

23.10.23

Machine Learning With TensorFlow

GENERAL INTRODUCTION

- **Personal Introduction**
- **Organizational Matters**
- **Introductory Discussion**
- **Coursera Registration**
- **Course Projects**
- **Current ML Libraries**

PERSONAL INTRODUCTION

CHAT

sose21 @steffen

C_Machine Learning With TensorFlow

1 Tuesday, 4-6 p.m.: Zoom; Course Handbook

Find channel

CHANNELS

- 00 - Announcements
- 01 - Questions
- C_Advanced Machine Lear...
- C_Deep Learning from Scr...
- C_Einführung in Data Scie...
- C_Machine Learning für di...
- C_Machine Learning With ...
- Kursleitungen

Beginning of C_Machine Learning With TensorFlow

This is the start of the C_Machine Learning With TensorFlow channel, created by Steffen Brandt on March 02, 2021. Any member can join and read this channel.

Invite others to this channel Set a Header

March 25

Pinned

Steffen Brandt 23:10

Welcome to the course "Machine Learning With TensorFlow"!

In this course we will try to provide you with hands-on knowledge about how to train machine learning models with TensorFlow.

An important part when working in the field of machine learning is networking and working together in a team. An important goal of the course is therefore that you get to know each other and work in a team on a project. I would therefore like to ask you to introduce yourself quickly here in the channel already. Maybe

- Please, ask questions to us in the chat

COURSE HANDBOOK



opencampus.sh Machine Learning Program

Course Kick-Off

How do I choose a course?

FAQ

COURSES

Einführung in Data Science und maschinelles Lernen >

Machine Learning with TensorFlow v

Requirements for a Certificate of Achievement or ECTS

Preparation

Week 1 - General Introduction

Week 2 - Introduction to TensorFlow, Part I

Week 3 - Introduction to

Week 1 - General Introduction

This week you will...

- get a basic introduction to neural nets in order to get a first intuition in the underlying mechanisms
- get a first idea about possible projects you might want to work on throughout the course

Learning Resources



220419_Introduction to Neural Nets.pdf 4MB
PDF

- Video Neural Networks Explained (12 minutes)
- Introductory course on Python from Kaggle
- Tutorial on Colab on Medium

ORGANIZATIONAL MATTERS

- **Complete your profile in the Mattermost chat with your full name and a photo.**
- **Please write us if you will not go on with the course!**

ATTENDANCE REGISTRATION

In Presence:

- **Scan the QR-Code if you participate in presence**

Online:

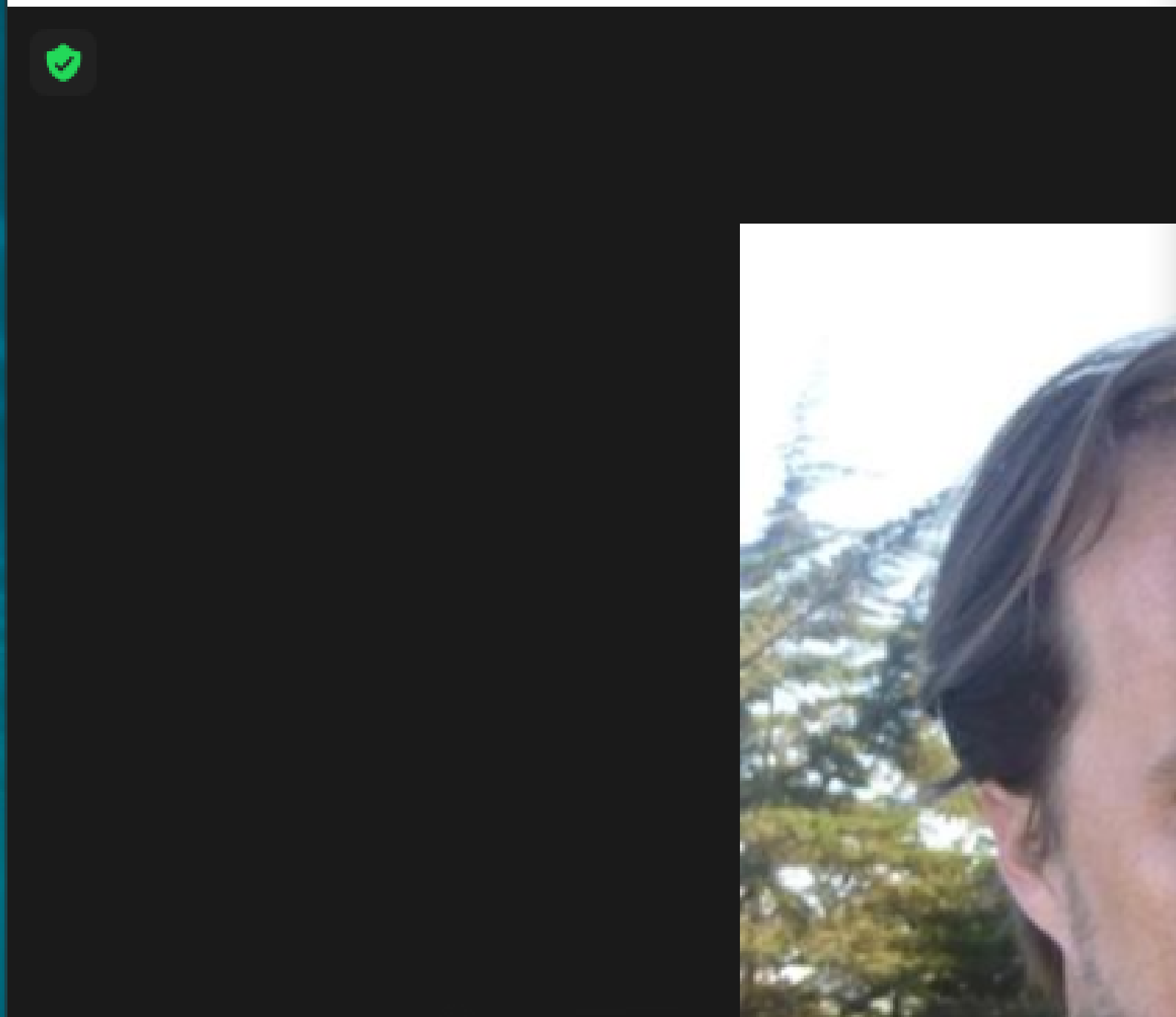
- **Use your full names in the zoom meetings!**
- **Only counts as attended with camera on.**

ZOOM

- **Try the different viewing modes:**
 - **Gallery View/ Active Speaker**
 - **Split Screen/ Full Screen Mode**

- **Maybe watch this video to get an idea:**
<https://www.youtube.com/watch?v=v3IPAbpVjd4>

Zoom Meeting



- Select a Camera (Alt+N to switch)
- NewTek NDI Video
 - ✓ Integrated Camera
-
- Choose Virtual Background...
- Choose Video Filter...
-
- Video Settings...

Steffen Brandt



Mute



Start Video



Security



Participants 1

Settings

- General
- Video
- Audio
- Share Screen**
- Chat
- Background & Filters
- Recording
- Profile
- Statistics
- Keyboard Shortcuts
- Accessibility



Window size when screen sharing:

- Fullscreen mode Maximize window Maintain current size

- Scale to fit shared content to Zoom window
- Show my Zoom Windows to other participants when I am screen sharing
- Enable the remote control of all applications
- Side-by-side mode
- Silence system notifications when sharing desktop

When I share my screen in a meeting

- Automatically share desktop
- Show all sharing options

When I share directly to a Zoom Room

- Automatically share desktop
- Show all sharing options

Advanced

- 18.04.**
16:00
Introduction to Neural Nets and Tools Used During the Course
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 25.04.**
16:00
Introduction to TensorFlow for AI, Machine Learning, and Deep Learning, Part I
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 02.05.**
16:00
Introduction to TensorFlow for AI, Machine Learning, and Deep Learning, Part II
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 09.05.**
16:00
Convolutional Neural Networks, Part I
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 16.05.**
16:00
Convolutional Neural Networks, Part II
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 23.05.**
16:00
Natural Language Processing, Part I
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 30.05.**
16:00
Natural Language Processing, Part II
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 06.06.**
16:00
Sequences, Time Series and Prediction, Part I
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 13.06.**
16:00
Sequences, Time Series and Prediction, Part II
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 20.06.**
16:00
Presentation of the Final Projects, Part I
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark
- 27.06.**
16:00
Presentation of the Final Projects, Part II
Zoom + Starterkitchen, Kuhnkestraße 6, Wissenschaftspark

FIRST BREAKOUT

- **15-20 Minutes**
- **Present yourself**
- **Discussion Questions:**
 - **What do you think is the difference between Machine Learning, Deep Learning, and AI?**

Artificial Intelligence

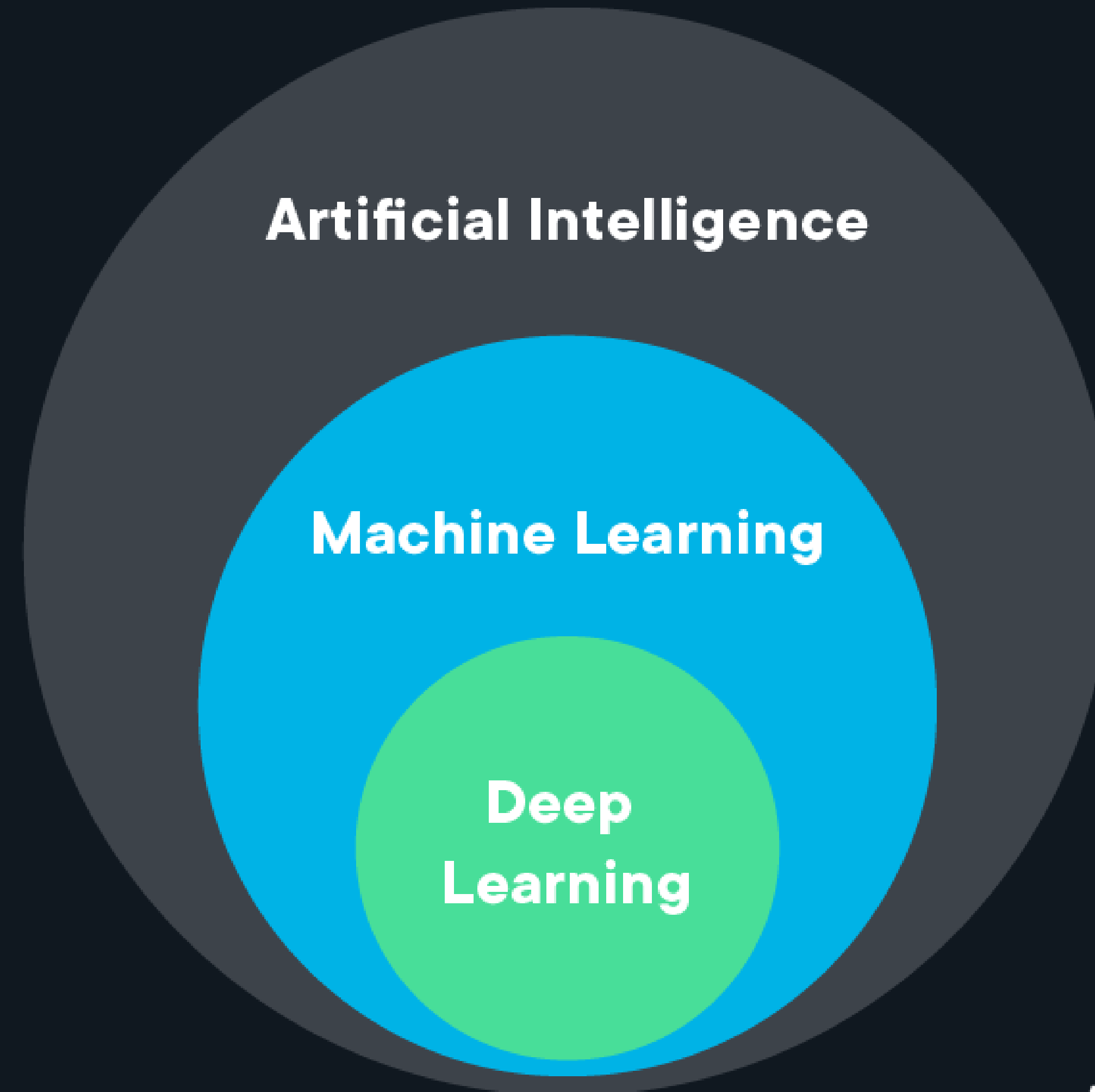
A science devoted to making machines think and act like humans.

Machine Learning

Focuses on enabling computers to perform tasks without explicit programming.

Deep Learning

A subset of machine learning based on artificial neural networks.




COURSERA REGISTRATION

DO NOT SIGN UP FOR THE SPECIALIZATION


For Individuals For Businesses For Universities For Governments


coursera Explore Online Degrees Find your New Career Log In Join for Free

Home > Browse > Data Science > Machine Learning

 **DeepLearning.AI TensorFlow Developer Professional Certificate**

Taught in English | [8 languages available](#) | Some content may not be translated

Instructor:  [Laurence Moroney](#)

 Financial aid available

186,170 already enrolled

[View all courses](#)

About Outcomes Courses Testimonials

CLICK ON THE INDIVIDUAL COURSE

Professional Certificate - 4 course series

TensorFlow is one of the most in-demand and popular open-source deep learning frameworks available today. The DeepLearning.AI TensorFlow Developer Professional Certificate program teaches you applied machine learning skills with TensorFlow so you can build and train powerful models.

[Read more](#)

[Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning](#)

[Course details](#) ^

Course 1 • 17 hours • 4.8 ★ (18,883 ratings)

What you'll learn

- ✓ Learn best practices for using TensorFlow, a popular open-source machine learning framework
- ✓ Build a basic neural network in TensorFlow
- ✓ Train a neural network for a computer vision application
- ✓ Understand how to use convolutions to improve your neural network

Skills you'll gain

Computer Vision

Tensorflow

Machine Learning

[Convolutional Neural Networks in TensorFlow](#)

Course 2 • 16 hours • 4.7 ★ (7,912 ratings)

Instructor



Laurence Moroney

DeepLearning.AI

15 Courses • 456,481 learners

Offered by



DeepLearning.AI


[Learn more](#)

ENROLL FOR INDIVIDUAL COURSE

For Individuals For Businesses For Universities For Governments

coursera Explore Online Degrees Find your New Career Log In [Join for Free](#)


Home > Browse > Computer Science > Software Development

 **DeepLearning.AI**

Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning

This course is part of [DeepLearning.AI TensorFlow Developer Professional Certificate](#)

🗣️ Taught in English | [8 languages available](#) | Some content may not be translated

 Instructor: [Laurence Moroney](#)

[Enroll for Free](#)
Starts Oct 20

Financial aid available

350,206 already enrolled

Course

Gain insight into a topic and learn the fundamentals

4.8 ★ (18,883 reviews) | 👍 96%

Intermediate level
Recommended experience ⓘ

17 hours (approximately)

Flexible schedule
Learn at your own pace

[View course modules](#)

[About](#) [Outcomes](#) [Modules](#) [Recommendations](#) [Testimonials](#) [Reviews](#)

SELECT AUDIT MODUS

For Individuals For Businesses For Universities For Governments

coursera Explore What do you want to learn? Online Degrees Find your New Career English Steffen als Student

Browse > Data Science > Machine Learning

Stanford

Supervised Machine Classification

This course is part of [Machine Learning Specialization](#)

Taught in English | [8 languages available](#)

Instructors: [Andrew Ng](#) +3 more
Top Instructor

Enroll for Free
Starts Oct 20

Try for Free: Enroll to start your 7-day free trial. Financial aid available

454,312 already enrolled


About Outcomes Modules [Audit the course](#)

7-day Free Trial

Supervised Machine Learning: Regression and Classification is part of the larger Machine Learning Specialization. Your 7-day free trial includes:

- ✓ **Unlimited access to all courses in the Specialization**
Watch lectures, try assignments, participate in discussion forums, and more.
- ✓ **Cancel anytime.**
No penalties - simply cancel before the trial ends if it's not right for you.
- ✓ **€45 per month to continue learning after trial ends.**
Go as fast as you can - the faster you go, the more you save.
- ✓ **Certificate when you complete.**
Share on your resume, LinkedIn, and CV.

Start Free Trial



EXERCISES

- **Each week two to four of you will present the exercises given in the course handbook**
- **Each of you presents at least once**

**EXERCISES:
WHO WILL PRESENT NEXT WEEK?**

PROJECTS

Option 1:

Bring your own idea and data

Option 2:

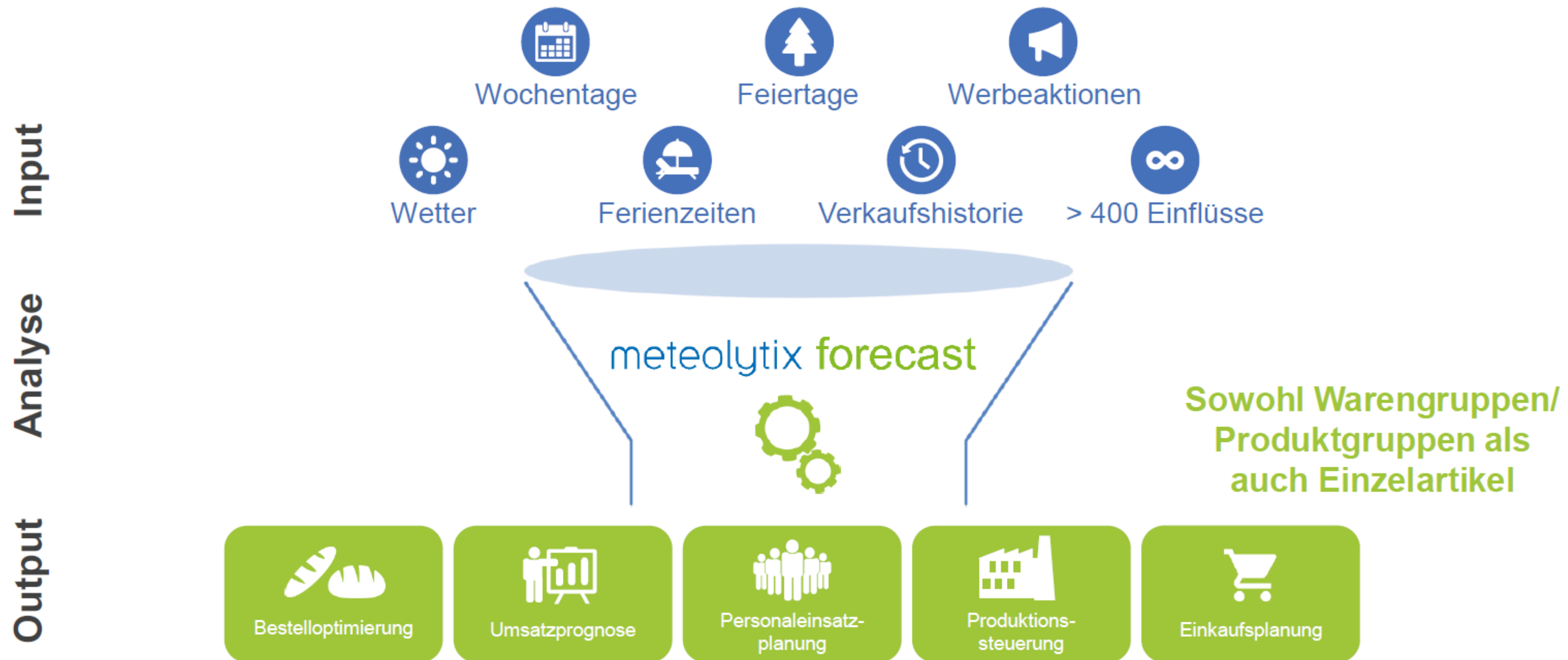
Do the default project

DEFAULT PROJECT

- **Time series prediction**
- **Based on sales data from a local bakery chain**
- **Prediction of future sales for three different stores and different product groups**

meteolytix forecast analysiert die Datenzusammenhänge von mehr als 400 Einflussfaktoren und liefert Absatzprognosen für viele Einsatzfelder.

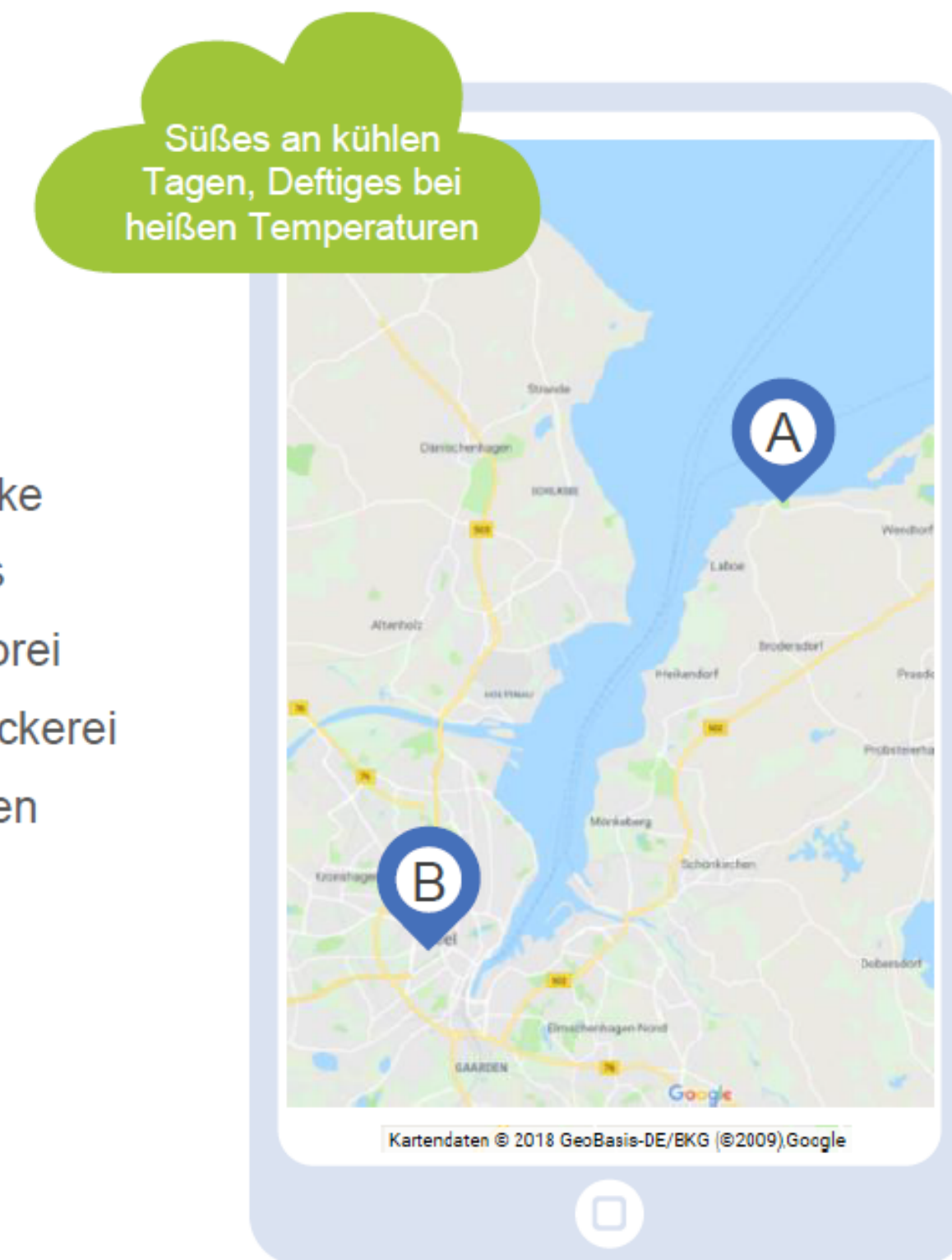
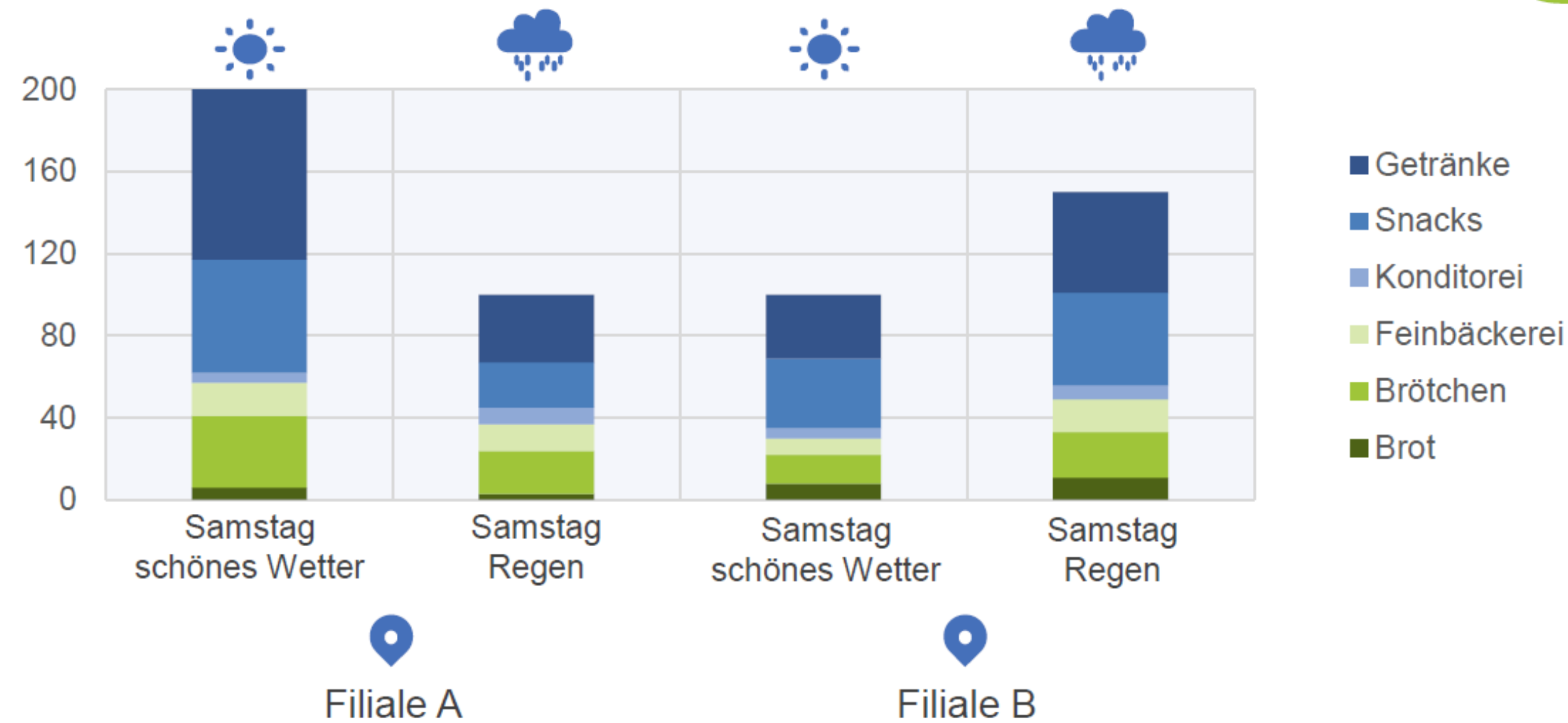
WAS WIR MACHEN



Die Stärke des Wettereffekts variiert von Ort zu Ort und wird jeweils filialindividuell berücksichtigt.

WAS WIR MACHEN

Wettereinfluss auf unterschiedliche Warengruppen bei Bäckereien



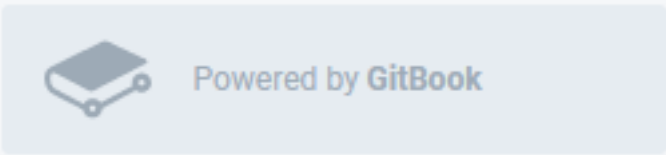
PROJECT INTERESTS

- RStudio
- Machine Learning With TensorFlow >
- Deep Learning >
- Natural Language Processing >
- Advanced Machine Learning

- EVENTS
- Waterkant Coding Hackathon
- Prototyping Week

- PROJECTS
- Requirements
- Possible Projects**
- Past Projects

- ADDITIONAL RESOURCES
- Glossary
- Tools >
- Optimizer
- Linear Algebra
- Python



Possible Projects

You are very welcome to bring your own data and project idea to a course. Simply talk to your course lead about your idea and the goal of the project until the end of the semester.

Further, we are offering a list of possible projects with corresponding datasets, you can use as project (see table below). Please, also talk to your course lead if you want to work on one of these challenges as your course project.

A further option is that you talk to local companies or chairs at your local higher education institutions if they are interested in a machine learning prototype for some of their production or research tasks and would like to share the corresponding data. If you find a partner that would be interested in such a project, we will be happy to support you in the definition of the project together with the partner and also, for example, with setting up a non-disclosure agreement for the provided data.

A final option is that you look for an interesting dataset on the Internet and define yourself a project based on this dataset. However, we would very much recommend you to choose one of the before mentioned options. With datasets from the Internet (e.g. from Kaggle competitions) your main challenge is typically limited to optimizing the model with an already prepared dataset. However, in practice the challenge is more often to construct the right training and validation datasets and construct the right features.

Title	Description	Dataset
	On a good surfing day for a particular surf spot, the number of pageviews on the site with the forecasts for that spot usually increases. The number of pageviews shall be used as a proxy for the quality of the surfing day in order to improve the forecast of a	Weather station data of 7 popular surf spots (Kiel Lighthouse, Skt. Peter-Ording, Wasmersünde, Dierk-See, Dierk-See, Dierk-See, Dierk-See)



RStudio

Machine Learning With TensorFlow >

Deep Learning >

Natural Language Processing >

Advanced Machine Learning

EVENTS

Waterkant Coding Hackathon

Prototyping Week

PROJECTS

Requirements

Possible Projects

Past Projects

ADDITIONAL RESOURCES

Glossary

Tools >

Optimizer

Linear Algebra

Requirements

In order to receive ECTS for a course you have to complete a machine learning project by yourself or preferably in a team with a maximum of 4 participants.

Typically the project work starts in the middle of the course.

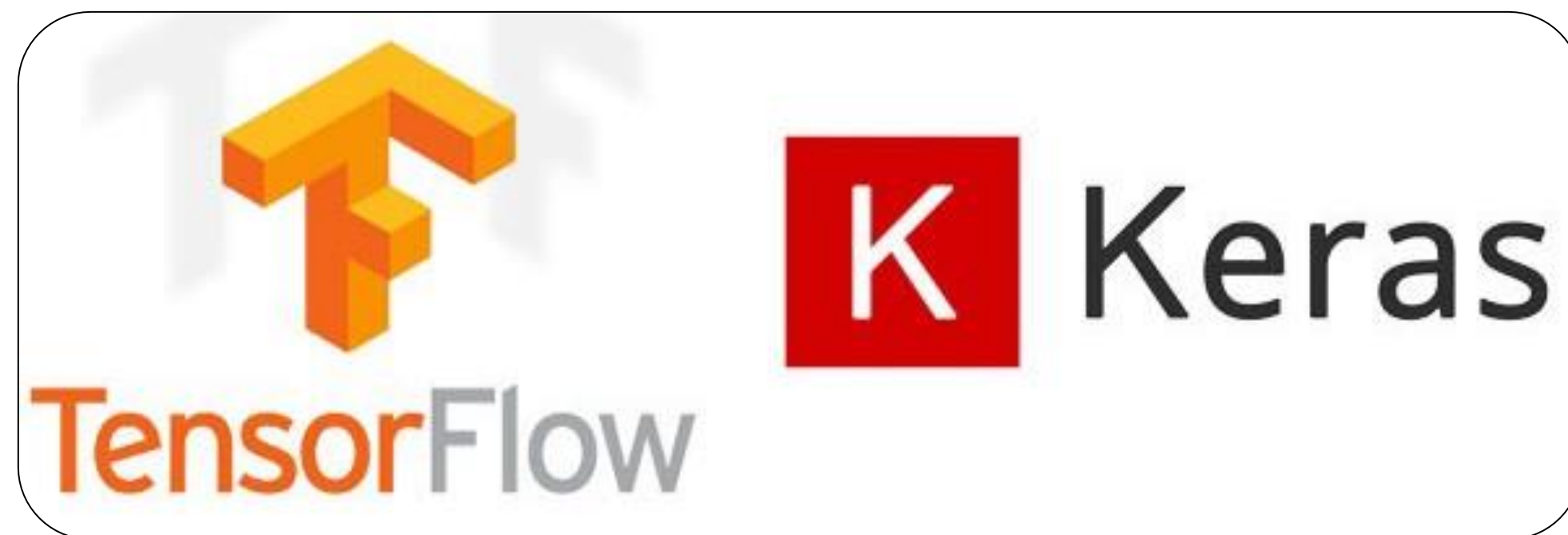
The requirement for this semester are:

1. Presentation of a detailed Jupyter Notebook with code and comment
 - including the definition of the environment
 - including required sections (Introduction, Data and Methods, Results, Baseline)
2. A small video, accompanying, for example, a screen recording of the notebook with an explanation of the challenge of the project, the used approach, and the results.
3. A statement that the code is released as open source software.
The data you use in your project can remain private if you wish.

Details about the requirements of the project will additionally be discussed in the course.

Please ask about whatever may be unclear, preferably before you start the project.

ML LIBRARIES (LOWER LEVEL)



PYTORCH

ML LIBRARIES (HIGHER LEVEL)

 **Transformers**

spaCy

 **LangChain**

 **haystack**
by deepset

LUDWIG

 **Auto**
gpt

DEVELOPMENT ENVIRONMENTS



Google Colaboratory



Visual Studio Code



jupyter



PyCharm



Studio®



TASKS UNTIL NEXT WEEK

- **Completion of the learning material of week 1 and 2 of the course "introduction to TensorFlow"**
- **Complete the exercises given in the course handbook**
 - **Who presents?**
- **Bring questions!**