

The background of the slide features a wide-angle photograph of a rugged mountain range under a cloudy sky. In the foreground, there's a dark, silhouetted area that looks like a forest or a shadowed valley floor.

Large-scale production in complex equipment manufacturing

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Scope of the Project

Background

or reasons for doing this project

- **importance of scheduling** - for manufacture industry and companies
- **gap between theory and practice** -
- **complexity increased** - with different constrains and larger scale

Scope of the Project

Aim

Develop an algorithm to efficiently solve large-scale production scheduling problems with many machines and parts which needs to consider the priority of the parts.

Objectives

- Conduct a literature review on production scheduling methods, particularly for large problems

Identify limitations of existing solution approaches for large instances

- Develop a mathematical model to represent the scheduling problem
- Find an algorithm to find near-optimal solutions
- Implement the algorithm and test on benchmark instances
- Analyze the algorithm's performance and scalability

Literature Review

Problems facing

- complexity increased & gap between theory and practice (Same as mentioned in the background)
- lack of research focus on large-scale scheduling problems
- limitation of widely used method like metaheuristics (Only partly optimal solutions can be found, but global optimal solutions cannot be found)



Literature Review

Methods

- Heuristics
 - Heuristics
 - Metaheuristic
 - Combined Metaheuristics
- Machine learning
- Constraint programming

Project Work Plan

1. Further research and Literature Review
(November 2023 - January 2024)

2. Development of Mathematical Model
(November 2023 - February 2024)

3. Algorithm Development (January 2024 - March 2024)

4. Testing and Analysis (March 2024 - April 2024)

5. Documentation of the algorithm and results
(February 2024 - April 2024)

	November 2023	December 2023	January 2024	February 2024	March 2024	April 2024
Further research and literature review						
Development of mathematical Model						
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END

thanks for listening