The objective of the report is to discuss about IT Practice of Nagorik Television and this follows as: • To discover the practical knowledge and personal observation about the IT policy procedure, functions, principles, process and nature.

- To identify which type of IT practices are needed to add.

1.3.2 Specific Objectives

- To identify the IT Recruitment Process of Nagorik Television.
- To find out the IT Selection Process of Nagorik Television.
- To disclose the IT Training and Development process of Nagorik Television.
- To identify the IT Employee Compensation System of Nagorik Television.
- To disclose the IT Performance Appraisal System of Nagorik Television.
- To discover the IT Employee Relations policy of Nagorik Television.

1.4 Methodology

The report underneath emphasizes my professional experience alongside what I acquired during an apprenticeship at Nagorik TV. The majority of the facts and statistics presented are based on my own observations. In addition, certain material was sourced from certain sources. The majority of data was acquired from these particular sources:

1.4.1 Primary Data

- Day to day observation.
- Telephone discussion.
- Face to Face discussion.
- Oral interview of the responsible officers.

1.4.2 Secondary Data

- Nagorik TV official website
- Internet

Chapter 2

Company Profile

2.1 Overview

Nagorik is basically a feature television. Nagorik Television started its journey almost six years ago. The institution was named by the former mayor of Dhaka City Corporation Mr. Anisul Haque. Basically, the name “Nagorik” was chosen because of the journey of television to present the daily problems and opportunities of the citizen’s life and the common man’s story to the people. Mayor Anisul Haque was a visionary in Nagorik Television. He set all the initial plans, organizational structure and future activities and goals of Nagorik Television.

Nagorik Television specifically follows the National Broadcasting Policy of the Government of Bangladesh in daily broadcasting. Nagorik TV being situated in Uttara, offers a very work friendly environment where a team of experienced and hardened employers produce excellent media and solutions for their consumers to use. Nagorik Television specifically follows the National Broadcasting Policy of the Government of Bangladesh in daily broadcasting.

2.2 Vision and Mission

Nagorik TV aims to provide an interactive and entertaining channel that embodies cultural, corporate, and creative excellence. The organization focuses on delivering exceptional content that resonates with diverse audience interests while fostering customer loyalty. Committed to exceeding customer expectations, Nagorik TV operates with a clear separation from the trend of full-service advertising agencies, choosing instead to concentrate on its distinct expertise. The television channel sector has experienced significant growth, now featuring over twenty channels, largely driven by companies striving for a professional image, along with small business owners seeking to establish a more corporate presence through online platforms.

2.3 How Does Nagorik TV Work

Nagorik TV comprises six distinct divisions:

2.3.1 News and Current affairs Department

The News Department comprises various roles and positions, including the News Director, Assistant News Director, Managing Editor, Business Manager for News/News Operations Manager, Executive Producer, Senior Producer, Producer, Assistant Producer, News Writer, Futures or Planning Editor, Assignment Desk Chief, News Assignment Desk, Special Projects Editor, News Assistant, News Anchor/On-Air Talent, Sports Director, Weathercaster/Meteorologist, Reporter, Creative Services or Promotions Director, Promotions Manager or Audience Promotions Manager, Writer/Producer, Post-Production Editor, and Station Announcer.

The News and Current Affairs department is organized into distinct sections, encompassing:

1. Reporting
2. Editing
3. Presentation
4. Lifestyle
5. Talk shows on Current Affairs
6. Research, Reference, and Archive

These sections collectively contribute to the overall functioning and content creation within the department.

2.3.2 Program Department

The responsibilities of the programming director or programming manager involve ensuring that relevant programming information is provided to various departments such as traffic, sales, and other pertinent teams. Any modifications to the programming are communicated internally within the organization and externally to TV listings services. Balancing the existing programming and engaging in negotiations for new content is a daily task. A significant number of programming decisions are now centralized at the corporate level, overseeing multiple stations. The program department is organized into several sections:

1. Programming
2. Set design and properties
3. Make up
4. Presentation
5. Press and Publication
6. Library and Archive

2.3.3 Human Resource and Administration Department

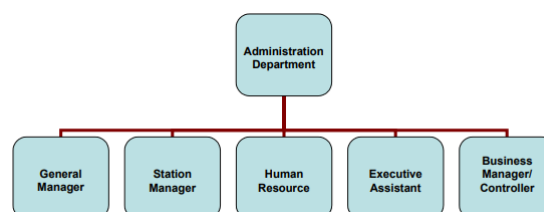


Figure 2.1: Human Resource and Administration Department

A vital component for any organization’s completeness is its human resource department, a truth underscored by its crucial role in enhancing overall productivity and efficiency within a thriving workforce. Within an organization, the human resources department is often considered among the most esteemed and valued, given its responsibility for managing people—the organization’s most significant asset. The integral function of a successful human resources department goes beyond surface-level visibility, involving substantial behind-the-scenes observation and analysis. The intelligence exhibited by the human resources department is comparable to sophisticated data analysis, encompassing the compilation of intricate data and metrics that track individual employee performance throughout their journey within the workforce. This meticulous task has proven instrumental in devising essential solutions to address inefficiencies, dwindling profit margins, and related challenges. Given the delicate nature of human relations and the multifaceted responsibilities of human resources, discretion emerges as a pivotal element in this field. This is particularly crucial due to the nature of performance management, which often entails making tough decisions such as terminations, promotions, and hiring choices. Upholding an ethical practice, the human resources department ensures that decision-making processes remain confidential, minimizing potential contention and fostering an environment of trust.

2.3.4 Marketing and Sales

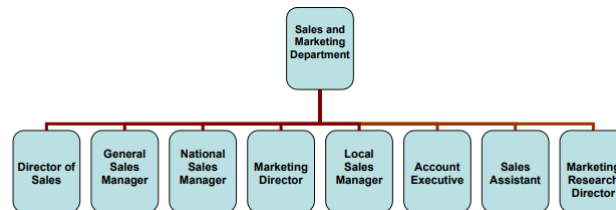


Figure 2.2: Marketing and Sales Structure

The sales and marketing department comprises the following segments:

- Analysis and research of the market
- Compilation of advertisements
- Formulation of agreements and documentation
- Oversight of production and promotional activities

2.3.5 Finance and Accounts Department

The Finance Department plays a crucial role in providing advisory services to the Government on various financial matters. Among its paramount responsibilities, the department is significantly involved in the formulation of the Budget. Additionally, it carries the mandate of establishing regulations governing the pay, emoluments, and other service conditions for all government employees. The Finance Department exercises administrative oversight over key entities such as the Local Fund Audit, Directorates of National Savings, State Lotteries, State Insurance, and Treasuries. The department is led by the Principal Secretary, with two Secretaries specifically overseeing expenditure and finance resources. The core functions of the Finance

Department encompass the preparation of the budget, management of appropriation accounts, handling re-appropriations, addressing surrender and savings matters. In essence, the Finance and Accounts section of the department is structured around key components:

- Budget
- Accounts
- Tax and VAT

2.3.6 Broadcasting and Engineering Department

The Engineering department staff plays a crucial role in ensuring the continuous operation of the television station and maintaining the physical assets of the station. The impact of rapidly advancing technology has led to a restructuring of the workforce, emphasizing the necessity of multitasking and rendering some roles obsolete. At the helm of this department is the director of broadcast operations and engineering, also known as the chief engineer. This unique position combines technical expertise with personnel management responsibilities, overseeing a wide spectrum of tasks, as one broadcast operations and engineering director aptly put it, "everything from the toilet paper to the tower."

broadcast operations and engineering leaders are tasked with identifying the station's equipment requirements to stay competitive and negotiating optimal deals. While certain news departments still rely on video-tape technology, there is a prevalent shift towards non-linear, server-based systems. The transition from analog to digital technology is evident, yet stations grapple with managing the legacy information stored in video format as opposed to the more efficient compressed computer files.

