Tribhuvan University

Institute of Science and Technology

A Report On

"Technical Writing"

Submitted to:

Department of Computer Science and Information Technology

Asian College of Higher Studies

Ekantakuna, Lalitpur

In partial fulfillment of the requirements

For the Bachelors of Science in Computer Science and Information Technology

Submitted by:

Babin Rana (79011057)

August 2025

Under the supervision of:

Ms. Riju Shrestha

ACKNOWLEDGEMENT

I would like to extend my deepest gratitude to **Ms. Riju Shrestha** for her invaluable assistance and thorough review of this report. Her insightful feedback and unwavering support have been instrumental in shaping the final outcome, and I am truly appreciative of her time and expertise.

I also wish to thank my friends and all the individuals who contributed in various ways, whether through encouragement, discussions, or practical help. Your collective efforts have made this work possible, and I am grateful for your kindness and generosity.

With respect,
Babin Rana

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1. Write a brief newspaper article explaining the importance of training for the staff of a company.

The Vital Role of Staff Training in Corporate Success

Sept 5, 2025

By Babin Rana

In today's fast-paced business landscape, companies are increasingly recognizing that their most valuable asset isn't cutting-edge technology or expansive market reach—it's their people. Staff training, often overlooked in budget crunches, emerges as a cornerstone for sustainable growth and competitiveness. Experts agree that investing in employee development isn't just a perk; it's a strategic imperative that drives innovation, efficiency, and loyalty.

One of the primary benefits of training is skill enhancement. As industries evolve with rapid technological advancements, such as AI and automation, workers equipped with up-to-date knowledge can perform tasks more effectively. For instance, a sales team trained in the latest CRM software can close deals faster, boosting overall revenue. Moreover, training reduces workplace errors and accidents, particularly in high-risk sectors like manufacturing or healthcare, leading to cost savings and safer environments.

Beyond operational gains, training fosters employee engagement and retention. When staff feel supported in their professional growth, morale soars, and turnover rates plummet. A recent study highlighted that companies with robust training programs see up to 24% higher profit margins, underscoring the direct link to financial health. It also cultivates a culture of innovation, where employees are empowered to suggest improvements and adapt to market shifts.

In conclusion, skimping on staff training is a shortsighted gamble. Forward-thinking leaders view it as an investment that pays dividends in productivity, satisfaction, and long-term success. As businesses navigate economic uncertainties, prioritizing employee development could be the key to not just surviving but thriving.

2. Write a report on Pandemic affects of Corona Virus (COVID-19) that affected in your locality.

Abstract

The COVID-19 pandemic significantly disrupted life in Imadol, a semi-urban locality in Lalitpur District, Nepal, affecting health systems, economies, and social structures. This report examines these impacts, drawing on secondary sources to highlight challenges at KIST Medical College and Teaching Hospital, a key local facility. It compares Imadol's experience with similar cases in Kathmandu Valley and urban South Asia, such as Mumbai. Objectives include analyzing health and socioeconomic effects, identifying limitations in data, and recommending resilience strategies. Findings reveal strained healthcare, economic losses, and social disruptions, underscoring the need for improved governance and infrastructure.

1. Introduction

1.1 Background

The COVID-19 pandemic, declared by the World Health Organization in March 2020, rapidly spread globally, reaching Nepal with its first case in January 2020. By mid-2021, Nepal faced severe waves, recording over 1 million cases and thousands of deaths, with the Kathmandu Valley emerging as a hotspot due to high population density and urban mobility. Imadol, located in Lalitpur Metropolitan City, exemplifies semi-urban vulnerabilities, relying on institutions like KIST Medical College and Teaching Hospital for healthcare. The area's proximity to Kathmandu amplified transmission risks, while lockdowns from March 2020 disrupted daily life, mirroring national trends of resource strain and socioeconomic fallout.

1.2 Problem Statement

Imadol experienced multifaceted challenges from COVID-19, including healthcare overload, with hospital studies showing high infection rates among workers and elevated disease markers in patients. Economic contractions led to job losses and food insecurity, while social issues like disrupted education and mental health access compounded vulnerabilities. These problems were exacerbated by governance gaps, limited resources,

and the influx of migrants, highlighting the need for localized analysis amid broader national inadequacies.

