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Team I

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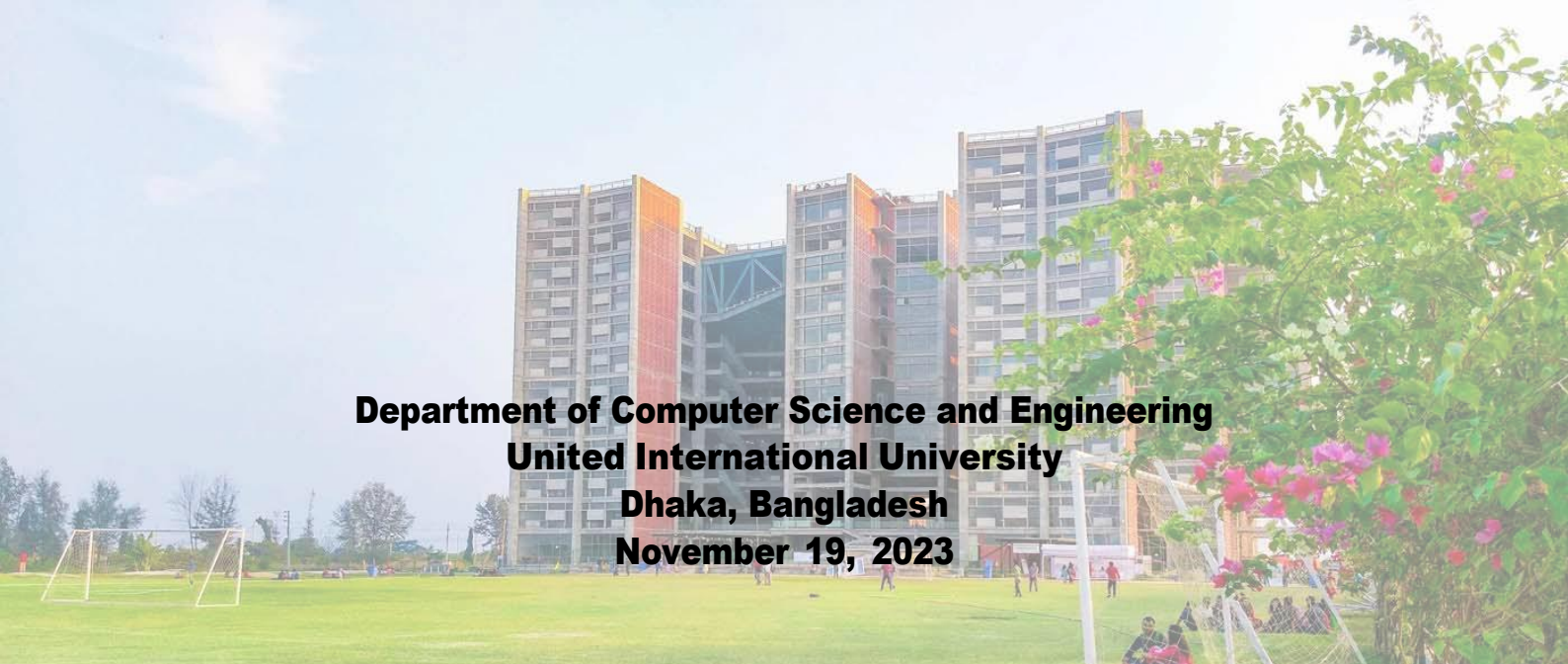

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Section 1: Problem Description

1.1: Problem Statement:

The present doctor-patient appointment system struggles with poor integration with patient medical history databases and diagnostic tool integration, limited communication capabilities, and scheduling inefficiencies. These restrictions lead to less than ideal patient experiences and may make it more difficult to diagnose and schedule treatments. These issues have an impact on patients and healthcare providers, which might result in service lapses and decreased system efficacy. It is imperative that these problems are resolved in order to raise the system's general effectiveness and efficiency, which will eventually raise patient and healthcare professional satisfaction and care quality.

