

Placement Empowerment Program
Cloud Computing and DevOps Centre

HACK - A - CLOUD 3.0

Team Name	MARVELS
Project Title	SCHOLARSHIP MANAGEMENT SYSTEM
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PROBLEM STATEMENT

SCHOLARSHIP MANAGEMENT SYSTEM

PROBLEM

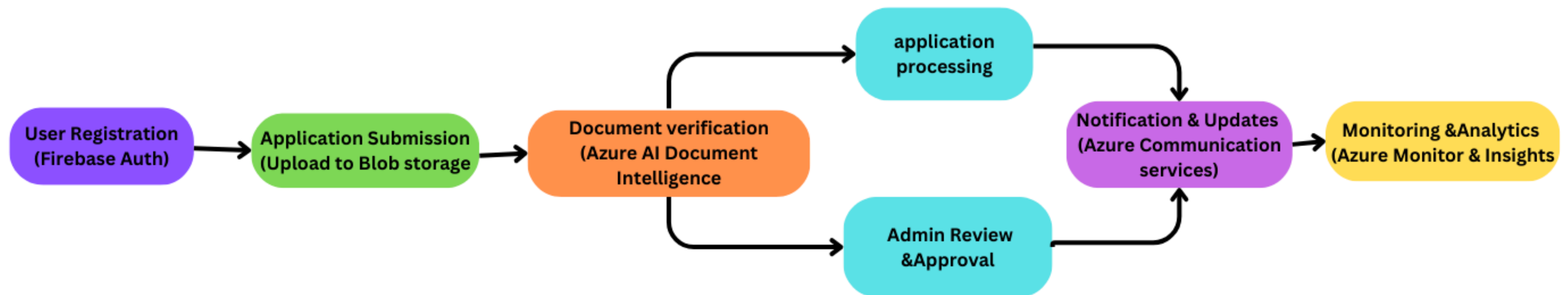
The current scholarship application process is primarily manual and paper-based, leading to inefficiencies and delays in document verification, application tracking, and approval processes.

- Lack of transparency
- Slow processing times
- Difficulty in document verification