The Broadcast and Engineering section encompasses various functions:

- Maintenance
 - Outside Broadcasting
 - Satellite and communication
 - Training and research
- Each of these areas contributes to the overall efficiency and effectiveness of the television station.

Each of these sections operates in accordance with the directives set by its respective Department Head. The Human Resources department primarily oversees the recruitment process, obtaining approval from relevant sections for the appointment of new employees. Notably, the authority to make decisions lies with the head of each section.

2.4 What does Nagorik TV Do?

Primarily focusing on the everyday challenges and advantages of civic life, Mayor Anisul Haque, a visionary leader at Nagorik Television, played a pivotal role in shaping the channel's mission. He meticulously formulated plans, organized the structure, and set the future goals for Nagorik Television during its early stages. Mayor Anisul Haque envisioned the channel as a platform to broadcast the thoughts of the common man to the public, which is why it was aptly named "Citizen." His

belief was rooted in the idea that Nagorik Television would engage in discussions about ordinary people, their dreams, and the path to progress.

2.5 Nagorik TV Broadcasting Software Development Process

The software development framework divides software development work into stages comprising tasks in order to improve planning and management. It's commonly known as the software development life cycle. The approach could require the pre-definition of unique objectives that a project team would build and finish in order to produce or sustain an application. When Nagorik TV implements their programs, they still pursue this creation process. They use an agile framework to ensure that project specifications are fully incorporated. Nagorik TV's creation phase is described in the steps below:

2.5.1 Content Management and Organization

Effective content management and organization are vital for broadcasters to efficiently handle their vast libraries of media assets. Nagorik TV broadcasting software offers robust tools for metadata tagging, indexing, and search functionalities, allowing users to easily locate and access relevant content. It enables efficient media asset management, ensuring smooth workflows and quick retrieval of assets for various production needs.

2.5.2 Ingest and Transcoding Capabilities

Nagorik TV broadcasting software provides features for seamless ingestion and transcoding of media files into various formats and resolutions. This allows broadcasters to handle different source materials, such as live feeds, pre-recorded content, and external contributions, and ensure compatibility with different broadcast platforms and delivery channels. Transcoding capabilities enable efficient file size management, ensuring optimal quality and reducing bandwidth requirements.

2.5.3 Real-time Editing and Post-Production Tools

Nagorik TV broadcasting software includes powerful editing and post-production tools that enable broadcasters to enhance their content and create compelling stories. These tools provide a wide array of features such as timeline-based editing, multi-camera support, color grading, audio mixing, and visual effects. Real-time editing capabilities allow broadcasters to make instant changes and adjustments, ensuring seamless and efficient workflows.

2.5.4 Playout Automation and Scheduling

Playout automation and scheduling are crucial components of Nagorik TV broadcasting software, enabling broadcasters to automate the delivery of their content.

This feature allows for the creation of playlists, scheduling of programs, commercials, and promotions, and the seamless transition between different content elements. Playout automation eliminates the need for manual intervention, reducing the risk of errors and ensuring uninterrupted broadcast operations.

2.5.5 Graphics Generation and Virtual Sets

Nagorik TV broadcasting software includes tools for graphics generation, enabling the creation of visually engaging elements such as lower-thirds, tickers, logos, and animations. These tools provide flexibility in designing and customizing on-screen graphics to match the broadcaster's brand identity. Virtual sets, enabled by chroma keying technology, allow for the integration of virtual environments, enhancing the visual appeal of broadcasts.

2.5.6 Integration of Advanced Technologies

Nagorik TV broadcasting software integrates advanced technologies to enhance the viewer experience and streamline production processes. Augmented reality (AR) enables the overlay of virtual elements onto live or pre-recorded content, creating interactive and immersive experiences. Artificial intelligence (AI) capabilities, such as automated closed captioning, facial recognition, and content analysis, contribute to efficient content creation, audience engagement, and data-driven insights.

2.5.7 Multi-channel Management and Distribution Options

Nagorik TV broadcasting software supports multi-channel management and distribution, allowing broadcasters to reach diverse audiences across various platforms. It facilitates the distribution of content to traditional broadcast channels, cable networks, satellite providers, and online streaming platforms. This multi-channel approach ensures maximum reach and enables broadcasters to adapt to changing viewer preferences and consumption habits.

2.5.8 Media Asset Archiving and Preservation

Nagorik TV broadcasting software offers robust archiving capabilities to preserve media assets for future use. It enables the secure storage of content, including metadata, and provides efficient retrieval options for historical footage, archival programs, and other valuable media assets. Media asset archiving ensures easy access, long-term preservation, and potential monetization opportunities for broadcasters.

2.6 What Does Nagorik TV Broadcasting Software Do?

Nagorik TV broadcasting software plays a pivotal role in the creation and delivery of television content, functioning as a behind-the-scenes maestro that orchestrates the seamless presentation on your screen. Its key functions encompass:

2.6.1 Video Capture and Editing:

Nagorik TV broadcasting software empowers producers to capture and edit video content, encompassing tasks such as recording live events, editing pre-recorded footage, and incorporating special effects or graphics.

2.6.2 Live Streaming:

This software facilitates the real-time broadcasting of events as they unfold, whether it be a news program, sports event, or live entertainment, ensuring the instantaneous transmission of content to viewers.

2.6.3 Graphics and Text Overlays:

Broadcasters can enhance their presentations by incorporating graphics, logos, text, and other visual elements through the software, thereby conveying supplementary information, strengthening branding, and enriching the overall viewing experience.

2.6.4 Switching Between Sources:

In live broadcasting scenarios with multiple content sources, such as different cameras, pre-recorded segments, and external feeds, the software enables smooth transitions between these sources during a live broadcast.

2.6.5 Audio Management:

The software manages the audio aspects of the broadcast, maintaining balanced sound levels and applying any necessary audio effects or enhancements to ensure a high-quality auditory experience.

2.6.6 Encoding and Compression:

Before transmission, content needs to be encoded and compressed for efficient delivery. The software oversees this process, optimizing content for transmission over the airwaves or digital platforms.

2.6.7 Transmission Control:

Nagorik TV broadcasting software supervises the actual transmission of content, coordinating with broadcasting equipment to guarantee the signal reaches the intended audience reliably.

2.6.8 Monitoring and Quality Control:

The software incorporates real-time monitoring tools to assess the quality of the broadcast, allowing broadcasters to promptly identify and address any issues that may arise.

2.7 Projects and Equipments

FIR is a unique program created by the Special News Department to highlight irregularities and criminal activities related to Citizen Television. Additionally, the Department of Welfare hosts various programs such as "Fish Fash" covering civic entertainment news, "Body Watch" focusing on the health of the general public, and "Moner Katha" addressing mental health. Moreover, Nagrik Music Cafe consistently arranges live music events featuring singers, and there are also special talk shows with emerging artists.

