# Instructional Design Document for FMC "Unpacking AI – Practical Foundations for Non-Tech Students" Unpacking AI | atingi


giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Digital Skills To Succeed

Alexander von Humboldt Institute for Internet and Society

# Structure of the Instructional Design Document

1. About the FMC "Unpacking AI"
    - Key data and Benchmarking
    - Goals, Competencies and Learning Mode
    - Logic and Structure
2. Introduction to Each Module
    - Outline and Structure of the Modules
    - Contents, Learning Activities and Accompanying Instruction
3. Course Assessment & Certification
    - End of Course Assessment
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# 1 About the FMC “Unpacking AI – Practical Foundations for Non-Tech Students”

# Digital Skills to Succeed in Asia Project Overview

The Digital Skills to Succeed in Asia (DS2S) project, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ), aims to enhance digital skills among young university students, especially women, in Bangladesh, India, and Viet Nam to position them for success in the job market. It collaborates with universities, private sector partners, and government agencies to achieve three outputs:

1) Establishing a Digital Skills Network and country hubs for knowledge exchange;
2) Enhancing faculty capacities through advanced training;
3) Collaborating with German universities and private sector to co-design targeted courses called micro-credentials in artificial intelligence, data, and digital entrepreneurship for non-tech students. These courses emphasise ethical tech use, ensure global standards, and offer industry-relevant skills tailored for the digital job market.

# Alexander Von Humboldt Institute for Internet and Society- Overview

The Alexander von Humboldt Institute for Internet and Society (HIIG) was founded in 2011 to research the development of the internet from a societal perspective and better understand the digitalization of all spheres of life. As the first institute in Germany with a focus on internet and society, HIIG has established an understanding that centers on the deep interconnectedness of digital innovations and societal processes. The development of technology reflects norms, values and networks of interests, and conversely, technologies, once established, influence social values

## Course Development

The course "Unpacking AI – Practical Foundations for Non-Tech Students" was developed by the Alexander von Humboldt Institute for Internet and Society in cooperation with GIZ as part of the Digital Skills to Succeed in Asia (DS2S) project.

It is designed to provide a foundational understanding of artificial intelligence for students from non-technical backgrounds. The course underwent a pilot phase in collaboration with partner universities in India to gather feedback and refine the content. Insights from student evaluations were integrated to improve clarity, engagement, and relevance before its wider rollout across participating countries.

## Key data

- **Course link:** Unpacking AI | atingi
- **Availability:** as of May, 2025
- **Duration for course completion:** 15 hours
- **Mode of learning:** self-paced, asynchronous
- **Level:** Foundational Micro-Credential on Artificial Intelligence
- **Target audience:** students of non-technical fields wanting to learn more about the impact of artificial intelligence on the future labour market
- **Course developers:** Alexander von Humboldt Institute for Internet and Society (HIIG) on behalf of and in cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
- **License of course contents:** CC-BY-SA 4.0

# Benchmarking

## Other courses about AI on atingi

- Data protection and privacy for developers of Artificial Intelligence (AI) in India
  - technical foundations required, focus on India
- AI for whom?
  - focus on who AI is for
- Transfer learning
  - technical foundations required
- Launchpad to Fundamental Questions of Artificial Intelligence
  - brief introduction to AI, no focus on societal impact

## Courses about AI on other platforms

- Elements of AI
  - rather technical approach
- AI 101 (MIT)
  - focus on training an algorithm
- Coursera courses:
  - payment needed for certificates

# Why this course stands out

- **Comprehensive Foundations:**

  Offering a well-rounded perspective by covering AI fundamentals, societal impacts, and ethical considerations, while encouraging a critical reflection of the use of AI

- **Tailored for Non-STEM Students:**

  No technical background required; all technical concepts are presented at an introductory level

- **Engaging and Context-Specific:**

  Combining theoretic concepts with practical application and personal exploration

- **Pathway to Further Learning:**

  Guides students to explore advanced AI topics with provided resources, fostering lifelong learning

# Overall goal

## The course aims at the following goals:

AI systems are integrated into our everyday lives in all areas, and their contribution to the automation of society has consequences that will be explored in this course. The overall aim is to provide a **basic understanding** of how artificial intelligence is defined and the technical principles that currently determine this definition.

It also aims to provide an **overview of the areas of society in which AI systems are used** and the social interactions that result, some of which are associated with negative consequences or risks, such as bias and discrimination, or media trust and misinformation.

The overall aim is also to shed light on how AI is being developed, the **role of governance in social development**, and the extent to which social participation should be considered in AI development.

# Competencies

**The course targets the following overarching competencies:**

- Understanding the concept and technical foundations of Artificial Intelligence
- Considering human-centred perspectives in the design and use of Artificial Intelligence
- Identifying the main challenges and potentials of the use of Artificial Intelligence
- Acquiring critical thinking skills in scoping a problem to be solved by an AI system

**It thereby addresses the competency blocks *Human-centred mindset*, *Ethics of AI*, *AI techniques and applications*, and *AI system design* at the levels *Understand*, *Apply*, and *Create* of the UNESCO AI Competency framework.**

# Learning Mode

**The course is designed as a self-paced, asynchronous learning experience, combining the following elements:**

- Practical application:

  Transfer of theoretical concepts to real-world examples

  Incorporation of different perspectives through examples from different sectors and geographical contexts

- Subject-matter inputs:

  Transparent structure of logical progression and course structure

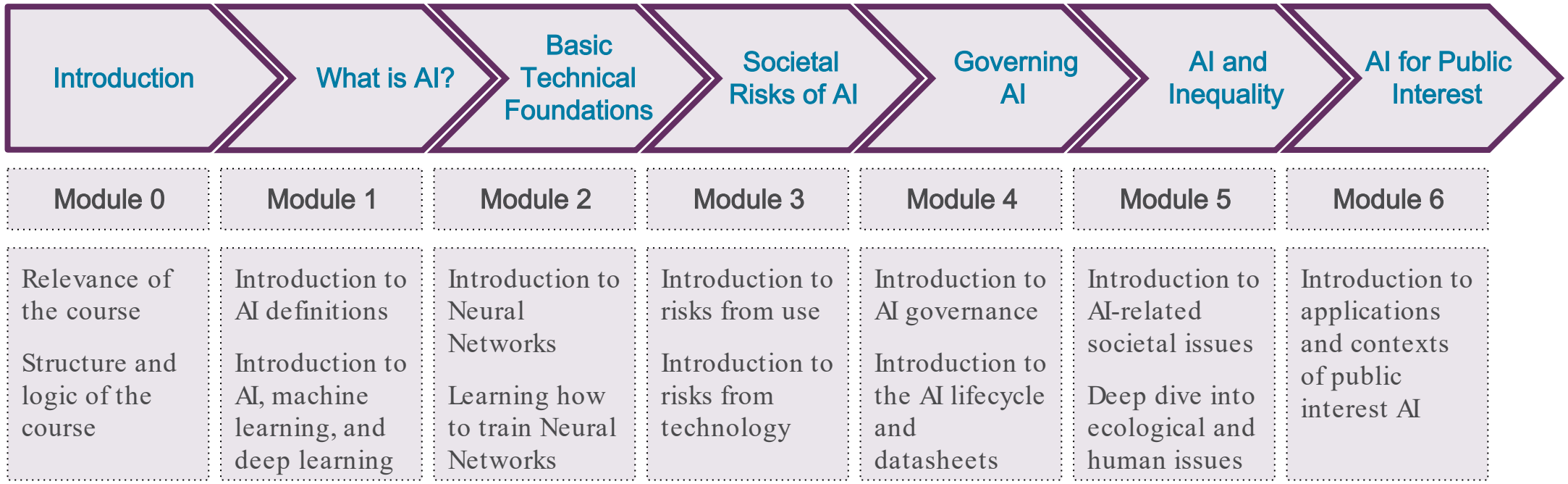
  Presentation of subject-matter knowledge through text, video, audio, graphics

- Tasks:

  Acquisition of knowledge → Quizzes throughout the modules to solidify the acquired knowledge

  Reflecting the contents → reflective tasks to engage critical thinking

# Logical progression of the course



# 2 Introduction to Each Module

# Module 0: Introduction
## Outline

In this introduction, students get an **overview** of why they should take this course and what topics the modules will cover. Here, students learn about the **structure of the course** and reflect on what they want to get out of this learning journey.

### Structure:

1 Why you should take this course

Benchmarking for students

Description of the target group and the prerequisites

2 What you will learn

Overview of the six (content) modules, each with learning objectives and competencies

3 How to Navigate the Course

Introducing course elements to help students navigate through the course

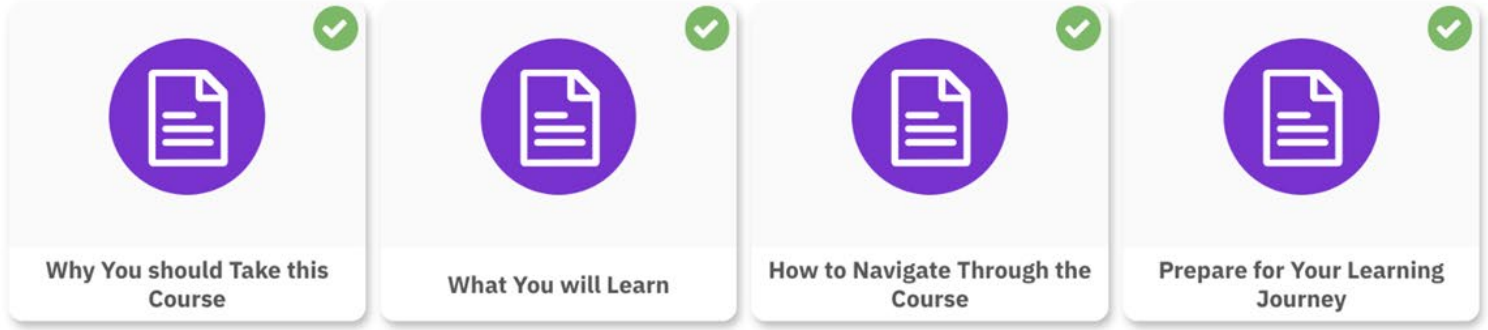
4 Prepare for Your Learning Journey

Reflection on students' individual expectations and goals

# Module 0: Introduction
## Display on atingi

Short description of the module

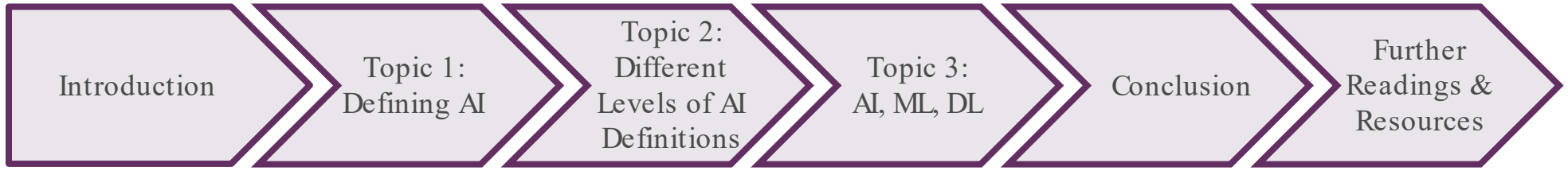
In this introduction, you will get an overview of why you should take this course and what topics the following modules will cover. This is a foundational micro-credential designed for **students from non-technical backgrounds** who want to build a **solid understanding of AI**, including its **societal impacts, ethical considerations**, and **practical applications** for future work placements. You learn about the structure of the course and reflect on what you want to get out of this learning journey.




Overview of the contents of the introduction module

# Module 1: What is Artificial Intelligence?
## Outline

In this first module, which takes **2 hours to complete**, students will learn that **different definitions of Artificial Intelligence (AI) exist**, because the way people think about AI affects how they explain it. Through different exercises, students reflect on **why different definitions are helpful** and how they can apply them. Students will also **learn about machine learning and deep learning** as important parts of AI. Finally, the module looks at the challenges of defining AI and highlight **how AI tools are both technical and social systems**, affected by human design and interaction.



# Module 1: What is Artificial Intelligence?
## Competencies and Learning Objectives

### Competencies:

- AI foundation: Develop an understanding of the definition and scope of AI

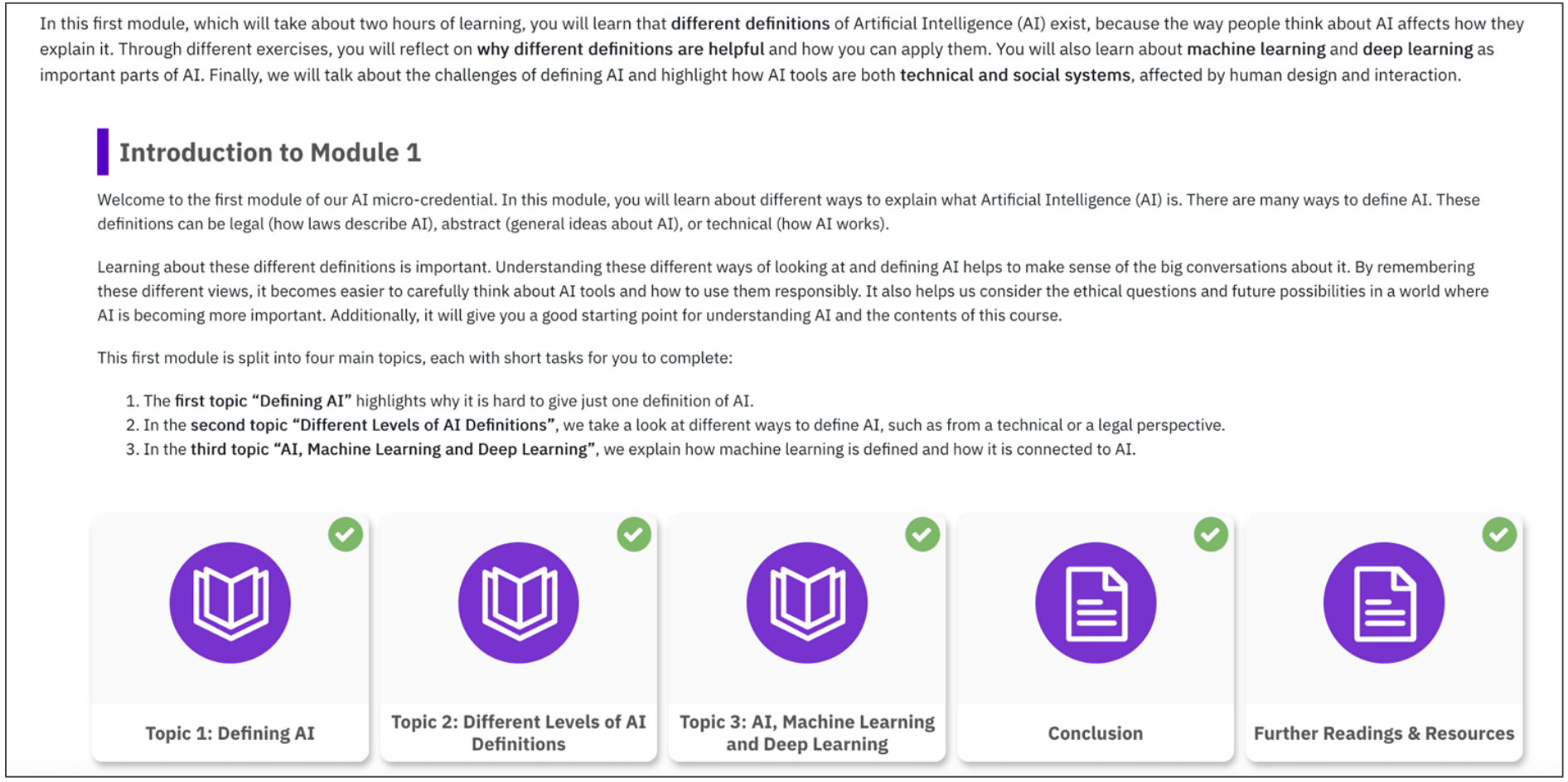
### Learning Objectives:

Students…

…recognise that there is not one definition of AI.

…explain different definitions of AI and their backgrounds.

# Module 1: What is Artificial Intelligence?
## Display on atingi




→ Short description of the module

→ Introductory section to module 1

→ Overview of the contents of module 1

# Module 1: What is Artificial Intelligence?
## Topic 1: Defining AI

The first topic of module 1 addresses why it is hard to give just one definition of AI. It explains that even though a lot of people are talking about AI right now, it doesn't always mean that they are talking about the same thing.

- Getting started with a **Guessing Game**: Is this AI?
  - Example: "Face recognition – When you unlock or smartphone or certain functionalities on your smartphone using only your face, is it AI?"
- Depiction of the **History of AI** with a visual and narrated timeline
- Introduction to **different AI definitions**

## Module 1: What is Artificial Intelligence?
## Topic 2: Different Levels of AI Definitions

The second topic of module 1 introduces three specific ways to understand AI. It explores how AI is defined in abstract terms, in legal terms, and in technical terms.

- Introduction to **three levels of AI definitions**:
  - abstract level (general ideas about AI)
  - legal level (how laws describe AI)
  - technical level (how AI works)
- Application of each level to the case study of the **Guanajuato Use Case**, an AI system to help reduce school dropout rates in Mexico
- **Task "Applying AI Definitions":** Reflecting the different definitions of AI by applying them to the last AI application that students used.

