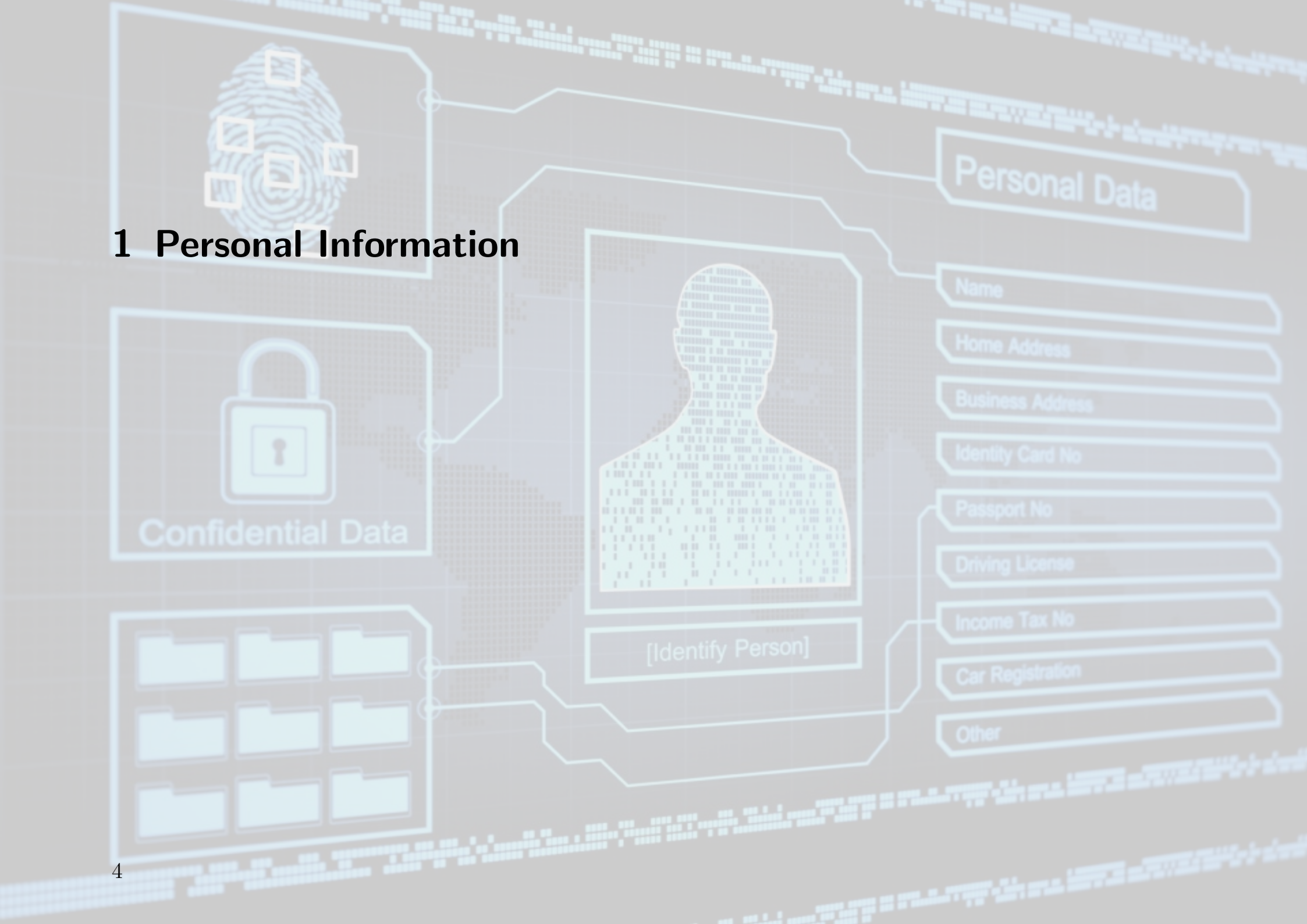
RWTH AACHEN UNIVERSITY

Amir Ali Aali

M. Sc. Data Science Student at RWTH Aachen
Working Student at SAP

Contents

1 Personal Information



Field	Details
First Name	Amir Ali
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LinkedIn	linkedin.com/in/amirali-aali-09240312b
GitHub	github.com/amiraliaali

Short Description

I hold a Bachelor's degree in Software Engineering from the University of Duisburg-Essen, graduating with a final grade of **1.7**.
Currently, I am in my second semester of a Master's program in **Data Science** at RWTH Aachen University, with an expected graduation in October 2026.
I have substantial industry experience, having worked for a year and a half at **Aptiv**, an automotive technology company. Since May 2024, I have been employed at **SAP** in the Data De-Identification division.
I am eager to further develop my expertise in autonomous vehicles and am actively seeking new opportunities in this field, with a particular focus on computer vision and reinforcement learning positions.

