# Lecture 3 - Recap & Copilot Strategy

## Management Science

Dr. Tobias Vlćek

# Working with AI Assistants

## Context Engineering

Write clear descriptions of what you want:

```
# Create subplot with 2 rows, 1 column
# Top: line plot of revenue over time
# Bottom: bar chart of profit by quarter
```

. . .

Tip

- Be specific in your instructions
- Review generated code
- Test the code as it might use old syntax
- Iterate for better results
- Force To-Tos so everything is completed

## Watch Out For

- Deprecated methods: `plt.subplot()` vs `plt.subplots()`
- Missing imports: Always verify imports are included
- Wrong assumptions: Might guess your data structure incorrectly
- Over-complexity: Very often suggests unnecessary features

. . .

Remember: Generative AI is stochastic!

# What We Learned

## Foundation Complete!

Why This Matters?

. . .

You now have a good foundation for data-driven decisions!

. . .

Before this introduction:

- Excel crashes with large datasets
- Manual calculations take hours
- Limited to basic charts
- No way to simulate scenarios

# What's Next

## Preview: 4 - Monte Carlo

Next Session: Modeling Business Uncertainty

. . .

We'll combine everything you've learned:

- NumPy for random number generation
- Visualization for showing probability distributions

. . .

Real applications:

- Predict project completion times
- Estimate financial risks
- Make decisions under uncertainty

## The End

That's it for today! Make sure you:

- ⍰ Have completed all the notebooks
- ⍰ Check whether you could follow so far
- ⍰ Set up Copilot

. . .

> Tip
>
> Every line of code you write makes you a better programmer. Every concept you understand makes you a better decision-maker. Keep practicing and keep learning!

# Literature

## Interesting Literature on Algorithms


- Christian, B., & Griffiths, T. (2016). Algorithms to live by: the computer science of human decisions. First international edition. New York, Henry Holt and Company.[1]

- Ferguson, T.S. (1989) 'Who solved the secretary problem?', Statistical Science, 4(3). doi:10.1214/ss/1177012493.

### Books on Programming

- Downey, A. B. (2024). Think Python: How to think like a computer scientist (Third edition). O'Reilly. Here
- Elter, S. (2021). Schrödinger programmiert Python: Das etwas andere Fachbuch (1. Auflage). Rheinwerk Verlag.

...

> **i** Note
>
> Think Python is a great book to start with. It's available online for free. Schrödinger Programmiert Python is a great alternative for German students, as it is a very playful introduction to programming with lots of examples.

### More Literature

For more interesting literature, take a look at the literature list of this course.

## Bibliography

[1] A great inspiration to learn more about Algorithms!