1.2. Target User Group:

The main users of our system are mainly healthcare professionals, doctors, who play a role, in managing doctor patient appointments. These professionals depend on the system to book appointments communicate with patients, access patient details and smoothly coordinate care. The goal of the system is to meet the needs of healthcare professionals by simplifying the appointment process improving communication and granting access to information, for better and more efficient patient care.

1.3. Challenges Faced by the Target Audience:

The challenges faced by the healthcare professionals such as doctors:

- Challenges, in managing and organizing appointment schedules, which can result in scheduling conflicts, delays or ineffective use of time slots.
- Limitations in effectively communicating important appointment details follow up care instructions or other crucial information to patients potentially impacting the overall patient experience.
- Difficulties in accessing and integrating patient medical records, diagnostic results and treatment plans within the appointment system affecting streamlined decision making and care coordination.
- Workflow disruptions caused by system inefficiencies that lead to time wastage and reduced productivity, for healthcare professionals.

Section 2: Data Collection Process

2.1 Research Methods:

Surveys were used as the primary research method for our system, gathering both quantitative and qualitative data from various participants, including patients, healthcare professionals, and IT specialists. This method allowed us to gather diverse viewpoints on the doctor-patient appointment process, enabling us to create a customized system that meets the needs of our investigation.

2.2 The process of reaching the target users:

To reach our target user groups, we employed several strategies tailored to each group within the context of our doctor-patient appointment system:

- Healthcare Professionals:

  - We reached out to healthcare professionals through professional networks related to healthcare technology and practice management.
  - Collaborating with medical students and associations allowed us to engage with a diverse group of healthcare professionals to gather their insights on the appointment system.

2.3 Participant Demographics:

Here we have discussed the demographics of the participants of our survey. Here we mentioned the name, age, occupation, and gender. Here, we've used a made-up name as we assured them that we wouldn't disclose their real identity. Table1 contains the demographic information of the participants.

Name	Age	Occupation	Gender
Dr. Mitchell	28	Junior Doctor	Male
Dr. Carter	45	Senior Physician	Female
Dr. Nguyen	32	Surgeon	Male
Dr. Patel	55	Cardiologist	Male
Dr. Lopez	34	Anesthesiologist	Female
Dr. Chang	48	Gynecologist	Male
Dr. Ramirez	30	Dermatologist	Male
Dr. Kim	41	Oncologist	Female
Dr. Sullivan	39	Ophthalmologist	Male
Dr. Torres	50	Orthopedic Surgeon	Female
Dr. Adams	36	Pediatrician	Male
Dr. Smith	47	Psychiatrist	Female
Dr. Hart	33	Radiologist	Male

Table 1: Participant Demographics

2.4 Types of Data Generated from Data Collection Process:

The data generated from our data collection process comprises both quantitative and qualitative information, providing a comprehensive understanding of the participants' perspectives and experiences related to the doctor-patient appointment system.

- **Quantitative Data:**
  - Demographic information such as age, gender, and occupation of the participants.
  - Statistical analysis of survey responses, including numerical ratings and rankings provided by the participants.
- **Qualitative Data:**
  - In-depth interview notes capturing detailed insights into the challenges, requirements, and experiences shared by healthcare professionals, patients, and technology experts.
  - Open-ended responses from the survey, offering nuanced feedback and suggestions regarding the doctor-patient appointment process.

2.5 Data Recording Process:

We used Google Sheets as the primary tool for documentation and organization during our data collection process. This entailed entering survey responses into Google Sheets, which allowed for collaborative data administration and analysis.

2.6: Facing and Overcoming the Challenges:

In the case of survey-based data collection, several challenges may have been encountered, and overcoming these hurdles is crucial to ensuring the validity and reliability of the collected data. Here are some specific challenges and corresponding solutions:

1. **Challenge:** Low Response Rates It's common to experience low response rates in surveys, which can impact the overall representatives of the data.

