

## Automate All the Things: CI/CD for the Bold and the Brave

*Wednesday 26 March 2025 14:00 (1 hour)*

This lecture provides a practical, in-depth look at modern CI/CD (Continuous Integration and Continuous Deployment) best practices within GitLab and GitHub environments. CI/CD is essential for efficient software delivery and quality assurance, particularly in scientific computing where reliable code performance and scalability are crucial. In this session, participants will explore fundamental and advanced strategies for implementing robust CI/CD pipelines, tailored for both small projects and large-scale systems.

### **The lecture will cover:**

- Core CI/CD principles that enhance software quality, collaboration, and deployment.
- Pipeline configurations within GitLab and GitHub, highlighting their similarities and unique features.
- Automation tools and integrations that complement CI/CD workflows, including Docker, Kubernetes, and other popular tools that facilitate testing, code analysis, and deployment automation.
- Security and best practices for managing CI/CD processes in complex project environments.

The session will be followed by a **one-hour hands-on exercise** focused on designing and building a GitLab CI/CD pipeline. Participants will gain practical experience with pipeline setup, configuring stages, automating tests, and deploying workflows, ensuring they are equipped with the skills to apply CI/CD practices in their own projects.

This lecture aims to demystify CI/CD for developers and data scientists in scientific computing, equipping them with actionable knowledge and skills to streamline code quality, deployment, and project integration.

### **Number of lecture hours**

1

### **Number of exercise hours**

1

### **Attended school**

CSC 2023 (Tartu)

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**Track Classification:** Computer Science, Engineering, IoT, Accelerator Controls