1. Central apparatus Room(CAR)
- 2 Modulator
- 3 block up-converter (BUC)
- 4 Solid State Power Amplifiers(SSPA)
- 5 Antenna
- 6 Integrated Receiver Decoder(IRD)
- 7 Video switcher[I. Tricaster video switcher II. Grass valley video switcher]
- 8 Automation Playout
- 9 Ingest VTR
- 10 Miranda
- 11 outer
- 12 Earth Sta 13 Encoder
- 14 Master control Room(MCR)
- 15 Production control Room(PCR)

2.8 2.8 Programming

Nagorik's programming line is diverse, consisting of dramas, music, health, cartoons, and many more. At its launch, four dramas premiered on the channel.

2.8.1 Drama

- Akash Meghe Dhaka
- Ami Tumi Se
- Bangi Television
- Binbir Gece (title localized as 'Sahasra Ek Rajani')
- Candy Crush
- Chander Hat
- Corporate Bhalobasha
- Ek Pa Du Pa
- Google Village
- Josnamoyi
- Lipstick
- Siyaasat (title localized as Samrat Jahangir)
- Siyah İnci (title localized as Maria)
- Shoshur Aloy Modhur Aloy

2.8.2 Animated

- Batman: The Animated Series
- Chacha Bahinir Ajob Kahini
- Superman: The Animated Series

2.8.3 Cooking

- Mariar Rannaghor
- Rannar Expert

2.8.4 Health

- Deho Ghor
- Shustho Desh Shustho Mon

2.8.5 Infotainment

- Bizzcussion
- Bola Na Bola
- F.I.R.
- Fisas
- Jogfol
- Nagorik Binodon
- Samadhan Jatra
- Soleman Hazari

2.8.6 Lifestyle

- Ghore Baire
- Pothe Prantore

2.8.7 Musical

- Bajlo Jhumur Tarar Nupur
- Banglabaul
- Gaan Baksho
- House Views
- Music Cafe
- Nagorik Cafe

Chapter 3

Workplace Details

3.1 Work Environment

My experience at Nagorik TV has proven to be exceptionally engaging, providing me with valuable learning opportunities. I've had the chance to connect with several individuals, some of whom have quickly become close colleagues. The atmosphere is characterized by a high level of support, and there is a notable absence of any dismissive attitudes towards ideas. Upon joining, I was treated not as an intern but as a full-time employee, facilitating a seamless integration into their work culture. The remote working setup means that, following the morning meeting, collaborative group chats with people on call are prevalent to simulate an office environment. While it's not obligatory, remaining on call proves beneficial for instant access to assistance, eliminating the need for repeated separate calls.

3.2 Organization Structure

Nagorik Television is overseen by three department heads, primarily led by the Heads of Sales and Marketing and Communications. These departments have the most subscribers on the channel. The program department head manages a team that includes senior managers and producers. The news division includes special correspondents and reporters, while the online division ensures programs are available online and seeks support for smooth operations. Broadcast Engineering and IT provide technical assistance for broadcasting. As a subsidiary of the Mohammadi Group, Nagorik TV focuses on enhancing corporate identity for established companies, utilizing advanced studios and equipment for quality transmission.

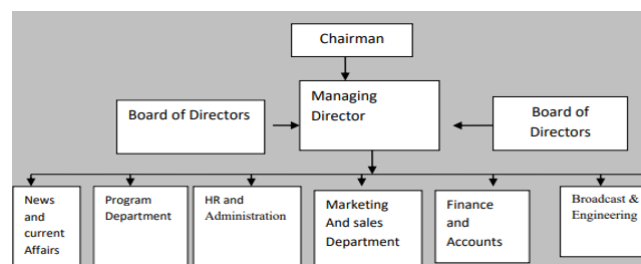


Figure 3.1: Organization Structure

3.3 Work Hours

Nagorik TV provides a flexible work schedule, with office hours running from 10:00 a.m. to 6:00 p.m. Employees are allowed to enter or leave the office outside of these hours. However, team members are required to participate in team meetings and ensure timely completion of their assigned tasks. In the case of virtual meetings, participants can join from any location outside the office.

3.4 Dress Code

Employees are not obligated to follow a strict dress code. However, this does not imply that inappropriate attire is acceptable. Most employees opt for business casual clothing, though some prefer to adhere to formal attire. On Mondays, formal dress is mandatory for everyone.

3.5 Facilities

Nagorik TV provides a range of facilities to its employees, ensuring a comfortable and productive work environment. These include:

- Restricted PCs assigned to developers and testers to maintain security.
- Access to high-speed internet for efficient work.
- Communication through Zoom for seamless collaboration.
- Utilization of advanced project management software for organized workflows.
- Regular in-house training sessions to stay updated with the latest technologies.
- A dedicated prayer room for spiritual needs.
- Provision of snacks and coffee to keep employees energized.
- Indoor sports facilities for recreation.
- Celebrations of birthdays and notable achievements to foster a positive atmosphere.

Working at Nagorik TV has been an enriching and engaging experience. The supportive environment helped me quickly adapt to their work culture. I thoroughly enjoyed collaborating with my team to deliver the best possible results.

Chapter 4

Internship Phrase and Growth

4.1 Overview

Securing an internship in a company signifies a significant advancement in both academic and professional spheres. In the current competitive job market, acquiring practical work experience holds immense value. This experience not only enhances one's career prospects but also facilitates a seamless transition into the professional realm post-academia. The application of theoretical knowledge in real-time scenarios poses its own set of challenges, considering the varying industry practices that necessitate adaptation.

Currently, I am undertaking an internship at Nagorik TV, specifically assigned to the Satellite TV Broadcast department. This internship is a mandatory component of my graduation requirements at BRAC University. Simultaneously, it provides an ideal opportunity for me to acquire diverse knowledge and gain valuable hands-on experience in my field. Throughout my tenure at Nagorik TV, my supervisor has been instrumental in guiding me through every phase, ensuring a smooth learning process.

Unlike traditional training phases, Nagorik TV immerses interns directly into work responsibilities. Despite the absence of an official training program, my supervisor has personally navigated me through various aspects of my internship thus far. While I have included several screenshots in this report, it's important to note that certain confidential panels I work on cannot be disclosed due to privacy constraints.

4.2 Getting Familiar with the QA Scenario

Before I was set out to work, I was told to study a few important terms and methods. I had to familiarize myself with Drive-Away DSNG windows. I followed tips and tricks my supervisor gave me and also followed a course on DMNG to get familiar with the software.

I was also recommended the Quick link Merlin Backpack to learn the process. Initially I had to get to know Geostationary Earth Orbit (GEO) Analysis and Equivalence Artificial Satellites. When applied these methods are very simple in reality.

4.2.1 Getting to Know the Satellite TV

Satellite television functions by delivering television content through broadcast signals transmitted from communication satellites. These signals are captured through an outdoor parabolic reflector antenna commonly known as a satellite dish antenna, along with a low-noise block (LNB) down-converter. Subsequently, a satellite receiver decodes the selected television program, enabling it to be viewed on a television set. This technology offers an extensive array of channels and services, particularly in regions where terrestrial television or cable television infrastructure is lacking. The diagram illustrating the components of a Satellite TV station is presented below:

Block Diagram of a Satellite TV Station:

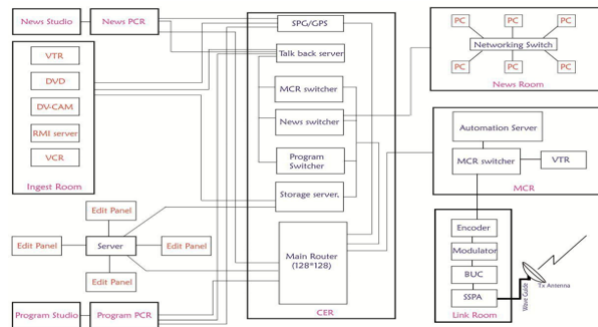


Figure 4.1: Getting to Know the Satellite TV

4.3 Tutorials and Assistance

My primary support and educational resource came from my supervisor, who generously allocated ample time to discuss concepts with me and demonstrate the correct procedures for various tasks. Additionally, I utilized the internet to explore various websites and gain a comprehensive understanding. Furthermore, I adhered to a book suggested by my supervisor as part of my learning process.