1.3 Objectives

The primary objectives are to: (1) Assess the health, economic, and social impacts of COVID-19 in Imadol; (2) Review similar cases in other Nepali localities and South Asian urban areas; (3) Evaluate methodologies and limitations in studying these effects; and (4) Provide recommendations for future pandemic preparedness.

1.4 Limitations

This report relies on secondary data, limiting depth due to scarce hyper-local statistics on Imadol. Potential biases in sourced articles, outdated information post-2022, and the absence of primary surveys restrict generalizability. Access to real-time data as of August 2025 is constrained by evolving post-pandemic recovery narratives.

1.5 Significance of Report

This report informs policymakers on localized pandemic effects, aiding in resource allocation and resilience building. By comparing Imadol with similar areas, it highlights transferable lessons, contributing to Nepal's public health discourse and emphasizing the role of secondary research in evidence-based planning.

2. Literature Review

First, a study on local responses in Nepal underscores the role of provincial and local governments in managing the pandemic, particularly in urban hotspots like the Kathmandu Valley (Bagmati Province).Provincial variations showed Bagmati reporting half of the national cases with high fatality rates, driven by coordination failures and migrant influxes from India. Local efforts included setting up isolation beds and health desks, but challenges like overlapping mandates and insufficient legislation hampered effectiveness. Outcomes in areas with strong disaster plans, such as Sudurpashchim Province, had lower fatalities, suggesting that inclusive governance could mitigate urban vulnerabilities similar to Imadol's.

Second, an evidence review of COVID-19 recovery in South Asian urban informal settlements, exemplified by Mumbai, reveals severe socioeconomic and health impacts. In Mumbai's Dharavi, lockdowns led to job losses for informal workers, increased women's burdens, and mental health issues, with inadequate water and sanitation infrastructure heightening transmission. Community responses, such as NGO-led tracing and testing via the 4-Ts model, facilitated recovery, but barriers to vaccination and discrimination against minorities persisted. This case parallels Imadol's urban-rural interface challenges, emphasizing the need for community alliances and government investment in public health.

3. Methodology

This report employs a secondary research methodology, prioritizing data from existing reports, news articles, and academic studies to analyze COVID-19 impacts in Imadol. Sources were gathered via web searches on platforms like PubMed Central and research repositories, focusing on keywords such as "COVID-19 impacts in Nepal" and "urban South Asia case studies." Data synthesis involved thematic analysis of health, economic, and social effects, with cross-referencing for validity. No primary data collection occurred, avoiding ethical and logistical issues, but ensuring reliance on peer-reviewed and recent (up to 2025) publications for relevance. Limitations in source diversity were mitigated by including diverse perspectives from Nepal and South Asia.

4. Discussion and Result

Health impacts in Imadol were pronounced, with KIST Hospital studies showing 41% of infected healthcare workers experiencing back pain and elevated ferritin levels correlating with disease severity. Maternal and neonatal care suffered, with irregular antenatal visits and vertical transmission cases, making delays in surgical services and increased oral health issues. Economically, mirroring national GDP contraction and job losses (e.g., 41% women affected), Imadol saw reduced remittances and food supply disruptions, exacerbating poverty in semi-urban households.

Socially, education and mental health pathways were disrupted, with school closures widening digital divides and increased anxiety among mothers, similar to national trends. Comparing with Kathmandu, Imadol's challenges reflect coordination failures but

benefited from hospital-centric responses.In Mumbai-like settings, community-led initiatives highlight potential for Imadol to leverage local NGOs for recovery.Results indicate higher urban prevalence due to density, with governance improvements key to outcomes.

5. Conclusion and Recommendation

In conclusion, COVID-19 profoundly affected Imadol through health system strain, economic downturns, and social disruptions, with parallels in Kathmandu and South Asian urban areas underscoring systemic vulnerabilities. Enhanced local governance and infrastructure are essential for resilience.

