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## **InfraGenie**

Automating the process of generating a deploy ready  
Infrastructure as Code (IaC) using AI

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## ABSTRACT

Managing complex infrastructure provisioning using Infrastructure as Code (IaC) is challenging, as manual configuration remains error-prone and time-consuming. Existing IaC generation solutions are often too specialized, limiting accessibility for users who require quick and precise configurations based on high-level requirements. This project, InfraGenie, leverages the capabilities of Large Language Models (LLMs) to automatically generate IaC configurations from natural language requirements, providing a streamlined solution that reduces reliance on manual coding and accelerates infrastructure setup.

The project implements a multi-agent system architecture that utilizes Azure OpenAI's GPT models to interpret high-level user requirements and generate corresponding Terraform configurations for Azure infrastructure. The system incorporates specialized agents for requirement analysis, IaC generation, validation, and cost estimation, working together to ensure the generated infrastructure code is both accurate and optimized.

Testing of the system with various real-world infrastructure scenarios demonstrated its capability to generate valid Terraform configurations for different use cases, from basic web applications to complex, highly-available systems. The results highlight the system's ability to interpret requirements and generate appropriate infrastructure code, while also providing cost estimates and maintaining security best practices. This approach significantly reduces the time and expertise needed for infrastructure provisioning while maintaining high standards of reliability and security.

### Subject Descriptors:

- Information systems -> Data management systems -> Database management system engines -> Infrastructure automation

**Keywords:** Infrastructure as Code, Large Language Models, IaC generation, IaC automation, Multi-agent systems, Azure, Terraform