4.4 Communication and Meetings

Our primary means of communication revolved around Microsoft Teams, where various group chats were established to cater to different work requirements. Additionally, Microsoft Outlook was utilized for work-related emails. Team members were consistently online during regular work hours (9 am to 6 pm), and often even beyond, ensuring accessibility for assistance at any given time. Each workday entailed two mandatory meetings. The first, held in the morning, served as a refreshing session and a platform for planning the day's tasks. This meeting provided an opportunity to discuss any new developments, and participants were typically queried about their respective responsibilities for the day. The second meeting occurred at the end of the work hours, focusing on ensuring the completion of assigned tasks. If any work remained unfinished, its resolution depended on its urgency; tasks were either deferred to the following day or addressed by individuals working a bit later to complete them.

Chapter 5

My Contribution

Nagorik TV hired me to gain an understanding of their satellite TV operations. Initially, I focused on simple tasks, but over time, I delved into more complex aspects of their workflow. This report outlines the production processes I learned, how my knowledge evolved, and the outcomes of my experiences. In today's information technology landscape, managing projects effectively is essential for organizational success. IT companies, regardless of size, juggle projects ranging from simple eCommerce websites to intricate corporate software solutions. Efficient project management tools, such as JIRA, ProofHub, and ClickUp, support this need but can become costly for large-scale operations. The goal of this internship project is to design a comprehensive Task Management Application tailored for company-wide use, addressing such challenges. The proposed Cloud-Based Task Manager is a web application designed to enhance collaborative work management. Built using the MERN stack (MongoDB, Express.js, React, and Node.js), it offers an intuitive platform for task assignment, tracking, and collaboration. It is equipped with features for administrators and regular users alike, improving productivity and organization. This system addresses the limitations of traditional task tracking tools, like spreadsheets, by offering a centralized, scalable solution. Key features include real-time task updates, communication tools, and a responsive design powered by Redux Toolkit, Headless UI, and Tailwind CSS. With the growing prevalence of remote work, this application caters to the need for seamless communication and efficient workflow management.

5.1 Task Management Project Overview

Upon completion of this internship, I hope to have the following features completed for this app:

- A dashboard that shows all tasks and projects for the user currently logged in, arranged according to priority.
- Establish individual tasks, which can be anything from long-term events to daily activities.
- Develop bigger projects, some of which may involve many smaller tasks.
- Sort tasks and projects according to importance, including deadlines, remaining time, personnel assigned, etc.

- Track individual performance by keeping track of daily tasks completed, total participation, and caliber of work.
- Attach files to tasks. Keep track of updates, developments, and testing history.

5.1.1 Administrator Features:

1. User Management
 - Create administrative accounts.
 - Add and manage team members.
2. Task Assignment:
 - Assign tasks to one or more people.
 - Update the task descriptions and status.
3. Task Properties:
 - Label tasks as to-do, in-progress, or done.
 - Assign priorities (high, medium, normal, and low).
 - Create and manage subtasks.
4. Asset Management:
 - Upload task assets like photos.
5. User Account Control:
 - You can disable or activate user accounts.
 - Permanently remove or destroy tasks.

5.1.2 User features:

1. Task Interaction;
 - Change the task status (in progress or completed).
 - View the detailed task information.
2. Communication:
 - Make comments or discuss on assignment activity.

5.1.3 General Features:

1. Authentication and authorization:
 - The user logs in using secure authentication.
 - Role-based access control.
2. Profile Management:
 - Update the user profiles.
3. Password Management:
 - Change your passwords safely.
 - Dashboard
 - Provide an overview of user activity.
 - Filter tasks by todo, in progress, or done.

5.1.4 Technologies used:

- Frontend: Features include React (Vite), Redux Toolkit for State Management, Headless UI, Tailwind CSS, and
- Backend: Node.js + Express.js
- Database: MongoDB provides efficient and scalable data storage.

5.1.5 Work Plan

iTask is mainly being developed as a solo project. As such, using the Iterative Model for the SDLC satisfies the work plan, and aims to produce the best results in this case. The company plans to use this app long-term, while having the option to upgrade it with new features over time. Instead of beginning with well-known specifications, as the possibilities are numerous, we enforce a series of software requirements, validate and analyze the result, rinse and repeat. One benefit over other SDLC methodologies: this model gives an early working version in development and makes it less costly to introduce changes.

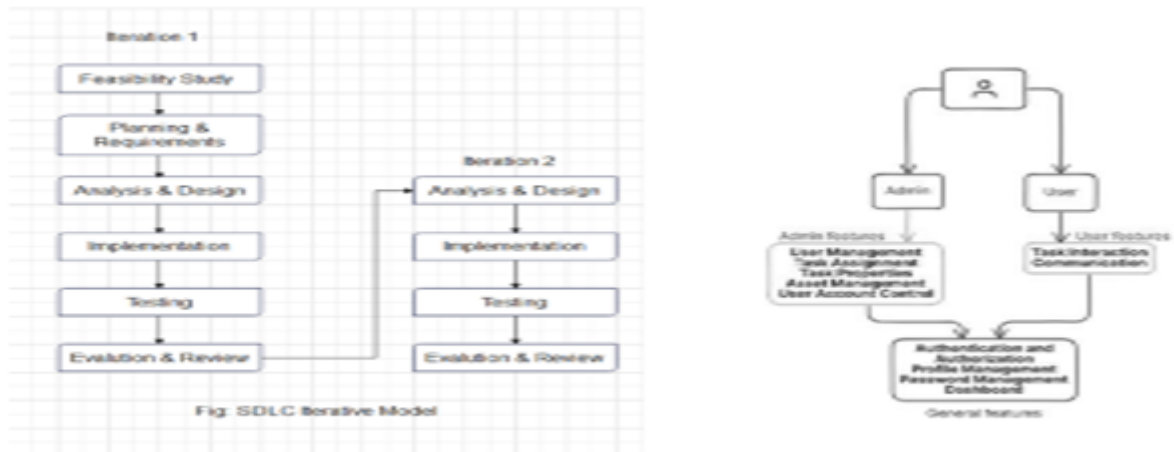


Figure 5.1: Work Plan

5.1.6 Flowchart

This is the flow chart diagram of my task management system:

