

SUMMER INTERNSHIP PROGRAM

at

Rukmani Birla Hospital, Jaipur

1st May 2024 to 1st July 2024

A REPORT BY

Samarth Gupta

Master of Business Administration

Hospital and Health Management

2023-25

under the Mentorship of

Mr. Ashish Bandhu



RBH/2024/Jul/HRD/6237

Date: 31 Jul 2024

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Samarth Gupta** has successfully completed his training in Patient Experience Department from 01 May 2024 to 01 Jul 2024.

We found him sincere, punctual & hardworking. We wish him every success in his future and career.

For **CK Birla Hospital - RBH**



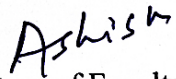
Raju Kumar
Unit Head - HR

IIHMR University Faculty Mentor Approval

This is to certify that **Mr. Samarth Gupta** of academic year 2023-25 of **INSTITUTE OF HEALTH MANAGEMENT RESEARCH** has prepared poster with respect to his summer internship held during 1st May 2024 to 1st July 2024.

He has carried out work as per the guidelines. His poster is approved for presentation.

Date – 23/07/2024


(Signature of Faculty Mentor)

Mr. Ashish Bandhu
Assistant Professor
IIHMR UNIVERSITY JAIPUR

Development of indoor navigation system for patient & visitors for improving whole experience at CK Birla Hospital, Jaipur

Name: Samarth Gupta Roll No: 1811 Faculty mentor: Mr. Ashish Bandhu Organisation mentor: Ms. Neha Sharma

HOSPITAL PROFILE

BRIEF HISTORY

An Endless Journey:

It was the first private hospital with the cutting-edge facility in healthcare in Kolkata.

The journey to serve the community took a new direction with the establishment of a super specialty cardiac hospital-BM Birla Heart Research Center. It is the first hospital in India to receive the National Accreditation Board of Hospital award.

In 2016, the group launched the most progressive center of the clinical care at Jaipur-The Rukmani Birla Hospital.

BRIEF DISCRIPTION

The CK Birla group has different chains which include hospitals in Gurugram (CK Birla), Jaipur (RBH), Kolkata (CMRI), and Kolkata (BM Birla Heart Research Centre). CK Birla Hospital is a 230-bedded multi-specialty hospital in Jaipur. RBH has 24-hour specialized healthcare departments with highly trained doctors and nurses.

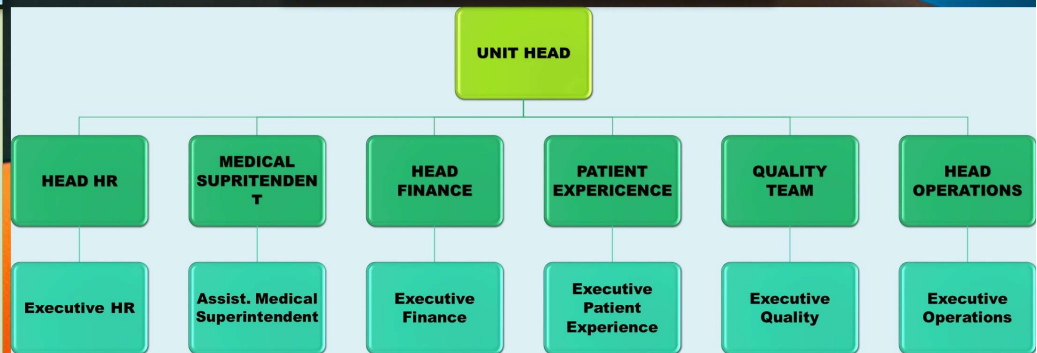
VISION

- ❖ To provide the highest level of patient care and clinical excellence

MISSION

- ❖ To create Clinical Centres of Excellence on a strong backbone of research, academics and evidence-based medicine for best clinical and patient outcome.

ORGANIZATION STRUCTURE



THEORETICAL VS PRACTICAL EXPOSURE

- Gained essential knowledge about hospital services in my coursework and had the opportunity to apply this knowledge practically during my internship.
- Identified module of communication was helpful in terms of communicating with the patients and simultaneously with business heads.

OBJECTIVES

- To identify the challenges of indoor navigation inside the hospital.
- To design indoor navigation application for hospital.

LEARNING

- ❖ Overview of technologies involve in development of indoor navigation.
- ❖ Identified unique need of hospital navigation system.
- ❖ Impact of new technology on user experience.
- ❖ Practical implementation of AR indoor navigation system.
- ❖ Indoor Positioning Systems (IPS): Learnt about different IPS technologies such as Wi-Fi, Bluetooth, RFID, UWB, and more.

ACTIVITIES DONE

Development was conducted by using multiple assets from GitHub

- ❖ Technologies Used in Indoor Navigation: Bluetooth beacons, Wi-Fi triangulation, RFID, Ultra – wideband (UWB), and AR and computer vision.
- ❖ Developing AR navigation application: Using AR SDK and tools and other plugins.

