Contribution ID: **67** Type: **Talk (15min + 5min)**

A Tale of Two Clusters: HPC Infrastructure for the Humanities and Applied Sciences

Wednesday 26 February 2025 14:20 (20 minutes)

This presentation explores experimental platform and software engineering approaches for providing high-performance computing infrastructure to interdisciplinary research projects in the humanities and the applied sciences. Two research projects are presented that demonstrate very different use cases, both in terms of scale and functional requirements.

"#Vortanz" was a project running from 2021 to 2024 that aimed to introduce machine learning into university-level dance education by establishing a processing pipeline integrated with a digital annotation tool embedded in the dance education curriculum at DSHS Cologne, HZT Berlin, and HfMdK Frankfurt.

"KITeGG", started in 2021 and ongoing until late 2025, is a joint project of five German universities exploring the integration of AI in design teaching. It provides open and interactive access to GPU resources to the project partners while developing dedicated learning software integrated with the cluster architecture.

While the former project's cluster hardware is sourced from up-cycled old university equipment, consumer hardware and modified mining-rig cases, the latter uses five NVIDIA HGX nodes with eight GPUs each and provides additional storage and CPU resources. Both use very similar software setups running Kubernetes. This allows for an interesting case study comparing two different approaches to bare-metal hardware with cloud deployment and critically examining the decisions made when providing HPC resources in rather atypical project setups.

Using this juxtaposition, the presentation aims to highlight the political and ethical dimensions of these decisions that warrant critical examination. It is a rejection of "cloud-sourcing" in the context of publicly funded projects at higher education institutions. Furthermore, a reflection on the engineering culture within the institution as well as broader tropes and paradigms that influence and inform decisions in university-based RSE and speculation on alternative ways of approaching and exploring technological trends and mythologies.

I want to participate in the youngRSE prize

Primary author: KOCH, Anton (Hochschule Mainz)

Presenter: KOCH, Anton (Hochschule Mainz)

Session Classification: Research Software Engineering in HPC

Track Classification: Research Software: high-performance computing (HPC)