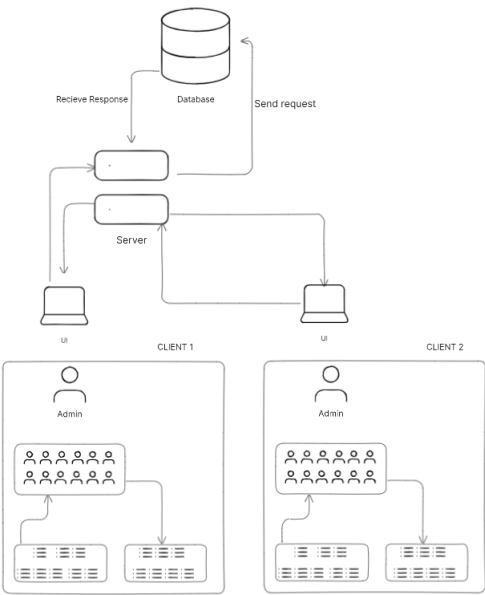


Figure 5.2: Flow Chart

5.1.7 Usecase Diagram

This is the usecase diagram of my task management system:



Figure 5.3: Usecase Diagram

5.1.8 Activity Diagram

This is the activity diagram of my task management system:

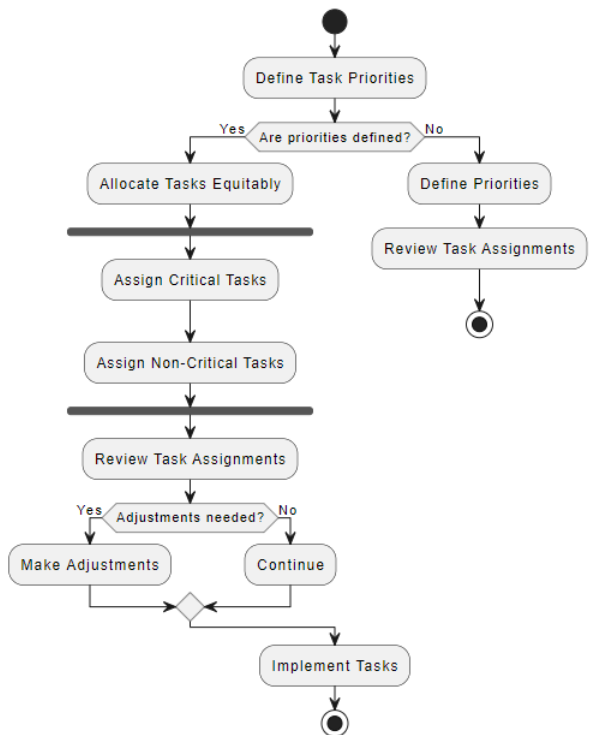


Figure 5.4: Activity Diagram

5.1.9 ER Diagram

This is the ER diagram of my task management system:

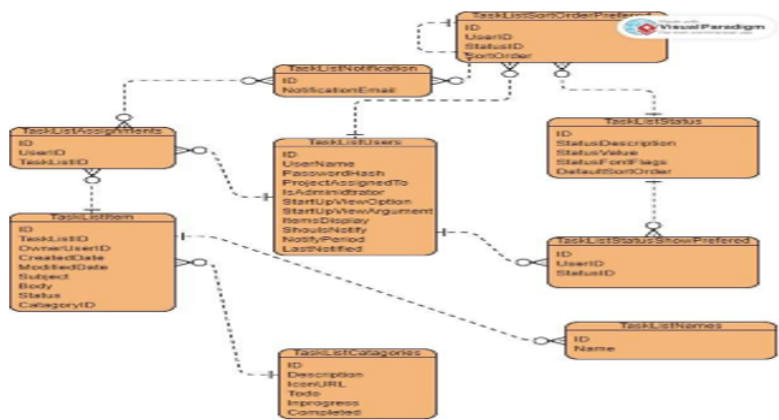


Figure 5.5: ER Diagram

5.1.10 Class Diagram

This is the class diagram of my task management system:

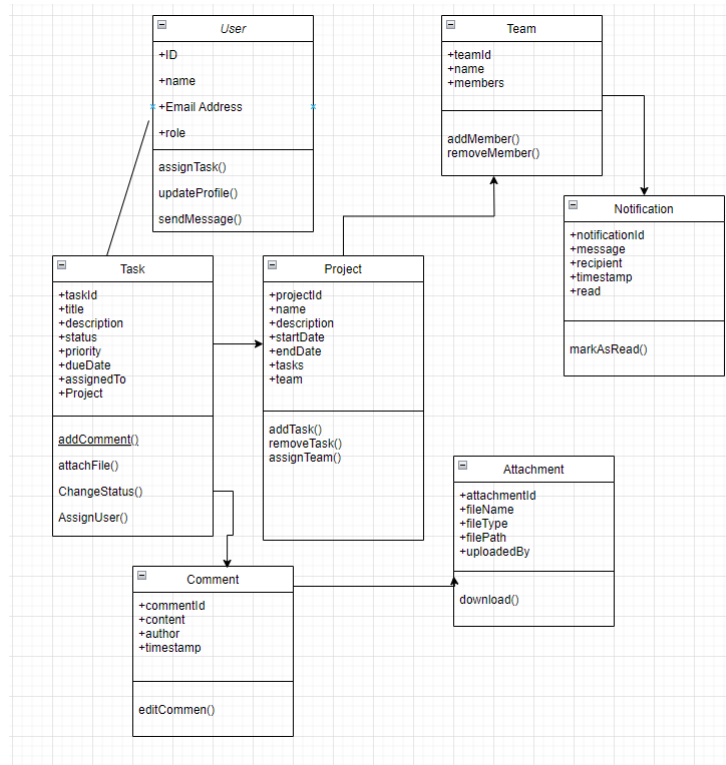


Figure 5.6: Class Diagram

5.1.11 Testing the Application

Once the system was integrated, its functionality was thoroughly tested under various scenarios. API testing was conducted using Postman, allowing us to simulate and validate the system's response to different request methods (e.g., POST, GET) and ensure the results matched expectations.

5.1.12 Deployment of the Application

After completing both functional and non-functional testing, the system was deployed to web servers, making it accessible to end users. In the context of a TV channel, this could involve launching a content management system where users can view schedules, request content, or access services. Clients, such as broadcasters or advertisers, can manage their interactions, such as booking ad slots or monitoring campaign performance.

5.1.13 Maintenance of the Application

During the operational phase, issues reported by clients or users are resolved through patches. Additionally, updated versions of the application are rolled out to enhance features and address user feedback.

5.1.14 Outcome of the project

1st Draft:

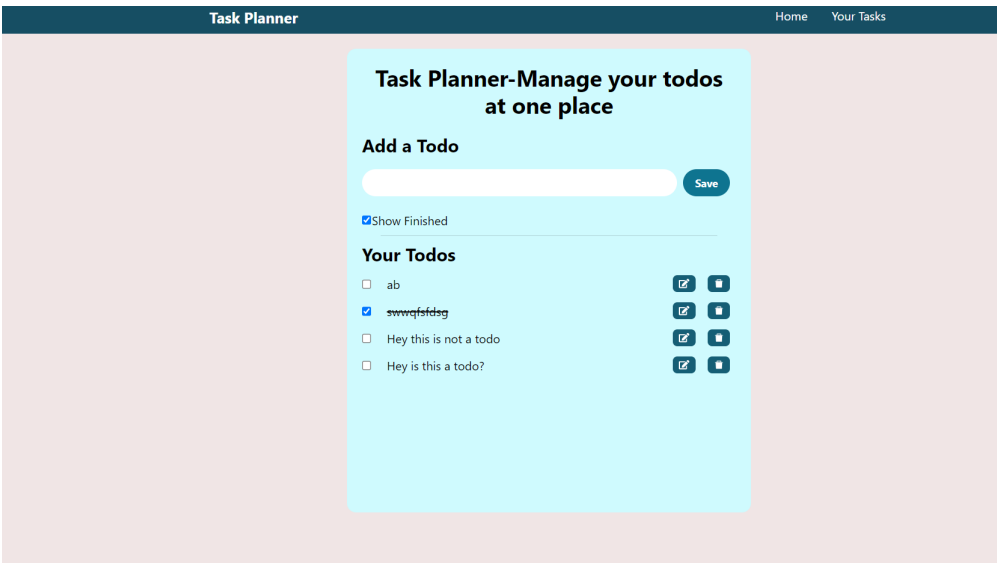


Figure 5.7: 1st Draft

2nd Draft:

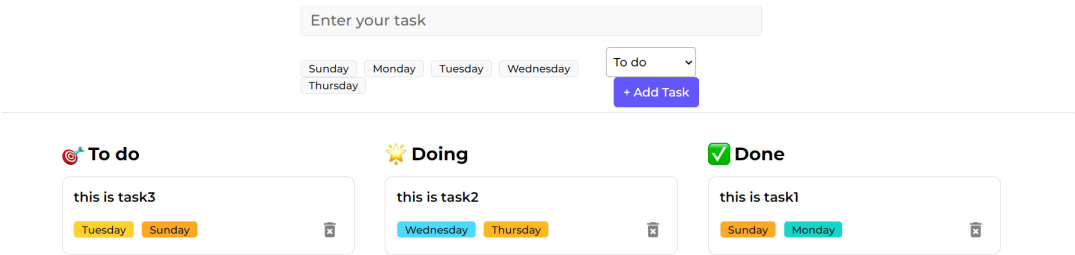


Figure 5.8: 2nd Draft

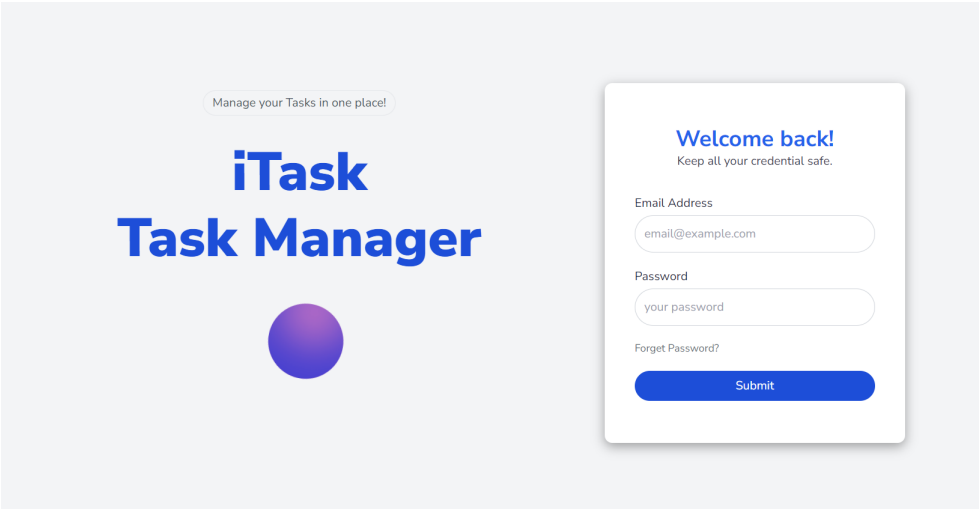


Figure 5.9: 3rd Draft

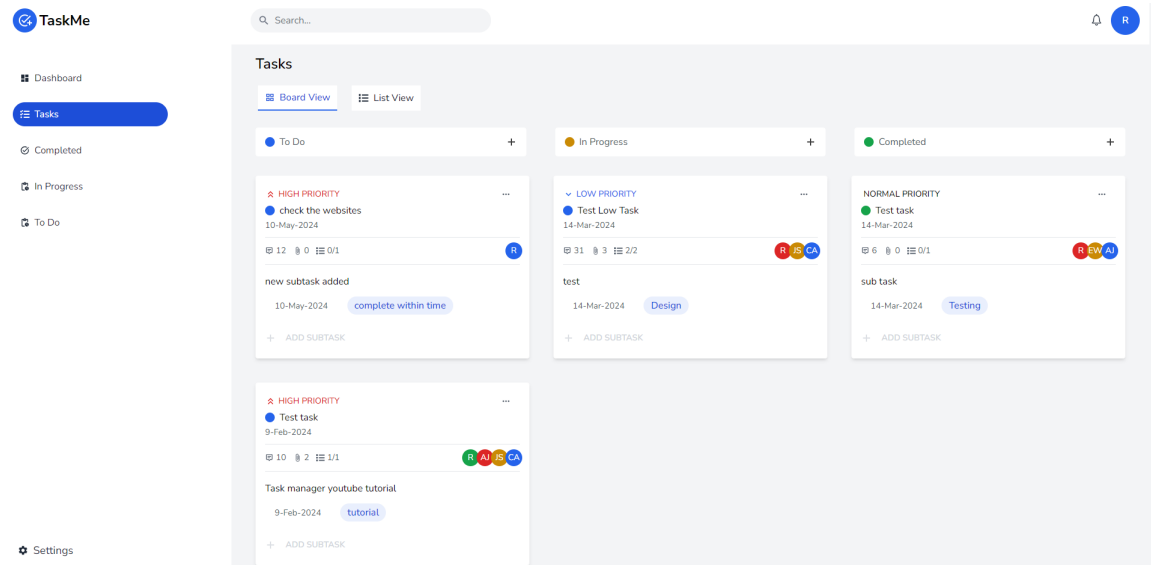


Figure 5.10: 3rd Draft

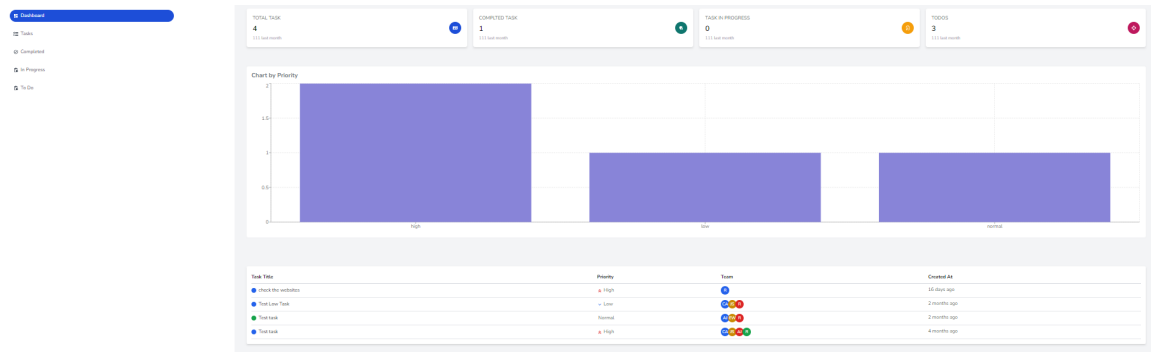


Figure 5.11: 3rd Draft

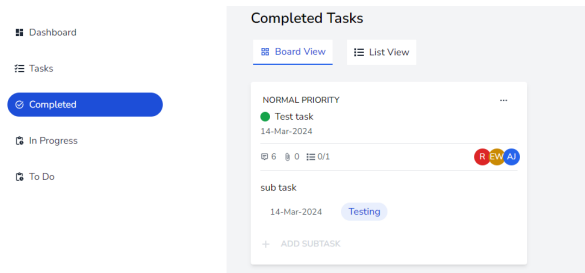


Figure 5.12: 3rd Draft

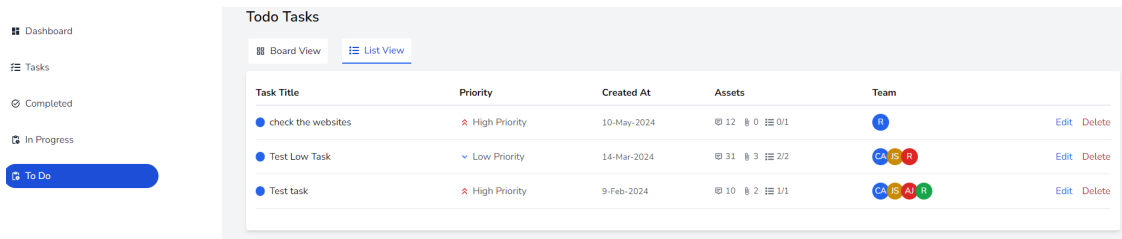


Figure 5.13: 3rd Draft

3rd Draft:

5.2 Data Analysis project at Nagorik TV

5.2.1 User experience analysis

This project centers on a virtual work experience as a data analyst at Nagorik TV, a leading television channel in Bangladesh. The focus was on analyzing viewer data to enhance audience engagement and optimize content delivery. By conducting an in-depth analysis of viewer behavior using advanced techniques, the project aimed to identify audience patterns, develop predictive models leveraging machine learning, and provide actionable recommendations to improve viewer satisfaction and business strategies.

In the rapidly evolving digital broadcasting industry, data plays a critical role in understanding and meeting viewer demands. This report outlines the data analysis efforts at Nagorik TV, detailing how audience behavior was studied to tailor content to viewer preferences, forecast future trends, and deliver improved recommendations powered by machine learning algorithms.

The project's objectives included:

- Analyzing audience behavior
- Building predictive models to estimate viewership trends