Recommendations include: (1) Strengthen healthcare capacity at facilities like KIST with better equipment and training; (2) Improve inter-governmental coordination via updated legislation; (3) Invest in digital education and mental health services; (4) Promote community-NGO partnerships for equitable recovery; and (5) Conduct ongoing localized studies to monitor long-term effects.

6. References

[1] S. Shrestha, A. Bajracharya, S. Dahal, P. Bhandari, B. Maharjan, and S. Bajracharya, "Back Pain among COVID-19 Positive Health Care Workers in a Tertiary Care Hospital in Nepal: A Descriptive Cross-sectional Study," *JNMA: J. Nepal Med. Assoc.*

[2] S. K. Shah et al., "COVID-19: vaccination, therapeutics and a review of the science and public health," *Ann Med Surg (Lond).*

[3] A. T. Sherpa and T. L. Sherpa, "Covid-19 in Nepal: Governance and its Implication on Public Health Measures," *Nepalese Medical Journal*, vol. 4.

[4] A. T. L. Sherpa and T. L. Sherpa, "Covid-19 in Nepal: Governance and its Implication on Public Health Measures," *Nepalese Medical Journal*, vol. 4. Jun. 2021

[5] "COVID-19 Impacts in Nepal," *Frontiers in Sustainable Food Systems*.

[6] "COVID-19 in Nepal: Governance and Its Implications on Public Health Measures," *ResearchGate*.

[7] "COVID-19 and Its Effect on Nepal: The Persistent Drumbeat of ...," *World Trade Organization*. [Online].

[8] "Irregular Antenatal Care Attendance among Pregnant Women during COVID-19 Pandemic: A Descriptive Cross-sectional Study," *CABI Digital Library*.

3.Prepare summary of a new book or film you have recently read or enjoyed.

A Chilling Dive into "*The Wailing*"

As an intense movie watcher with a penchant for exploring global cinema, I recently revisited and thoroughly enjoyed `*The Wailing*` (original title: Goksung), a 2016 South Korean horror-thriller directed by Na Hong-jin. While it's not brand new, its timeless tension and cultural depth make it feel fresh every time—especially in today's wave of supernatural stories. If you're into atmospheric horror that blends mystery, folklore, and psychological dread, this one's a must-watch. Here's a spoiler-free summary to pique your interest:

The film unfolds in the remote rural village of Goksung, South Korea, where life is upended by a string of gruesome murders and inexplicable illnesses plaguing the residents. The story centers on Jong-goo, a bumbling yet earnest police officer played by Kwak Do-won, who becomes personally invested when his young daughter, Hyo-jin, exhibits alarming symptoms of the mysterious affliction. Suspicion falls on a reclusive Japanese stranger (Jun Kunimura) who recently moved to the outskirts of town, sparking rumors of demonic possession and ancient curses.

As Jong-goo delves deeper, he enlists the help of a charismatic shaman (Hwang Jung-min) for an intense exorcism ritual, blurring the lines between superstition, reality, and hysteria. The narrative masterfully weaves elements of Korean shamanism, Christian symbolism, and zombie-like horror, building to a crescendo of paranoia and moral ambiguity that keeps viewers guessing. Clocking in at over two and a half hours, it's a slow-burn epic

that rewards patience with stunning cinematography, visceral scares, and profound themes on faith, evil, and human vulnerability.

What I loved most was how it subverts expectations—it's not just horror; it's a deep cultural commentary that lingers long after the credits roll. If you haven't seen it, stream it on platforms like Netflix (availability may vary by region) and brace yourself for a wild ride!

4. Apply for the post of Software engineering mentioning your skills and ability for Abstract Engineering Pvt. Ltd.

Babin Rana
Address: Imadol, Lalitpur
Email Address: babin.rana20@gmail.com
Phone Number: +977-9800000000
August 21, 2025

Hiring Manager
Abstract Engineering Pvt. Limited
Company Address: Gwarko, Lalitpur

Dear Hiring Manager,

I am writing to apply for the position of Software Engineer at Abstract Engineering Private Limited, as advertised or through general opportunities in your innovative software development firm based in Gwarko, Lalitpur. As fast thinker, an technological enthusiast, I bring a unique blend of advanced computational abilities, problem-solving prowess, and a passion for creating efficient, scalable solutions that align with your company's focus on IT and engineering services.

My core skills include proficiency in multiple programming languages such as Python, Java, and C++, with extensive experience in software development environments. I excel in machine learning and artificial intelligence frameworks like PyTorch and TensorFlow, enabling me to design intelligent systems that optimize processes and drive innovation. For instance, I can analyze complex data sets using libraries like NumPy, Pandas, and

SciPy to derive actionable insights, which could be invaluable for your engineering solutions. Additionally, my capabilities extend to code execution, debugging, and optimization, ensuring robust and error-free applications.

What sets me apart is my ability to handle multifaceted tasks, from algorithmic problem-solving using tools like SymPy for mathematical computations to simulating real-world scenarios in game development with Pygame or chess libraries. I thrive in dynamic environments, adapting quickly to new challenges, and my "stateful" reasoning allows me to maintain context across interactions, much like a REPL environment for continuous improvement.

I am eager to contribute to Abstract Engineering Pvt. Ltd. by enhancing your software projects, reducing development time, and fostering technological advancements. I would welcome the opportunity to discuss how my skills can support your team's goals.

Thank you for considering my application. I look forward to the possibility of joining your esteemed organization.

Sincerely,

Babin Rana

5.You are the student of bachelors level students and you want to apply for a scholarship for the further study and prepare cover letter and CV for that purpose.

Cover Letter

Babin Rana

Imadol, Lalitpur, Nepal

Aryal Chowk, 44705

Email: babin.rana20@gmail.com

Phone Number: +977-9800000000

Date: August 21, 2025

Dr. Harry Potter

Program Name: Global Excellence Scholarship

Kent State University

Kent OH, 44242

Dear Scholarship Committee,

I am writing to apply for the Global Excellence Scholarship to support my pursuit of a Master's degree in Computer Science at Kent State University. As a recent Bachelor's graduate in Computer Science from Tribhuvan University, I am passionate about advancing my knowledge in artificial intelligence and machine learning to contribute to innovative solutions in technology. This scholarship would enable me to overcome financial barriers and focus fully on my academic and research goals.

During my undergraduate studies, I maintained a GPA of 3.2 and actively participated in projects that honed my technical skills. For instance, I led a team in developing a machine learning model for predictive analytics in healthcare, which was presented at the university's annual tech symposium. This experience not only strengthened my proficiency in programming languages like Python and Java but also taught me the importance of collaborative problem-solving. Additionally, I volunteered as a tutor for underprivileged students in coding basics, fostering my commitment to community service and education accessibility.

What motivates me to pursue further studies is my aspiration to research ethical AI applications, particularly in developing regions where technology can bridge socioeconomic gaps. However, as a first-generation college student from a modest background, funding my graduate education poses a significant challenge. Receiving this scholarship would alleviate these financial constraints, allowing me to dedicate myself to rigorous coursework, research, and extracurricular contributions without the burden of loans or part-time work.

I am eager to bring my enthusiasm, academic excellence, and innovative mindset to Kent State University, and I believe this scholarship aligns perfectly with my goals and your mission to support promising students in STEM fields. Enclosed is my curriculum vitae for your review. I would welcome the opportunity to discuss my application further.

Thank you for considering my application. I look forward to the possibility of contributing to and benefiting from this prestigious program.

Sincerely,

Babin Rana

Curriculum Vitae

Babin Rana

Student

Address: Lalitpur, Nepal 44705

Phone : 9812706663

E-mail : babin.rana2060@gmail.com

To secure the Global Excellence Scholarship for pursuing a Master's degree in Computer Science at Kent State University, focusing on artificial intelligence and machine learning to advance my expertise and contribute to innovative technological solutions that address socioeconomic challenges in developing regions.

Education

2023-01-Current **Bachelor of Science: Bsc.CSIT**
Asian College of Higher Studies -Ekantakuna, Lalitpur
-Member of ACHS Club

School
Aishwarya Vidya Niketan -Hasanpur-5, Dhangadhi, Kailali
-Elected to secretary for SOSW(Student Organization for Social Welfare)

High School
Capital College And Research Center -Narephat, Koteshwor
-Elected to Advisor for CCRC IT Club

Relevant Experience

- Project Lead, Machine Learning Development:

  -Lead a team of 4 in developing a machine learning model for predictive analytics in healthcare using Python and SciKit Learn.

- Volunteer Tutor:

  -Taught introductory coding basics (Python and Java) to 3+ underprivileged high school students.

  -Organized coding workshops that increased participant engagement and basic programming proficiency.

- Intern, Software Development: Nepal Tech Solutions

  -Assisted in building web applications using Java and Spring Framework.

  -Debugged code and optimized database queries, reducing application response time by 15%.

Skills

- **Technical Skills:** Proficient in Python, Java, SQL; Familiar with Machine Learning frameworks (sci kit-learn, TensorFlow); Data Analysis (NumPy, Pandas); Web Development (HTML, CSS, JavaScript)
- **Soft Skills:** Strong problem-solving, teamwork, communication, leadership, adaptability
- **Languages:** English (Fluent), Nepali (Native), Hindi (Intermediate)
- **Certifications:** [e.g., Google IT Support Professional Certificate (2024), Coursera Machine Learning by Andrew Ng (2023)]

6.Prepare a formal speech to deliver in the upcoming farewell program of your college as an Alumni.

Respected Chief Guest, Honorable Principal, Esteemed Faculty Members, Dedicated Administrative Staff, Proud Parents and my wonderful juniors — good afternoon.

It is a true honor to stand before you today as an alumnus of Asian College of Higher Studies, Ekantakuna, Lalitpur, affiliated with Tribhuvan University. Congratulations to the graduating class — you made it through lectures, assignments, group projects, and the mysterious disappearance of classroom pens. Today we celebrate not only degrees, but also the small victories: surviving exam week, finding a quiet corner in the library (or at least pretending the library was quiet), and managing to keep our coffee cups upright during long study sessions.

A few memories from this campus are etched in all of us: the first nervous day when every corridor seemed longer than it actually is, the excited chatter after a good lecture, the friendly debates that sometimes turned into impromptu philosophy clubs, and yes — the Wi-Fi that chose the most dramatic moments to take a break. These moments made our time here real, human, and unforgettable.

To the graduating class, let me share three short pieces of advice — practical, sincere, and with just a pinch of alumni wisdom (the kind that comes free with experience).

First — stay curious. Curiosity kept many of us awake in the best possible way: reading beyond the syllabus, trying new ideas, and asking the questions professors pretended not to hear at 8 a.m. Your degree is a ticket to many doors, but curiosity is what makes you

step through them. Keep learning — and yes, Google is useful, but a good book and a thoughtful mentor are still unbeatable.

Second — build relationships. Here at Asian College of Higher Studies we learned from teachers who cared more than their office hours suggested, classmates who became teammates and friends, and staff who held the place together — often with far more patience than any of us deserve. Nurture those relationships. Send the occasional message to a mentor, return the favour to a junior, and for the love of networking, respond to your emails (preferably before three years later).

Third — choose integrity. In a world of quick wins and shortcuts, reputation becomes your quiet capital. Work honestly, admit mistakes, and be the person others trust to do the right thing. Success tastes better — and lasts longer — when it's earned honestly. Also: return library books on time. That one counts.

We must also thank those who made this journey possible. To our faculty — thank you for knowledge, guidance, and for answering the same question three different ways until it finally stuck. To the administrative and support staff — your work is the foundation of everything we do here. To the families — thank you for the patience, encouragement, and the occasional care package that smelled suspiciously of home. And to our juniors: keep the college energy alive (and please keep the campus clean).

As alumni, we're not disappearing after the ceremony like a magician's assistant. We remain part of this community. We will come back as mentors, guests, and sometimes as the person who brings snacks to revitalise a club meeting. I invite my fellow alumni to stay connected with the college, to lend their time and experience, and to open doors for the next generation — because someone did the same for us.

Before I close, a short wish: may you face challenges with courage, treat failures as lessons, and celebrate successes with humility. Embrace detours — they often have the best stories. If life asks you for effort, give your best. If life offers you luck, accept it graciously — and credit it to late nights and a supportive network.

I'll end with a little borrowed wisdom from Nelson Mandela: "Education is the most powerful weapon which you can use to change the world." Wield that weapon wisely — and perhaps also use it to change your bank balance for the better.

Thank you, Asian College of Higher Studies — Ekantakuna, Lalitpur — and Tribhuvan University. Congratulations once again to the graduating class. May your future be bright, purposeful, and occasionally amusing.

Thank you.

7.Write a recommendation report using the appropriate format.

November 22 2020

Hiring Manager

Tech Company

Sankhamul, Lalitpur

Dear Hiring Manager,

It is my absolute pleasure to recommend Rajan Bohara for the position of Sales Assistant at Tech Company.

As Rajan's manager at Leapfrog Technology for over 3 years from 2017 to 2020, I can safely say that you will be in good hands with Rajan at your side. Throughout her time working with us, Rajan has been an invaluable asset to the team, and his infectious dedication, dependability, and confidence has brought a noticeable change to the community here at Leapfrog.

Among Rajan's many professional accomplishments, his keen attention to detail and levelheadedness have contributed greatly to the sales department. When a new campaign was going through the preliminary stages of being introduced, Rajan was quick to realize several issues that might arise. His calmness in addressing and solving the situation before it was officially rolled out saved the company a future loss of Rupees five lakhs.

Throughout his time with our company, Rajan has been a pleasure to work with. His approach-ability and excellent customer service have been an incredible addition to our team, and I am confident that he will perform exceptionally well at Tech Company.

Should you wish to discuss Rajan's application further, please do not hesitate to contact me by phone (+977-9800000000) or by email (babin.rana20@gmail.com)

Best,

Babin Rana

Head of Sales

Leapfrog Technology

8.Write a research proposal to carry out experimental research on any topics of your interest area.

Evaluating the Effectiveness of a Socially Assistive Robot in Post-Stroke Rehabilitation

1. Abstract

This experimental randomized controlled trial (RCT) will evaluate whether integrating a socially assistive robot (SAR) into standard physiotherapy improves functional recovery, therapy adherence, and patient engagement in adults undergoing post-stroke rehabilitation. 126 participants (63 per arm) will be recruited and randomized to receive either standard physiotherapy (control) or standard physiotherapy augmented with SAR-led encouragement, task demonstration, and real-time feedback (intervention). Primary outcome: change in functional mobility measured by the Timed Up and Go (TUG) test at 8 weeks. Secondary outcomes: Functional Independence Measure (FIM), therapy adherence (session attendance and exercise completion), patient engagement and satisfaction (validated questionnaires), and length of hospital stay. Outcomes will be measured at baseline, 4 weeks, 8 weeks (end of intervention), and 3-month follow-up. Data will be analyzed using intention-to-treat principles with mixed-effects models for repeated measures. Ethical approval, informed consent, and a safety monitoring plan will

be in place. The study aims to produce evidence on the practical utility of SARs in rehabilitation and inform future scale-up in Nepali healthcare settings.

2. Background & Rationale

Robotic technologies are increasingly explored in healthcare for assistance, monitoring, and social support. Socially assistive robots (SARs) combine physical presence or virtual embodiment with motivational behaviors (encouragement, feedback) and have shown promise in improving engagement in therapy. Post-stroke rehabilitation success depends heavily on repetitive practice, motivation, and adherence — domains where SARs may offer measurable benefits. However, rigorous experimental evidence from randomized trials in low-resource settings (such as Nepal) remains limited. This study tests the hypothesis that SAR-augmented rehabilitation produces superior functional outcomes and engagement compared with standard care.

3. Research Questions & Hypotheses

Primary research question: Does adding a socially assistive robot to standard physiotherapy improve functional mobility (TUG) at 8 weeks compared to standard physiotherapy alone?

Primary hypothesis (H1): Participants in the SAR group will show a greater improvement in TUG time at 8 weeks than control participants.

Secondary hypotheses (H2–H4): SAR participants will show (H2) higher FIM score improvements, (H3) greater therapy adherence, and (H4) higher patient engagement and satisfaction.

4. Objectives

Primary objective: Quantify the effect of SAR augmentation on improvement in TUG time after 8 weeks of rehabilitation.

Secondary objectives:

- Measure changes in Functional Independence Measure (FIM).
- Compare therapy adherence (attendance, home exercise completion).
- Assess patient engagement/satisfaction.

- Evaluate safety, feasibility, and staff acceptance of the SAR in a hospital rehabilitation setting.

5. Study Design

• **Type:** Single-blind (outcome assessor blinded) randomized controlled trial.

• **Allocation:** 1:1 randomization into SAR-augmented physiotherapy (intervention) or standard physiotherapy (control).

• **Setting:** Physiotherapy / rehabilitation unit at a collaborating hospital or rehabilitation center affiliated with Asian College of Higher Studies, Ekantakuna, Lalitpur.

• **Duration per participant:** 8 weeks active intervention + 3-month follow-up.

6. Intervention & Control

Intervention (SAR-augmented physiotherapy):

- Standard physiotherapy program delivered by trained therapists (60 min/day, 5 days/week) PLUS a SAR present during therapy sessions.
- SAR functions: lead guided repetition demonstrations, provide verbal encouragement, display visual feedback of repetitions/targets, prompt safe rest breaks, and log repetition counts. The robot will not perform physical assistance but will act as an engaging coaching partner.
- Therapists will integrate SAR prompts into exercises; SAR will be configurable to patient needs (difficulty levels, language preference — Nepali/English).
- Identical standard physiotherapy program without the SAR. Therapists will offer usual verbal encouragement

Fidelity: All therapists will follow a standardized therapy protocol. SAR behaviour scripts will be documented and consistent across sessions.

7. Outcome Measures & Instruments

Primary Outcome:

- Timed Up and Go (TUG) — change in seconds from baseline to 8 weeks.

Secondary outcomes:

- Functional Independence Measure (FIM) — change from baseline to 8 weeks and 3 months.
- Therapy adherence: percentage of scheduled sessions attended and percentage of prescribed home exercises completed (patient log + therapist check).
- Patient engagement and satisfaction: validated questionnaires (e.g., Patient Activation Measure or a short validated engagement scale; a brief satisfaction survey adapted and translated into Nepali).
- Length of hospital/rehab stay (if inpatient).
- Adverse events and safety incidents.

  Assessment schedule**:** baseline, 4 weeks, 8 weeks (end of intervention), 3 months follow-up.

8. Statistical Analysis

- Primary analysis by intention-to-treat (all randomized participants).
- Descriptive statistics for baseline characteristics.
- Mixed-effects linear models for repeated measures to compare TUG and FIM change over time between groups (fixed effects: group, time, group×time; random intercepts for subjects). Adjust for relevant covariates if baseline imbalance found (age, baseline severity).
- Therapy adherence compared using chi-square or t-tests as appropriate; engagement and satisfaction scores compared using t-tests or nonparametric tests if distributions are non-normal.
- Sensitivity analyses will include per-protocol analysis and handling of missing data via multiple imputation if missingness >5%**.**

9. Sample Size Calculation

Using a medium effect size ($d = 0.5$), $\alpha = 0.05$, power = 0.80, two groups: required sample ≈ **63 participants per group**, total **126**. This allows some buffer for dropouts; we will plan to recruit up to 140 participants to allow ≈10% attrition.

10. Feasibility and Risk Management

- Pilot phase (first 10 participants) to test SAR integration, therapist training, and safety procedures.
- Training sessions for therapists and technical staff on robot operation and basic troubleshooting.
- Technical support arrangement for robot maintenance.

11. Timeline (12 months)

- Months 1–2: Protocol finalization, ethics approval, staff training, SAR configuration, pilot preparation.
- Months 3–4: Pilot (n=10) and adjustments.
- Months 5–10: Recruitment and active intervention (rolling admission).
- Month 11: 3-month follow-ups complete for earliest recruits.
- Month 12: Data analysis, report writing, dissemination planning.

12. Budget (indicative)

- SAR hardware (purchase or lease for 12 months): estimate NPR X (specify after local quotes).
- Software customization and maintenance: NPR Y.
- Personnel: project coordinator, research assistant(s), therapist training stipend.
- Consumables and assessment materials.
- Participant travel/compensation (if applicable).
- Ethics application and administrative costs.

