Project no. 6524105

ATLAS
Artificial Intelligence Theoretical Foundations for Advanced Spatio-Temporal Modelling of Data and Processes

WP5: Integrated platform
Deliverables D5.4.

Computation management infrastructure

Program for Development of Projects in the field of Artificial Intelligence
https://ai.ipb.ac.rs/

Report prepared by:

Dušan Vudragović

Ivan Radosavljević

The report was reviewed internally by:

Anderja Stojić

Đorđe Obradović

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Summary

This document covers aspects of managing computational infrastructure available for research activities within the frame of the Project as well as for further utilization of the achieved results . The computational infrastructure comprises hardware resources, communication infrastructure and software infrastructure aimed at managing users and computation process itself.

1. Computation management infrastructure

1.1. Focus

This document focuses on two aspects of computational management when conducting experiments. The first aspect is the management of users and their access rights, and the second is the control of the computing process.

1.2. Available computational infrastructure

Two computer infrastructures are used to support research within the Project frame, which are available online to users.

- PARADOX cluster aimed primarily for conduct the ML experiments, installed at the Institute of Physics.
- A private grid of personal computers aimed for test purposes installed at the Singidunum University.

1.3. IPB PARADOX cluster computation management

The first computation management infrastructure provided by the PARADOX cluster is installed at the Institute of Physics with a capacity of more than 1000 processing units and 50TB of storage space. The mode of use for participants of the ATLAS project is the same as for other PARADOX cluster members. It is regulated by the following documents.

1. Terms of use: https://www.scl.rs/PARADOX_User_Guide/policies/terms-of-use.html

2. Acceptable use policy:

https://www.scl.rs/PARADOX_User_Guide/policies/acceptable-use-policy.html

3. Privacy policy: https://www.scl.rs/PARADOX_User_Guide/policies/privacy-policy.html

User administration is performed by the competent department of the Institute of Physics according to the procedure applied at the Institute of Physics. Manual management of the computation process is supported through the Experiment manager service of the ATLAS platform, while resource allocation is managed by the resource management system (Torque/Slurm) of the PARADOX cluster. There is also a 15-minute CPU time limit for each process on the login nodes, which allows all processes using more than 15 minutes to be terminated without notification.

1.4. Singidunum private grid computation management

The second infrastructure installed at Singidunum University, Center Novi Sad is a private grid of 14 personal computers, including two GeForce NVIDIA graphic cards, two servers and 12 workstations.

The private grid of Singidunum University is intended primarily for use within the ATLAS project, but it is also intended to be used within teaching and other research. All authorized users have the right to use it. The management policy is that users of ATLAS project services have priority in use. Infrastructure management includes managing the identities and access rights of services users. It is technically implemented through the Keycloak open source application for managing identities and access rights, which enables fine-grained allocation of roles and access rights within the project as a closed business process. The technical availability of the infrastructure is the responsibility of the Computer Center of Singidunum University. User management is performed by a person in charge (administrator) at the level of an individual project, and the coordination of user management tasks at the level of the complete infrastructure is performed by the administrator of the Computer Center. As for managing the computation process, manual management of the computation process is supported through the Experiment manager service of the ATLAS platform, while the processing of large amounts of data is supported through the open source software Apache Spark.