2 Education

Title	From	Till	Institute	Location	Final Grade
M.Sc. Data Science	04.2024	Expected 2026	RWTH Aachen University	Aachen, Germany	N/A
B.Sc. Software Engineering	10.2020	03.2024	University of Duisburg-Essen	Duisburg, Germany	1.7
Preparatory College	10.2019	08.2020	FH Aachen	Geilenkirchen, Germany	2.3

3 Technical Working Experience

3.1 Overview

Position	From	Till	Duration	Hours per Week	Employer	Location
Working student for Data De-Identification	05.2024	05.2025	1 yr	20	SAP	Düsseldorf
Bachelor Thesis	01.2024	04.2024	3 mos	40	Aptiv	Wuppertal
Working student for Computer Vision/AI/ML	11.2022	01.2024	1 yr 3 mos	20		

3.1.1 Working student for Data De-Identification (SAP)

Summary

Skills Leveraged

`Python, Pandas, NumPy, Databricks, Big Data Processing, Unit Testing, Git/Github, Agile`

3.1.2 Working student for Computer Vision/AI/ML (Aptiv)

Summary

Collaborated with a specialized team focused on high beam assistant for the Gen. 7 systems to create a smart system for cars to automatically control their high beams at night.

During my time, I had the opportunity to contribute to several tasks, including:

- Contributing to the creation of a high beam assist classifier, which effectively discerns between car headlights and taillights.
- Conducting comprehensive experiments to fine-tune the hyperparameters of machine learning algorithms, ensuring optimal performance.
- Profiling the runtime performance and development of a profiling tool tailored for an embedded processor.
- Implementing Python bindings to seamlessly integrate C++ objects.
- Developing robust unit and regression tests to validate the functionality and reliability of the solutions.
- Designing and implementing a user-friendly GUI component, enabling live overlay of results and interactive adjustments to hyperparameters for enhanced usability and efficacy.

Skills Leveraged

`Python, C++, PyTorch, OpenCV, NumPy, Bazel, Git/Gerrit, MISRA, Agile, Unit Testing`

4 Skills and Languages

4.1 Skills

Skill	Proficiency	Skill	Proficiency
Python		Git/GitHub	
C++		PyBinds	
Reinforcement Learning		Bazel	
Computer Vision		Misra	
DL with PyTorch		Agile	
OpenCV		Unit Testing	
NumPy		SQL	
Pandas		Docker	
Matplotlib		Matlab	
ML with Scikit-Learn		HTML	

4.2 Languages

Language	Proficiency
English	
German	
Persian	

5 Awards, Certificates and Volunteering

5.1 Awards

Award	Issued on	Institute	Sponsor
Germany's National Scholarship (Deutschlandstipendium)	10.2024	RWTH Aachen University	Porsche

5.2 Certificates

Certificate	Issued on	Link to certificate	Issued by
Reinforcement Learning beginner to master - AI in Python	07.2024	link to certificate	Udemy
Python for Data Science and Machine Learning Bootcamp	08.2022	link to certificate	
Beginning C++ Programming - From Beginner to beyond	05.2022	link to certificate	

5.3 Volunteering

Position	From	Till	Institute	Task Description
Head of International Students Engineering (ISE) Student Council	03.2022	09.2022	University of Duisburg-Essen	Oversaw the planning and execution of several significant events. These included: • an orientation event for incoming freshmen during the Summer Semester of 2022 • a major election event open to all ISE students • a study night to support students as they prepared for their exams

6 Recommendations

Recommendation given by	Given on	Recommendation Text
Markus Bühren (Manager Computer Vision at Aptiv)	05.2024	I highly recommend Amir for any role in the field of artificial intelligence and machine learning. Throughout his time as a student at APTIV, he consistently demonstrated a deep understanding of AI and ML concepts, coupled with strong problem-solving and programming skills in Python and C++. He is adept at applying theoretical knowledge to real-world scenarios. His dedication to continuous learning and passion for the field make him an invaluable asset to any team. I have no doubt that he will excel in any role he takes on.

* Recommendation can be found on my LinkedIn homepage.

7 Python Projects

```
>>> print("Hello World")
Hello World
```

7.1 Street Lamp Area Detection

7.1.1 Overview

Task Description

As part of my Bachelor's thesis, titled Street Lamp Area Detection through Classical Vision and Convolutional Neural Networks, which was in cooperation with Aptiv, I developed a component that processed pre-recorded footage to assess lighting conditions in real-time. For each moment of the footage, the system determined whether there was sufficient lighting. This functionality allows for the automatic activation of a car's high beams in low-light conditions and deactivation when adequate surrounding light is detected.

Skills Leveraged

- `Python`
- `Image Processing using OpenCV`
- `Deep Learning (CNNs) with PyTorch`
- `NumPy, Pandas, Matplotlib`
- `Git/Github`

Link to Github repository

Unfortunately, I am unable to share the code per Aptiv's request.

7.1.2 Results

Click the thumbnail to watch a result video on YouTube:

Figure 7.1: Click to watch the YouTube video

7.2 Traffic Signal Control

7.2.1 Overview

Task Description

For this task, I took the initiative to work on a Reinforcement Learning project to deepen my understanding of the subject, which I had studied in a university lecture. In this project, we trained an agent to optimize the control of traffic signals at a junction. Instead of deploying a specific pre-defined algorithm, we trained the agent using a set of rewards. The algorithm used for this task was Deep SARSA.

Skills Leveraged

- `Python`
- `Reinforcement Learning`
- `Deep Learning with PyTorch`
- `NumPy, Pandas, Matplotlib`
- `Git/Github`

Link to Github repository

https://github.com/amiraliaali/traffic_signal_control

7.2.2 Results

Click the thumbnail to watch the result video on YouTube:

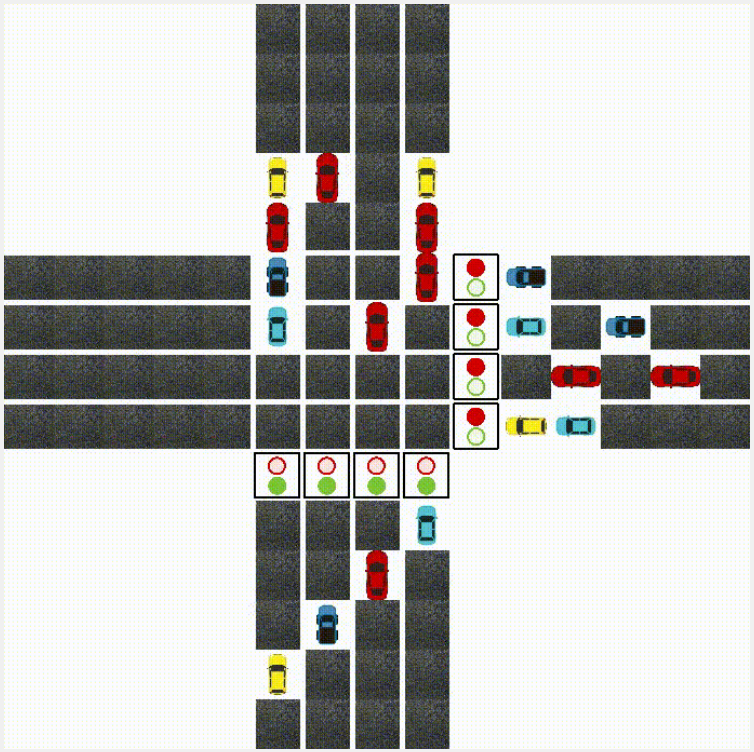


Figure 7.2: Click to watch the YouTube video

7.3 Language Detector

7.3.1 Overview

Task Description

As part of this task, we worked with a dataset containing a large collection of sentences from various languages, each one labeled according to its language. After preprocessing the data, we trained a Multinomial Naive Bayes model using these labeled sentences. The goal was to enable the model to learn language patterns effectively. Once trained, the model could accurately identify the language of any arbitrary sentence provided to it, making it a useful tool for automatic language detection in diverse text inputs.

Skills Leveraged

- `Python`
- `Machine Learning with SciKit-Learn`
- `NumPy, Pandas`
- `Git/Github`

Link to Github repository

https://github.com/amiraliaali/language_detector

7.3.2 Results

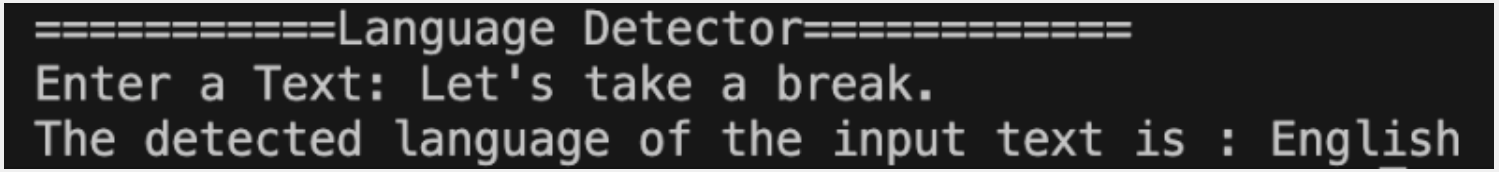


Figure 7.3: English

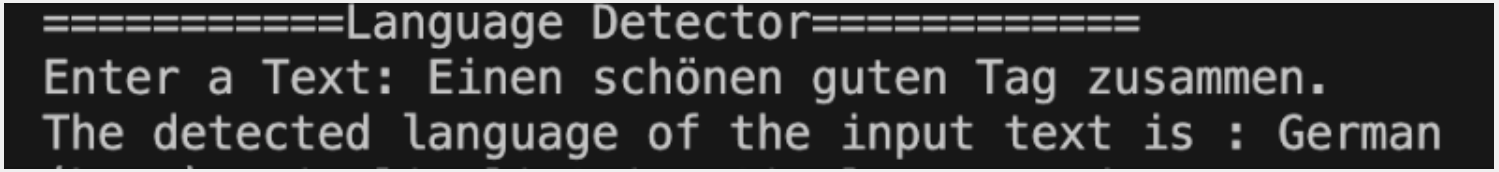
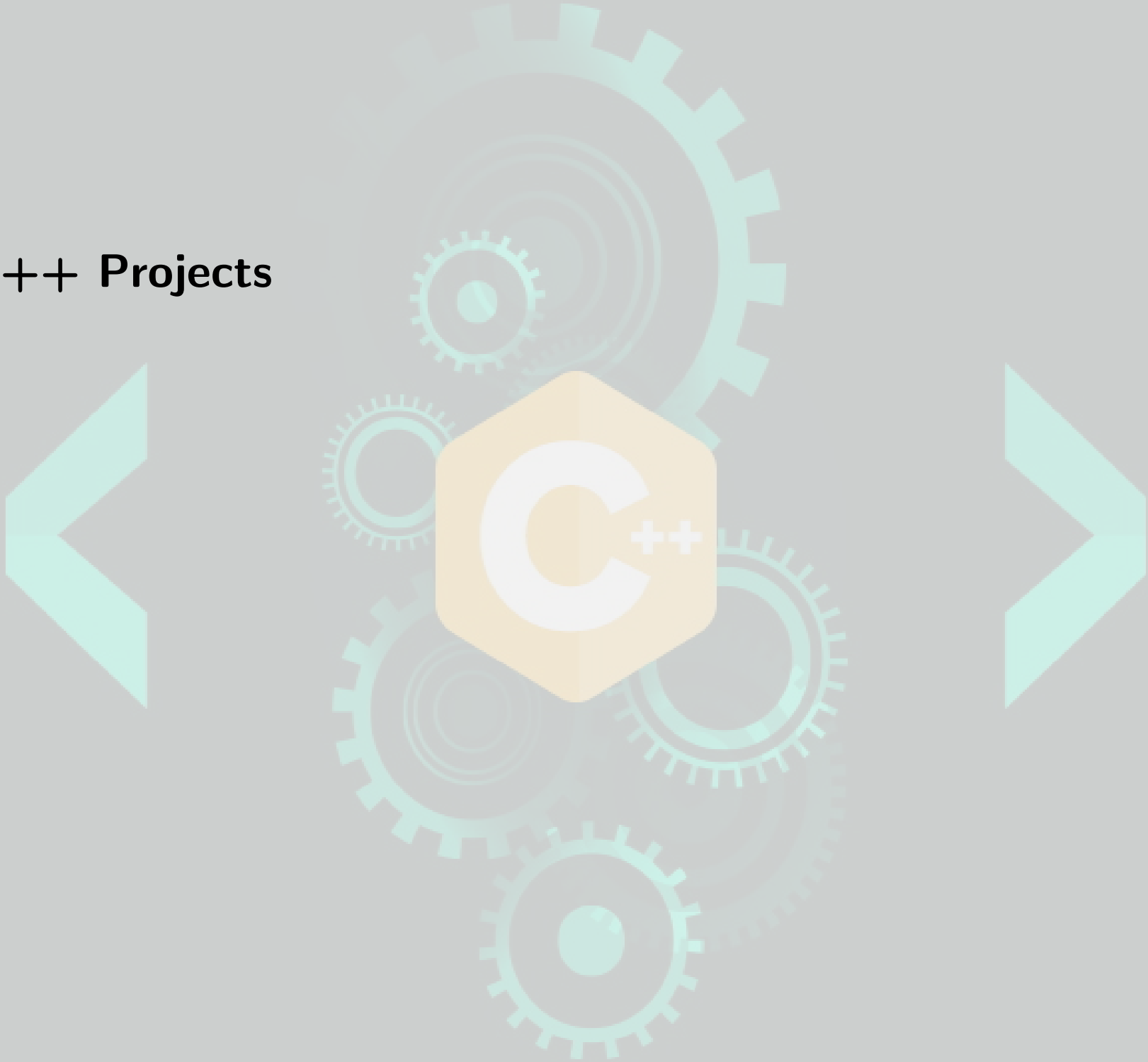


Figure 7.4: German

8 C++ Projects



8.1 Login System

8.1.1 Overview

Task Description

This task highlights my proficiency in object-oriented programming with C++ and utilizing the Bazel build system.

The program is designed to manage a dataset of cars, allowing operations such as renting or returning a car, as well as adding new cars to the dataset or removing existing ones.

Skills Leveraged

- `C++`
- `Object Oriented programming`
- `Bazel`
- `Git/Github`

Link to Github repository

https://github.com/amiraliaali/car_rental_system

8.1.2 Results

Click the thumbnail to watch the result video on YouTube:

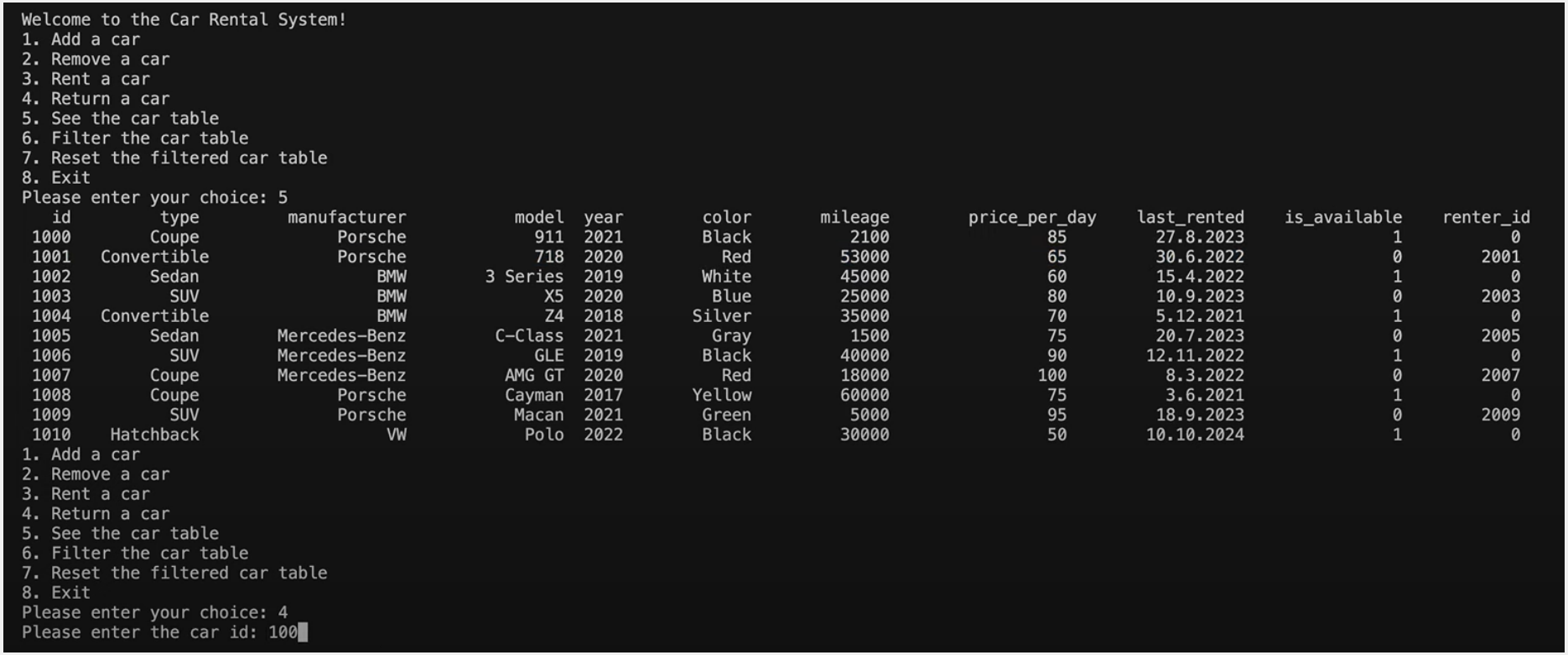


Figure 8.1: Click to watch the YouTube video