Solution:

- Employed a well-crafted and engaging survey design to capture the interest of the participants.
- Sent out targeted reminders and follow-up communications to encourage survey participation.
- Utilized multiple communication channels to reach a wider audience and improve response rates.

2. **Challenge:** Biased Responses Participants may provide biased responses, either consciously or unconsciously, impacting the accuracy of the data.

Solution:

- Implemented various question types and response scales to minimize response biases.
- Properly framed questions to minimize leading or suggestive language that could influence responses.
- Conducted data validation checks to identify and address potential response biases.

3. **Challenge:** Data Integrity and Accuracy Ensuring the accuracy and integrity of the survey data is essential to draw valid conclusions from the collected information.

Solution:

- Implemented data validation measures within the survey to minimize errors and inconsistencies.
- Verified the completeness and consistency of the collected data through thorough data cleaning and validation processes.
- Verified the integrity of the data by cross-referencing responses to identify any anomalies or discrepancies.

Section 3: Data Analysis Process

3.1 Insights from the Affinity Diagram:

Here are the final insights from the affinity diagram for our system:

- **Patient Communication and Understanding:**
  - It is difficult for some patients to articulate their medical history and problems clearly, leading to potential misunderstandings during appointments.
  - Patients may feel more comfortable communicating through images and uploading relevant medical documents for better context.
- **Technical Challenges and Healthcare Professional Adoption:**
  - Healthcare professionals might encounter resistance in adopting new technology, especially if it disrupts established workflows.
  - Integrating the system with existing electronic health records and diagnostic tools can be technically challenging and time-consuming.
- **Data Security and Compliance:**
  - Ensuring patient data privacy and compliance with regulations such as HIPAA presents a significant challenge, especially when handling sensitive medical information.
  - Healthcare professionals express concerns about data security and the potential for privacy breaches when storing patient data online.
- **Disease Identification and Diagnosis:**
  - Accurate disease identification, especially for rare or less common conditions with overlapping symptoms, poses a significant challenge.
  - Automated medication and dosage suggestions based on identified diseases are considered beneficial for accurate treatment.
- **Patient Engagement and Participation:**
  - Encouraging patients to actively participate in uploading relevant data and health information can be challenging, affecting the overall effectiveness of the system.
  - A user-friendly interface with intuitive navigation is crucial for patients to engage effectively with the system.

3.2 Those we didn't know:

This section includes data that was not anticipated or expected to be provided by the users. It implies that the content within this section holds unexpected insights or details that may not have been initially considered during the information-gathering process:

- The unexpected communication issue patients face in explaining their medical histories and difficulties, which hinders appropriate diagnosis and treatment planning, was revealed during the analysis.
- Healthcare professionals expressed concerns about resistance to new technology, highlighting the need for change management strategies to integrate the appointment system into existing practices.

3.3 Those we confirm that we suspected:

This section details anticipated aspects before survey, which were confirmed after the survey, confirming that our initial expectations were accurate.

- Healthcare professionals may express concerns about data security and privacy in digital appointment systems, confirming the importance of robust security measures.
- The study confirmed the importance of patient engagement and the challenges associated with promoting active participation, highlighting the complexities of patient involvement in healthcare technology solutions.

3.4 Affinity Diagram Link:(Team I):

https://miro.com/app/board/uXjVNfrrTzk=/

Section 4: User Personas

4.1 User Persona 1:

Farhana Lima

Neuro Specialist

Age: 35 years	Country Bangladesh
Sex: Female	Education: Dhaka Medical College
Marital status Married	Occupation: Doctor

BIOGRAPHY

- General Practitioner with 10+ years of experience
- Works in a busy urban clinic
- Surgeon
- Languages: Fluent in English and Spanish

GOALS AND OBJECTIVES

- Improve efficiency in patient data documentation
- Enhance accuracy in disease identification and diagnosis
- Streamline the workflow to spend more time with patients