(*A detailed line-item budget will be prepared once local procurement quotes and institutional overhead rates are available.*)

13. Expected Outcomes & Impact

- Demonstration whether SAR augmentation leads to clinically meaningful improvements in mobility and independence.
- Evidence on effect sizes, feasibility, and acceptability in a Nepali rehabilitation setting to inform larger trials or scale-up.
- If positive, the model could be adapted for other rehabilitation domains (orthopaedics, geriatric care) and inform policy on assistive technologies in Nepal.

14. Dissemination Plan

- Present findings at national conferences, workshops with local healthcare providers, and submit manuscript(s) to peer-reviewed journals.
- Share practical guidance and training materials with partner institutions.

15. Appendices (to include with formal submission)

- Therapist protocol and session templates.
- SAR behaviour scripts and safety checks.
- Consent forms (English & Nepali).
- Data collection instruments and validated questionnaire copies.
- Detailed budget and procurement quotes.

9. Write down Email to your superior for the request of 3 days leave.

Date: 15 August, 2025

To: Simon12@gmail.com

From: babin.rana20@gmail.com

Subject: Request for 3 Days Medical Leave (Medical Appointment & Bed Rest)

Respected Sir,

I hope you are well. I am writing to request three days of medical leave from 16 Aug to 18 Aug inclusive (3 working days). I am currently unwell and need to see a doctor and take bed rest as advised.

I will complete any urgent tasks today and have briefed/handed over the following items to Rajan to ensure continuity while I am away:

- Task A: Data Cleaning
- Task B: Use LangGraph

If needed, I will be reachable by phone at +977-9800000000 for urgent matters. I will also provide a medical certificate on my return, if required.

Thank you for your understanding and support. I kindly request your approval for these three days of leave.

Sincerely,

Babin Rana

Data Scientist

XYZ Compnay

babin.rana20@gmail.com | +977-9800000000

10. You are the manager of the Production Department of the XYZ Company. In the past three months the productivity of the employees has remained stagnant, and upcoming season requires increased production of goods. Write a memorandum to the Manager of Human Resources recommending a bonus plan to encourage employees, and suggest other ways increasing productivity.

Memorandum

To: Manager — Human Resources, XYZ Company
From: Babin Rana, Manager — Production Department, XYZ Company
Date: August 21, 2025
Subject: Short-Term Bonus Plan & Key Measures to Boost Production (3-Month Pilot)

Purpose

Productivity has been stagnant for three months and we must increase output for the upcoming peak season. I recommend a short, focused bonus pilot plus complementary measures to raise productivity quickly.

Proposed Bonus Plan (summary)

- **Duration:** 3 months (pilot).
- **Eligibility:** Production staff with >= 80% shift attendance.

- **Metrics (weighted):** Output 60%, Quality 25%, Attendance 15%. Quality threshold must be met before any bonus is paid.
- **Payout bands:** <95% = no bonus; 95–104% = partial; 105–114% = higher; >=115% = full.
- **Split:** 70% individual, 30% team.
- **Funding:** Cap pool at 3%–5% of direct wages (HR/Finance to confirm). Paid monthly with payroll.

Other Quick Actions to Boost Productivity

- **Short upskilling sessions** (efficient methods, quality checks, safety).
- **Cross-training** for flexible staffing during peaks.
- **Pre-season machine maintenance** to reduce downtime.
- **Daily 10-minute huddles** and a visible KPI board at each line.
- **Recognition:** "Team of the Week" with small rewards.
- **Employee suggestion rewards** for implemented ideas that improve output/quality.

Monitoring & Risk Controls

- Baseline metrics for one month pre-pilot; monthly review.
- Safeguards: quality threshold, safety compliance, transparent rules to avoid gaming.

Requested HR Actions

1. Confirm funding model and payroll feasibility.
2. Approve 3-month pilot and help draft employee communication.
3. Coordinate training and reward logistics with Production and Finance.

I am available to discuss and finalize targets and launch details this week.

Respectfully,

Babin Rana

Manager-Production Department

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