PROJECT FINDINGS

- **Hardware** based indoor navigation system was costly for installation and maintenance, also require device setups in several meters by using wires which impacted hospital operations while setting up.
- **Augmented Reality** based application requires Google AR core in android phone and AR Kit in IOS supported device.
- **Sensor Fusion** is a technology which exist in augmented reality with low level sensors and camera inputs are process on frame per second using point cloud.
- **Rendering** of data require specific pipeline which is affected by Graphical Processing Unit.
- Understand the principles of digital mapping, pathfinding algorithms (e.g., A*, Dijkstra's), and how to create efficient routes

SUGGESTIONS

- Frequently auditing of blueprint
- Improve navigation or signage of hospital

USEFULNESS

- Hospital industry exposure.
- Opportunity to conduct prototyping in hospital.
- Helped to create networking with hospital member.
- Opportunities to improve MVP.

SWOT ANALYSIS

STRENGTH

- High-Quality Care and Services
- Comfortable and Safe Environment
- Patient-Centric Approach

WEAKNESS

- Inconsistent service quality
- Limited space leading to overcrowding

OPPORTUNITIES

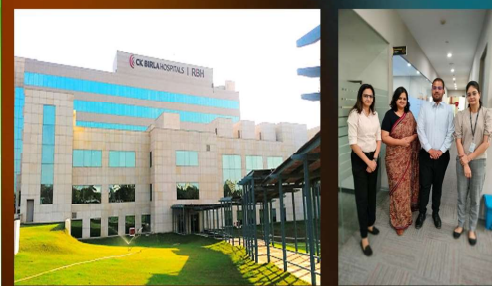
- Technological Advancements
- Expansion of facilities and services
- Building stronger relationships with local communities

THREAT

- Environmental and infrastructure challenges
- Recruitment and retention of skilled healthcare professionals
- Competitors like EHCC

CHALLENGES

- Adjusting to Dynamic Hospital environment



(Week 1)

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: MBA-HHM

Week no: From:1/05/2024.....to.....4/05/2024.....

Activity Done	• Collect Blueprint of RBH • Signed Non-Disclosure Agreement with RBH
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation is required
Plan for the next week	• Start working on the project

Samarth Gupta

Signature of the Student

(Week 2)

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: MBA-HHM

Week no: From:6/05/2024.....to.....11/05/2024.....

Activity Done	• Install all necessary software required for development of indoor navigation software • Initiate planning for development
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation is required
Plan for the next week	• Learn auditing method for blueprint • Auditing of blueprint

Samarth Gupta

Signature of the Student

(Week 3)

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: MBA-HHM

Week no: From:13/05/2024.....to.....18/05/2024.....

Activity Done	• Perform audit on blueprint of RBH
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation is required
Plan for the next week	• Blueprint Analysis • Blueprint correction

Samarth Gupta

Signature of the Student

(Week 4)

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: MBA-HHM

Week no: From:20/05/2024.....to.....25/05/2024.....

Activity Done	• Mark correction on blueprint of RBH
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation is required
Plan for the next week	• Convert blueprint into 3D model

Samarth Gupta

Signature of the Student

(Week 5)

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: MBA-HHM

Week no: From:27/05/2024.....to.....01/06/2024.....

Activity Done	• Created 3D model of Hospital ground floor
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation is required
Plan for the next week	• Development of path finding navigation algorithm

Samarth Gupta

Signature of the Student

(Week 6)

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: MBA-HHM

Week no: From:03/06/2024.....to.....08/06/2024.....

Activity Done	• Initiate development of navigation algorithm on 3D model of hospital
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation is required
Plan for the next week	• Build Minimum viable product for RBH

Samarth Gupta

Signature of the Student

(Week 7)

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: MBA-HHM

Week no: From:10/06/2024.....to.....15/06/2024.....

Activity Done	• Created way finding mechanism of hospital • Showcase first prototype to hospital
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation is required
Plan for the next week	• Identification of methods to addon features as per requirement of client

Samarth Gupta

Signature of the Student

(Week 8)

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: MBA-HHM

Week no: From:17/06/2024.....to.....22/06/2024.....

Activity Done	• Perform experimentation for fulfilling the hospital requirement • Consult with industry experts about cyber security
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation is required
Plan for the next week	• Initiate working on web based application

Samarth Gupta

Signature of the Student

(Week 9)

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: MBA-HHM

Week no: From:24/06/2024.....to.....29/06/2024.....

Activity Done	• Update the application as per requirement • Took study for building web-based application
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation is required

Samarth Gupta

Signature of the Student

Compiled Report

Name of the Organisation: Rukmani Birla Hospital, Jaipur

Area/ Department/ Project of Summer Internship Program: Patient Experience

Name of the Student: Samarth Gupta

Roll no: 1811

Stream: HHM

Activity Done	• Collect Blueprint of RBH • Signed Non-Disclosure Agreement with RBH • Install all necessary software required for development of indoor navigation software • Initiate planning for development • Perform audit on blueprint of RBH • Mark correction on blueprint of RBH • Initiate development of navigation algorithm on 3D model of hospital • Created 3D model of Hospital ground floor • Created way finding mechanism of hospital • Showcase first prototype to hospital • Perform experimentation for fulfilling the hospital requirement • Consult with industry experts about cyber security • Update the application as per requirement • Took study for building web-based application
Linking theory (Classroom learning) with practice at your organisation	• Long term impact and sustainability of hospital by introducing modern technology
Gaps identified on the working area.	• Variance between Structural and designed plan of hospital • Lack of signage in hospital
Suggestions for improvement	• Modern method of indoor navigation required.

Samarth Gupta

Signature of the Student

Approved by the IIHMR University's Mentor