LLM-based AI Assistants for Infrastructure as Code and Policy as Code

Is your degree almost in sight? Are you looking for a challenging internship in the field of software development/data engineering? Then we might be a good match! At Blenddata, we are looking for a graduation intern who can start around July 2024.

About your thesis

In your thesis, you will investigate the best way to integrate LLM-based AI assistants within an organization's Infrastructure as Code (IaC) and Policy as Code (PaC) practices. If you are successful in finding a possible solution to this complex problem, you will get the opportunity to implement it on a suitable project!

Why this subject

Blenddata aims to be at the forefront of technology. With your research, you can help us further and better understand how to use LLM-based AI assistants in the realm of IaC and PaC. Your research and proposed solution will help us facilitate our customers with IaC and PaC related questions and implementations.

What are IaC and PaC?

Infrastructure as Code (IaC) is a method to manage and provision computer data centers through machine-readable definition files, rather than physical hardware configuration or interactive configuration tools. Policy as Code (PaC) is the practice of writing code in a high-level language to manage and enforce policies across an organization's infrastructure.

How does that come together?

The integration of LLM-based AI assistants in IaC and PaC involves several promising research directions:

- **Multi-agent Systems for IaC and PaC Tasks**: Inspired by the works on multi-agent systems (MAS), the concept can be extended to IaC and PaC. MAS can be leveraged to handle complex tasks in infrastructure management, where collaboration between various agents (network engineers, security experts, compliance officers) is essential. These scenarios can be modeled using MAS, with some agents being LLMs and others traditional agents. Research can focus on identifying roles, designing agents, establishing communication protocols, and assessing the impact of different parameters on task achievement.
- **Task-Specific Assistants**: Focusing on specific tasks within IaC and PaC, such as infrastructure provisioning, configuration management, policy compliance verification, and security

assessment. The challenge is to ensure that the generated scripts and policies are of high quality and maintainable, avoiding technical debt.

- **Robustness of AI Assistants in IaC and PaC**: Investigating the robustness and reliability of LLM-based assistants in generating IaC and PaC scripts. This includes examining the accuracy and security of scripts for configuring cloud infrastructure or enforcing security policies.
- **Detection and Tuning of Misconfigurations**: Using LLMs to detect misconfigurations in IaC scripts and policies and providing recommendations for tuning them. Research can explore how LLMs can extract best practices from user manuals and apply them to detect and correct misconfigurations automatically.
- **Policy-Driven Infrastructure Design**: Utilizing domain-driven design principles to develop microservice architectures that are policy-compliant from the outset, with LLMs aiding in the design and enforcement of policies throughout the infrastructure lifecycle.

Who are we looking for?

You:

- Are seeking a graduate internship starting in June, July, August 2024;
- Are pursuing a degree in the field of Data Science, Computer Science, or similar;
- Live in the Eindhoven, Den Bosch area;
- Are enthusiastic, eager to learn, and ambitious;
- Enjoy working together in a team.

What to expect from us?

- A compensation of €500,- per month based on a full-time commitment;
- A friendly environment to develop yourself;
- You will become part of an enthusiastic team who are eager to help you develop further;
- The opportunity to join Blenddata upon successful completion of your thesis;
- Daily provided lunch with the team at the office;
- An inspiring environment with our office in the centre of Eindhoven;
- Monthly team events and weekly Friday afternoon drinks.

Are you interested? What are you waiting for!

We would love to get in touch with you! Apply by using the apply button below, or send us your resume with some brief information about yourself. We will contact you after this.

Any questions? We're happy to help you!

Please feel free to contact us:

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