LASER DRIVER STATE ESTIMATION ORIENTED DATA GOVERNANCE

Jun Luo, Li Li, Zhigao Ni, Xiaowei Zhou, Institute of Computer Application, China Academy of Engineering Physics, Mianyang City, China



Background and Motivation

- As an important part of the business process of a laser shooting experiment, laser driver state estimation is to evaluate physical experiment results and driver performances.
- Due to problems such as inconsistent data formats, absences of data. abnormal data and complex data relationships, data pre-processing consumes a lot of time, and application systems involving experimental data processing and analysis reveal common problems, such as slow development progress, repeated processing of experimental data, low computational efficiency, and uncertain analysis results.
- Data governance aims to improve the efficiency and guality of data analysis.



Laser Driver State Estimation

• By utilizing experimental data, we evaluate experiment results and driver performances.





Data Governance



· Data specification: addressing the issue of inconsistent data formats.

- Data cleaning: mainly refers to the integrity and anomaly detection of the original measurement data.
- Data exchange: a data governance service is established.
- Data integration: utilizing the data replication method, constructs the data warehouse of driver state evaluation.

Algorithm Integration

- Data governance involves various data processing algorithms.
- Current: algorithms → DLLs.
- Future: artificial intelligence algorithms \rightarrow services.

Fig 2. Technical architecture of the laser driver state estimation system.



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Laser Driver State Estimation

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	Func	ional architecture of the laser driver state estimation system	
Experimental Data	Data Visualization	Main Configurations Data Source Data Set Dashboard Graphics	
		Supplementary Configurations Template Module	
	Data Governance	Main FunctionsData SpecificationData ExtractionData CleaningScientific ComputationData Integration	
		Supplementary Functions Algorithm Abnormal Data Identification	

Fig 1. Functional architecture of the laser driver state estimation system.



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