THOUGHTS ON AUTOMATION

Automated system — Manual

Comfortable — Hard

Helpful — Also ok without it

INTERESTS:

- Participates in medical conferences and workshops on digital health
- Engages in online forums and communities to share knowledge
- Enjoys reading medical literature and staying informed about healthcare advancements

HIS STATEMENT ON CHALLENGES

He states that:

"Its difficult to understand what the patient wants to actually tell us as he communicates in the most lame language.we have to create a healthy environment while investigating so that he could freely discuss with us his problem"

- Limited time during patient appointments
- Increasing paperwork and documentation demands
- Desire to provide personalized care in the midst of administrative tasks

SUGGESTIONS

He wants inforfation on:

- Proper past history, drug history, family history about diabetes, hypertension, bronchial asthma and other disease
- Medicines he takes on daily basis
- His diet

SOCIAL NETWORKS

Use social networks at work

4.2 User Persona 2:

ARNOB CHOWDHURY

MEDICINE SPECIALIST

Age: 40 years	Country Bangladesh
Sex: Male	Education: Mugda Medical College
Marital status: Married	Occupation: Doctor

BIOGRAPHY

- Specialist in Internal Medicine
- Practicing in a suburban healthcare clinic
- **Holds a leadership position in the clinic's medical team**
- Languages: Fluent in English and Bangla

GOALS AND OBJECTIVES

- Improve accuracy and speed in disease identification
- Streamline the patient onboarding process using technology
- Enhance collaboration with specialists for comprehensive care

THOUGHTS ON AUTOMATION

Automated system — Manual

Comfortable — Hard

Helpful — Also ok without it

INTERESTS:

- Participates in medical research projects related to chronic diseases
- Attends conferences on the intersection of technology and healthcare
- Enjoys mentoring medical students and residents

HIS STATEMENT ON CHALLENGES

He states that:

"They don't provide the actual problem,they hides many things like previous history of diseases ,drugs they used to take etc"

"They can't properly say their problems and mainly they also don't bring their previous medical records"

- Balancing the demands of administrative tasks with patient care
- Staying updated on the latest medical research and treatment options
- Ensuring accurate and efficient documentation of patient data

SUGGESTIONS

He wants inforfation on:

- Proper family history about diabetes, hypertension, bronchial asthma and other disease
- Medicines he takes on daily basis
- His diet
- If had any past operations

PATIENT INTERACTION STYLE

- Empathetic and patient-focused approach
- Prioritizes clear communication to ensure patient understanding
- Strives to create a comfortable and trusting environment during appointments

SOCIAL NETWORKS

Use social networks at work

Section 5: Scenario And Storyboard

A scenario is a brief overview of events in a situation, offering a guide for decision-making. A storyboard, on the other hand, uses comic-style frames or dialogues to visually outline scenes, acting as a blueprint for visual storytelling like film or animation.

5.1 Scenario:

Scenario: Dr. Smith, a busy primary care physician, begins her day by reviewing her appointment schedule on the doctor-patient appointment system. She encounters a challenge as she notices overlapping appointments and incomplete patient medical records within the system. Despite these issues, Dr. Smith proceeds with her first appointment, during which she faces difficulty accessing the patient's recent diagnostic test results due to integration issues with the system.

Later in the day, the system prompts Dr. Smith with multiple appointment reminders, which she finds to be disrupting her workflow and causing unnecessary interruptions. Additionally, she struggles to communicate effectively with a patient regarding follow-up care instructions, as the system's current communication capabilities are limited.

As the day progresses, Dr. Smith reflects on the challenges faced within the system, realizing the impact on her ability to provide seamless and efficient care to her patients. She identifies the need for a more integrated, efficient, and user-friendly doctor-patient appointment system to streamline her workflow and enhance the overall patient experience.

5.2 Storyboard: