Lecture XIII - Recap and Discussion

Applied Optimization with Julia

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Introduction

Congratulations!

You’ve finished the course and learned how mathematical models can be used to solve real-world problems! 🎉

Topics Covered

Topic	Original Problem[1]
Solar Panel Transport	Classic Transport Problem
Beer Production	Capacitated Lot Sizing Problem
Split Delivery Minimization	Multiple-Quadratic-Knapsack Problem
Library Routing	Capacitated Vehicle Routing Problem
Police Service Districting	P-Median Problem
Safety Planning Hajj Pilgrimage	Scheduling Problem
Arena Seating	2-D Knapsack Problem
Passenger Flow Control	Network Flow Problem

1. Original problem structure we **used/extended/exploited** to address the topic.

Any questions regarding the past lectures?

What have we learned?

- How to **identify and abstract** real-world problems
- How to **start programming** in Julia
- How to **model and solve** optimization problems
- How to **question** model assumptions

Tip

That’s a lot and a great foundation for a seminar or a master thesis!

How to continue?

How to continue after the lecture?

- The best way is to **keep programming and modeling**
- We are offering **seminars and master thesis**
- Try to find a way to **apply programming in your work**
- There are **many interesting topics** to explore!

> **Tip**
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> Getting your supervisors on board is the hardest part! But note, that it is often worth it and the tools we have used are all free and open-source.

Concrete Next Steps

- Join online communities on Julia and Optimization
- Contribute to open-source projects if you can
- Follow key researchers and practitioners
- Start a small personal project using the tools learned

> **Tip**
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> If you want to start a small personal project, try to find a problem that you are interested in and that you can solve using the tools we have learned.

Start Pair Programming with AI

- First, try to **be confident with the basics** of a language
- Always try to **understand the code you use**
- If you want to try **AI pair programming**, use Cursor as IDE

> **Tip**
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> Cursor is a great IDE for AI pair programming, although it is not completely free. It has Claude and ChatGPT integrated and makes work much easier when compared to copying and pasting code.

Final Words

That's it for the Lecture Series!

- I hope you **enjoyed** the lecture and found it **helpful**
- On Friday, we will have a **discussion session**
- You can earn the **last half-bonus point** for the exam
- I wish you **all the best for your studies and your career!**

> **Note**
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> If you have any questions on optimization in the future, feel free to contact me!

Questions?


The End