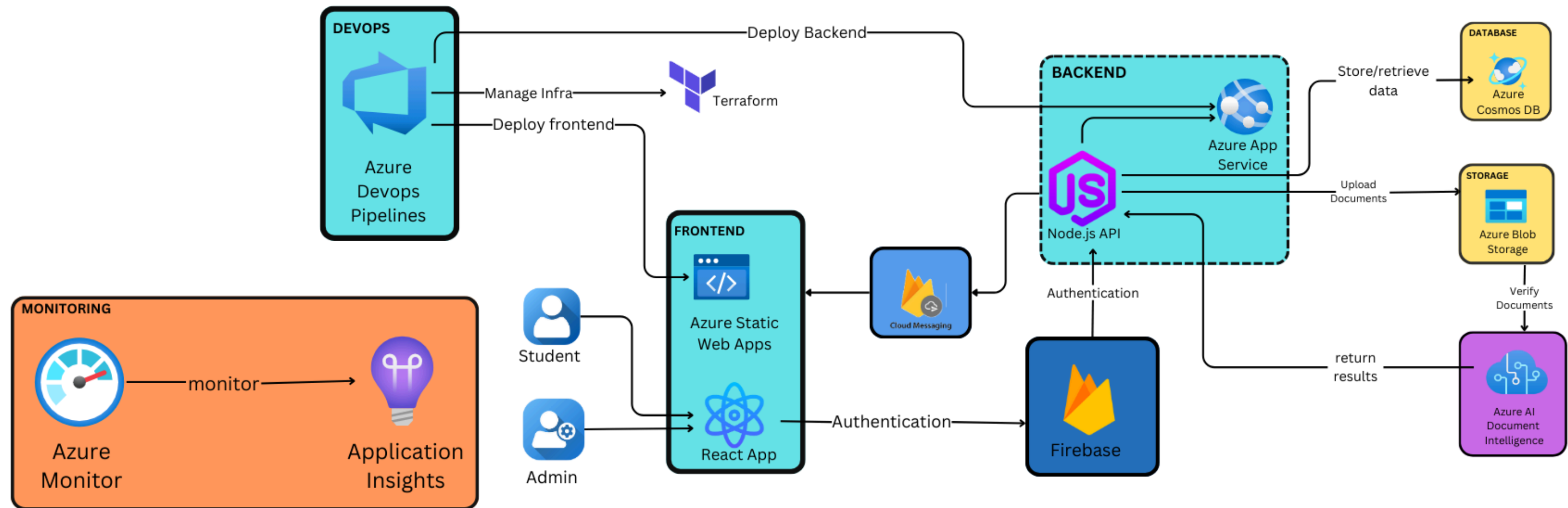
GOAL

To develop a **smart, paperless, and automated scholarship** management system that speeds up the scholarship application process, provides real-time status updates, and ensures data security.

FLOW OF THE PROJECT



ARCHITECTURE DIAGRAM



USE CASES & TECH STACK

UseCases	TechStack
Frontend	React.js (Azure Static Web Apps)
Backend	Node.js + Express.js (Azure App Service)
Database	Azure Cosmos DB (MongoDB API)
Storage	Azure Blob Storage
AI Verification	Azure AI Document Intelligence
Authentication	Firebase
DevOps & CI/CD	Azure DevOps Pipelines
Infrastructure Automation	Terraform (Infrastructure as Code)
Monitoring	Azure Monitor, Application Insights

SWOT

STRENGTHS:

- ✓ **Automated & Paperless Process** → Reduces manual work, making scholarship distribution faster.
- ✓ **Azure Cloud Integration** → Ensures scalability, security, and reliability.
- ✓ **AI-Powered Verification** → Increases accuracy and prevents fraudulent applications.
- ✓ **Strong DevOps Practices** → CI/CD pipelines, Infrastructure as Code (Terraform), and automated monitoring.
- ✓ **Role-Based Access Control (RBAC)** → Secure access for students and admins with Firebase.
- ✓ **Hybrid Deployment Strategy** → Uses Docker, and Azure App Services efficiently.

WEAKNESS:

- ⚠ **Complex Tech Stack** → Requires deep knowledge of MERN, Azure AI, and DevOps.
- ⚠ **Initial Setup Time** → Configuring Azure AI, DevOps Pipelines can take time.
- ⚠ **Dependency on Azure Services** → The system is tightly integrated with Azure, limiting multi-cloud flexibility.
- ⚠ **User Training Needed** → Students and admins might need training on portal usage & AI verification.

OPPORTUNITIES

- 📈 **Scalability for Other Government Schemes** → Can expand beyond to other scholarship programs.
- 📈 **Machine Learning for Fraud Detection** → AI can improve over time, detecting fake documents more efficiently.
- 📈 **Multi-Platform Expansion** → Future mobile app version for wider accessibility.
- 📈 **Integration with Financial Systems** → Direct bank payment processing for approved scholarships.

THREATS:

- ⚠ **Security & Data Privacy Risks** → Sensitive student data requires strong encryption & compliance.
- ⚠ **Government API Restrictions** → Potential policy changes in , Azure AI, or Aadhaar APIs.
- ⚠ **Internet Connectivity Issues** → Students from rural areas may face accessibility challenges.
- ⚠ **Competition from Other Solutions** → Other scholarship platforms might offer similar features.

FUTURE ENHANCEMENTS

1. **Terraform** will automate infrastructure on Azure, ensuring scalability, security, and seamless DevOps integration.
2. **AI Scholarship Finder** – An AI system that suggests the best scholarships based on student details.
3. **Automatic Fund Transfer** – Smart contracts to send scholarship money instantly without delays.
4. **Voice-Based Applications** – Allow students to apply using voice commands instead of typing.
5. **The mobile app** will enhance accessibility with real-time updates, AI-powered assistance, and secure transactions using Azure services.

CONCLUSION

The **Scholarship Management System** is a **secure, AI-powered**, and **cloud-integrated** platform built using the **MERN stack**. It leverages **Azure services** and **AI-driven** features to streamline the entire scholarship application, verification, and disbursement process. The system automates workflows to ensure efficient processing, enhances security through **fraud detection alerts**, and provides **personalized recommendations** to applicants. With **automated deployment**, **real-time processing**, and **scalable architecture**, delivers a reliable and intelligent solution for managing scholarship programs effectively.



**THANK
YOU**