- Generating data-driven insights using machine learning techniques

The dataset was meticulously cleaned and processed, with Python employed for data manipulation and analysis, and Tableau utilized for creating insightful visualizations.

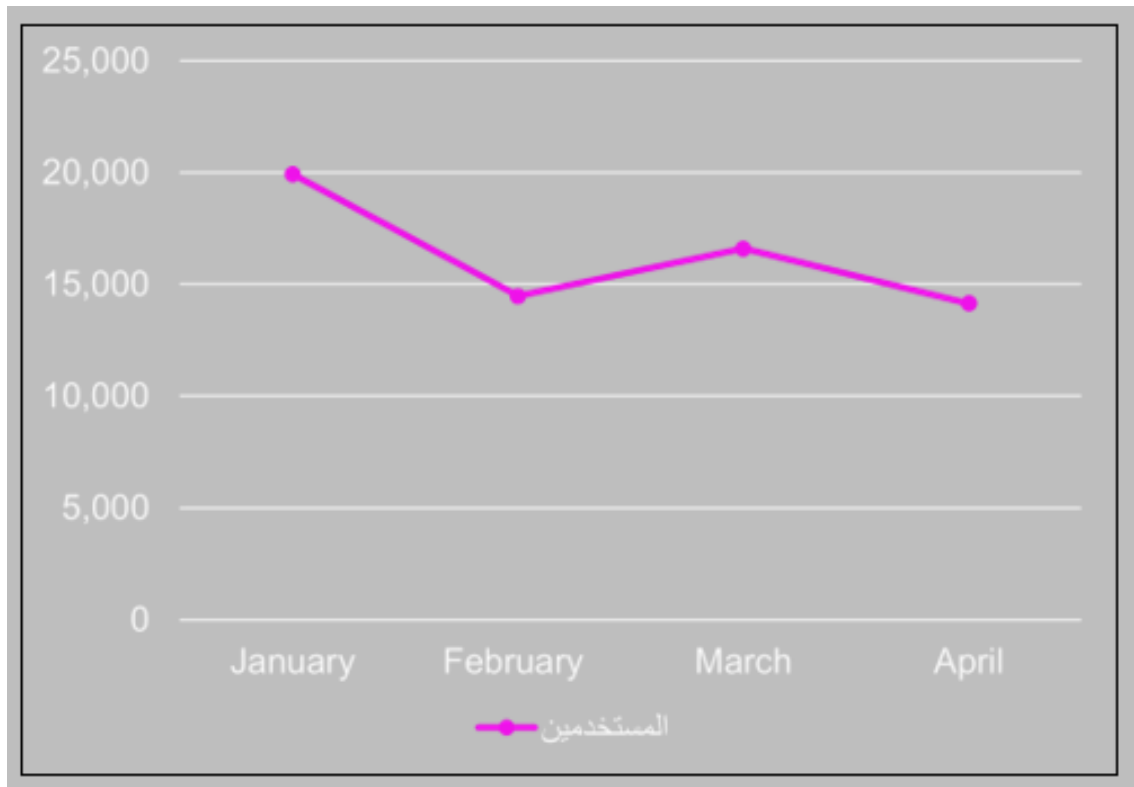


Figure 5.14: User experience analysis

5.2.2 Study and analyze user behavior

The following analysis focuses on viewership trends for Nagorik TV over a four-month period. The first graph highlights January as the peak month, with 19,331 views, representing 100 percent of the total for that timeframe. In February, viewership decreased by 14.8 percent, followed by a relatively stable trend in March. However, between March and April, there was a sharp decline, with views dropping by 26.8 percent compared to January, indicating a steady decrease from the initial peak.

The subsequent graphs reveal viewer preferences. Notably, 62 percent of viewers favored watching news over TV shows. Additionally, 59 percent of views were in HD resolution, while 40.97 percent were in SD resolution, highlighting a preference for higher-quality streaming among the audience.

Recommendations

- Investigate January viewership factors.
- Analyze decline reasons in subsequent months.
- Introduce short series and standalone episodes for quick content.
- Implement new features like favorite episode follower and new release notifications.
- Provide tailored content based on device type.

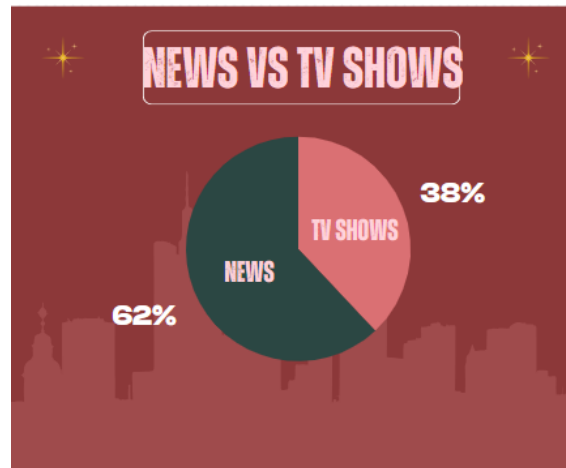


Figure 5.15: Study and analyze user behavior

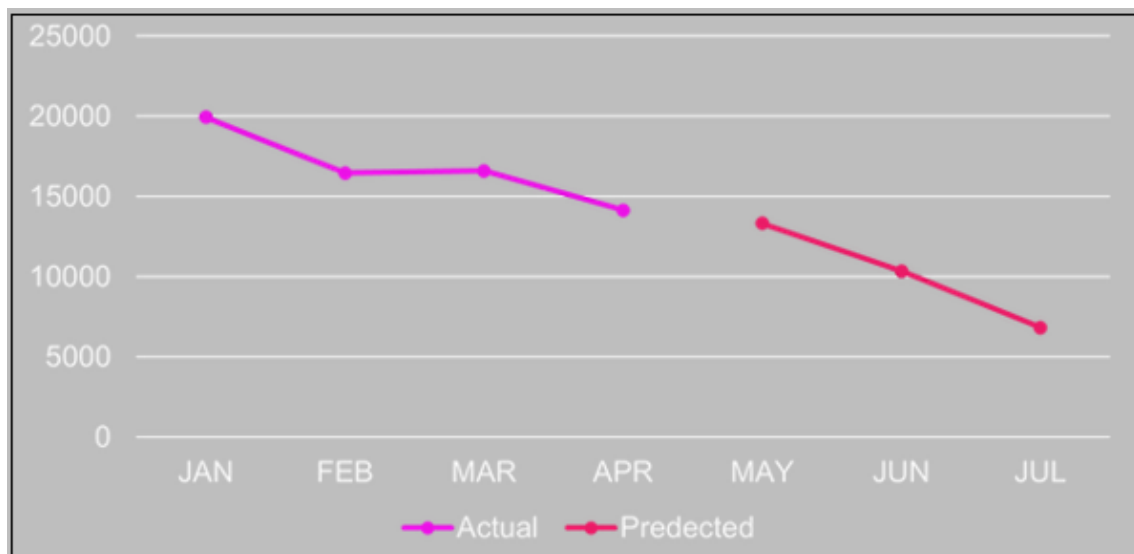


Figure 5.16: Develop predictive models using machine learning algorithms

5.2.3 Develop predictive models using machine learning algorithms

Upon analyzing the data related to previous views, it was found that there is an expected decrease in viewership over the next two months by 54.56 percent. This conclusion was reached by analyzing temporal patterns and changes in user preferences.

Recommendation

- Investigate factors contributing to decrease.
- Assess changes in content interest.
- Assess competition, market changes, and search engine algorithm updates.
- Enhance marketing strategies for wider audience reach.
- Improve content quality for engaging, value-added content.

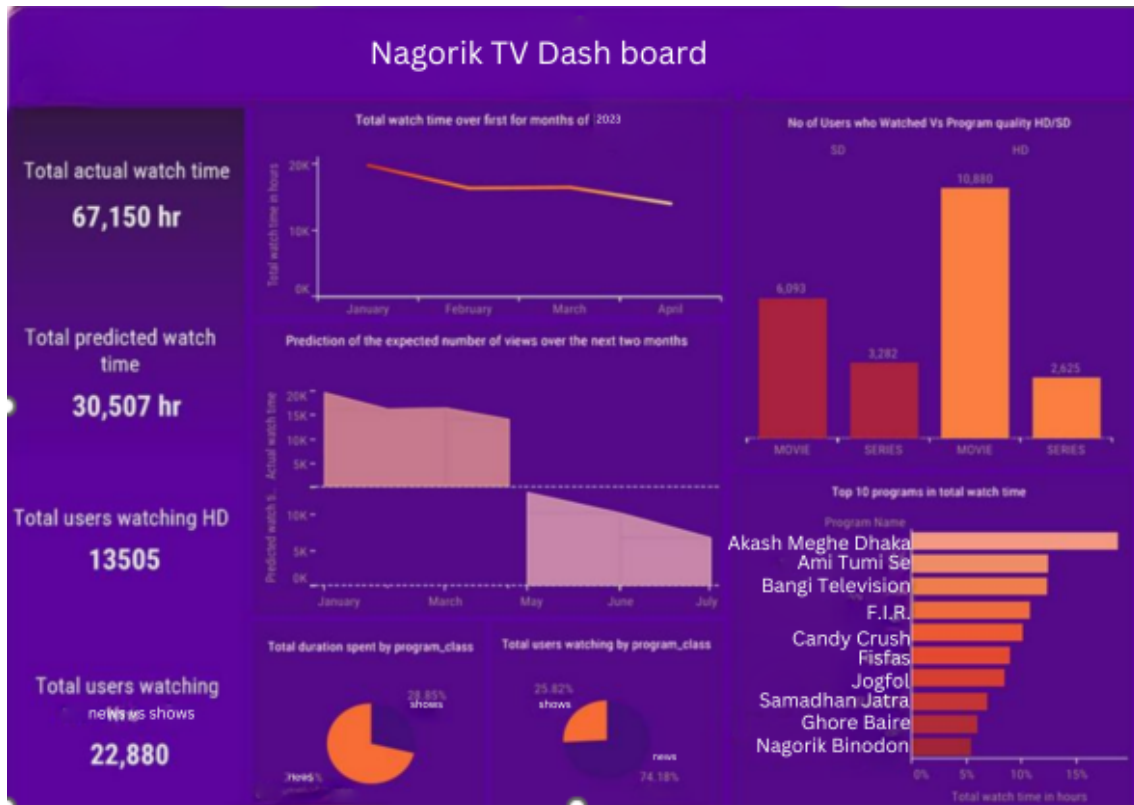


Figure 5.17: Provide optimized recommendations using machine learning algorithms

5.3 Provide optimized recommendations using machine learning algorithms

Based on the analysis of user behavior among those with similar preferences, the following chart present the recommendation system that has been enhanced to provide personalized content that meets their unique needs.

1. Improve recommendation systems and enhance recommendation algorithms to accurately deliver content preferred by users based on the preferences of similar users.
2. Diversifying content by adding new and varied content such as documentaries and reality programs aims to increase viewership and better understand their needs in depth

This dashboard presents a comprehensive analysis, showcasing insightful information crucial for informed decision-making. It consolidates key metrics and trends, offering a clear view of performance across various parameters. By visually presenting data on user behavior, market trends, and operational efficiency, the dashboard facilitates strategic planning and enables stakeholders to make data-driven decisions swiftly. Its interactive features allow for deep dives into specific areas of interest, empowering teams to identify opportunities, mitigate risks, and optimize strategies effectively.

Chapter 6

Conclusion

The internship provided a comprehensive understanding of software testing principles, emphasizing meticulous planning, comprehensive documentation, and patience. It also highlighted the importance of approaching problems from multiple perspectives and the need for continuous testing. The internship began with simple tasks, progressing to more complex challenges, debugging sessions, and collaboration with the Nagorik TV tech team. The internship lasted six months, ending on April 30, 2024. The report provides a comprehensive overview of the initial two months, aligning with the requirements of my pre-thesis work.



নাগরিক

Date: 10 June, 2024

Ref: Admin & HR/Jadoo Media/June/Exp-0001

To Whom It May Concern

This is to certify that **Bushra Yesmeen Anika** student of BRAC University completed Internship in **Department of Broadcast & IT** of Nagorik Television (Jadoo Media Limited) from **01 November-2023** to **April,2024**. She has developed an intensive report on Software Development for Nagorik Television. After completion of the internship she has submitted a comprehensive report on the assigned responsibilities.

We wish her success in future endeavors of career.

With regards,

Sunanda Chakraborty
Deputy Manager
Admin & HR
Contact: 01711081710
e-mail: sunanda@nagorik.com

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www.nagorik.com

[/nagorikonline](https://www.facebook.com/nagorikonline)

Figure 6.1: Internship accomplishment Certificate