	Marwadi University
	Faculty of Technology
	Department of Information and Communication Technology
Subject: Capstone Project (01CT1718)	**Innovation and Originality**
	Date: 22-09-2025 **Enrolment No: 92200133003, 92420133001**

Innovation and Originality

1. Introduction

The Infomate chatbot is an innovative web-based solution developed to address the challenges of accessing ICT Department information. Unlike conventional departmental websites, notice boards, or static PDFs, Infomate provides an AI-powered conversational interface that makes information retrieval seamless, personalized, and interactive. Its originality lies in applying Gemini API's document-based intelligence to an academic departmental context, ensuring that students, new admissions, faculty, and visitors receive real-time, accurate responses from a single knowledge source.

2. Novel Approach

The novelty of Infomate lies in:

1. **PDF-Centric Knowledge Base:**
   o Unlike typical chatbots trained on large generic datasets, Infomate relies on department-specific PDFs as its sole knowledge base.
   o This ensures responses are accurate, reliable, and department-verified, preventing misinformation.
   o Updates are effortless: staff only need to replace the PDF to refresh chatbot knowledge.
2. **Gemini API Integration for Higher Education Use:**
   o While AI chatbots are common in customer service, using Gemini's advanced NLP for academic departmental information is a novel application.
   o The system enables students to ask natural questions such as *"Which electives are available in Semester VI?"* or *"What are the latest placement packages?"*—something static websites or PDFs cannot provide interactively.
3. **Lightweight, No-Database Architecture:**
   o Many chatbot systems rely on complex databases. Infomate bypasses this by directly parsing PDFs via Gemini API, making the architecture cost-effective, lightweight, and low-maintenance.
4. **Scalability for Multi-Department Use:**
   o Although initially designed for ICT, Infomate's architecture allows easy replication across departments by simply uploading their respective PDFs.
   o This provides a novel, unified solution for universities aiming for digital transformation without heavy infrastructure costs.

3. Comparison with Existing Solutions

Existing Solution	Limitations	How Infomate is Different
Department Websites	Static, difficult to navigate, not conversational.	Infomate provides an interactive chatbot interface for quick, natural queries.
Printed Brochures/Notice Boards	Outdated quickly, not scalable.	Infomate is always updated through the latest departmental PDF.
Generic Chatbots	Trained on external data, risk of irrelevant responses.	Infomate is strictly PDF-driven, ensuring domain-specific accuracy.
University ERPs/Portals	Often complex, requiring logins and training.	Infomate is lightweight, no-login, user-friendly for guests and parents.

Evidence of differentiation:

- IEEE studies highlight that most educational chatbots are FAQ-based and limited in scope (IEEE Xplore, 2023). Infomate's PDF-driven AI approach introduces higher accuracy and maintainability.
- Gartner's 2022 report on AI in education notes that ease of updating knowledge sources is a major challenge; Infomate directly addresses this with PDF replacement.

4. Contribution to the ICT Field
4.1 Contribution to Stakeholders

- Students: Quick access to course details, curriculum, faculty, and placements improves decision-making and reduces dependence on staff.
- New Admissions: Simplifies understanding of department offerings, labs, and achievements—enhancing admission experience.
- Faculty/Staff: Reduces repetitive workload (answering FAQs), allowing more focus on academics and research.
- Parents/Guests: Provides transparent, accurate information about the department in an accessible way.

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4.2 Contribution to ICT as a Domain

- AI in Higher Education: Demonstrates a novel academic use case for document-based AI chatbots, bridging the gap between static institutional data and dynamic student needs.
- Lightweight ICT Infrastructure: Shows how AI solutions can be built without heavy databases, lowering adoption barriers for institutions with limited resources.
- Scalable Digital Transformation: Provides a blueprint for university-wide chatbot adoption—departments can independently maintain their knowledge without additional development.
- Future Research Directions: Opens opportunities for extending chatbots with multi-language support, voice-based queries, and analytics on student interactions to improve departmental services.

5. Conclusion

Infomate demonstrates innovation and originality by combining AI-driven natural language processing with a PDF-based departmental knowledge system. It outperforms traditional solutions (websites, ERPs, brochures) by offering an interactive, easily maintainable, and scalable platform. Beyond serving as a departmental chatbot, Infomate contributes to the broader ICT field by showcasing how AI can transform higher education information systems in a cost-effective and practical way.

This originality ensures that Infomate is not only impactful for the ICT Department today but also a model for future ICT-driven digital transformation in education.