# Module 1: What is Artificial Intelligence?
## Topic 2 – Additional Instruction

### Task: Applying AI Definitions

Now that you have gotten to know three definitions of AI, let's take a moment and think about them. While all these definitions have things in common, they also differ. But in what way? Think about the last AI application that you used and apply the three definitions to it. Which parts of the definitions are similar and where do they differ? Write down the things that stand out to you.

Bonus: Try to find a definition of AI from your home country. This can be a national AI strategy, a computer science paper or from a societal actor. How has the context affected this definition?

### Additional Instruction

→ Before you get started with this first task, you may ask your students to set up a learning journal (either digital or on paper) they can use throughout the FMC.

→ After the students have answered the questions individually, they can pair up and discuss their answers with their peers. This will help them to make an argument for their own understanding of AI.

## Module 1: What is Artificial Intelligence?
## Topic 3: AI, Machine Learning, and Deep Learning

The third topic of module 1 looks more closely at different types of AI from a technical point of view. It provides an overview for students to understand what machine learning and deep learning mean and how they are different from each other.

- Introduction to **Machine Learning** and **Deep Learning**
  - Definitions
  - Application to real-world applications
- Highlighting the **difference between AI, ML, and DL**
- **Task "Is this AI, ML, or DL?"**: Quiz about whether the provided examples can be categorised Artificial Intelligence, Machine Learning or Deep Learning?

# Module 1: What is Artificial Intelligence?
## Conclusion

Wrap up of looking closely at the different types of AI technologies we use today and reflecting on the learnings of module 1:

- It's not easy to give just one definition for AI. There are many ways to explain it.
- People look at AI from different angles, and this affects how they define it.
- These different ways of looking at AI also show different values or ideas about what's important.
- Some early definitions of AI were very broad. They talked about making machines that can think like humans. This idea is still popular in science fiction and some AI discussions today.
- Other definitions, like those used in laws, need to be more specific. They help separate AI from other types of technology. This is important for making rules about AI that work well.

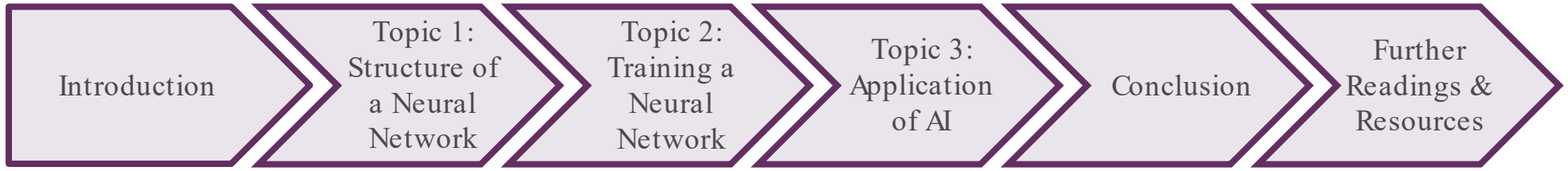
# Module 1: What is Artificial Intelligence?
## Further Readings & Resources

If students want to dive deeper into the question of "What is AI?", they can explore additional readings and resources:

- AI Definitions: If students are interested in even more definitions of AI, this list of international definitions of AI by the iappai governance center is worth looking into.
- AI Toolkit: The Intersectional AI Toolkit gathers ideas, ethics, and tactics for more ethical, equitable tech.
- Introduction to AI: Students can take a look at the Elements of AI online course by the University of Helsinki. There also is a great guide to AI ethics.

# Module 2: Basic Technical Foundations
## Outline

The second module, which takes about **2,5 hours of learning**, explores the basics of AI and machine learning (ML) to build a technical foundation. While some concepts may seem complicated, understanding them is very important in order to know how AI works. It looks at **how an artificial neural network (ANN) works**, focusing on input layers, hidden layers, weights, and output layers, and learning **how it is trained**. The module ends with an **overview of different ML models**, such as vision and text, and how they are used.



# Module 2: Basic Technical Foundations
## Competencies and Learning Objectives

### Competencies:

- Human agency: Develop an understanding that AI is human-led
- AI foundation: Gain conceptual knowledge on how AI is trained based on data and algorithms

### Learning Objectives:

Students…

…recognise how a neural network functions and identify the elements of a simple neural network.

…identify the training processes of AI systems.

…discover how to train an AI model with data.

…recognise how AI is used in different sectors.

# Module 2: Basic Technical Foundations

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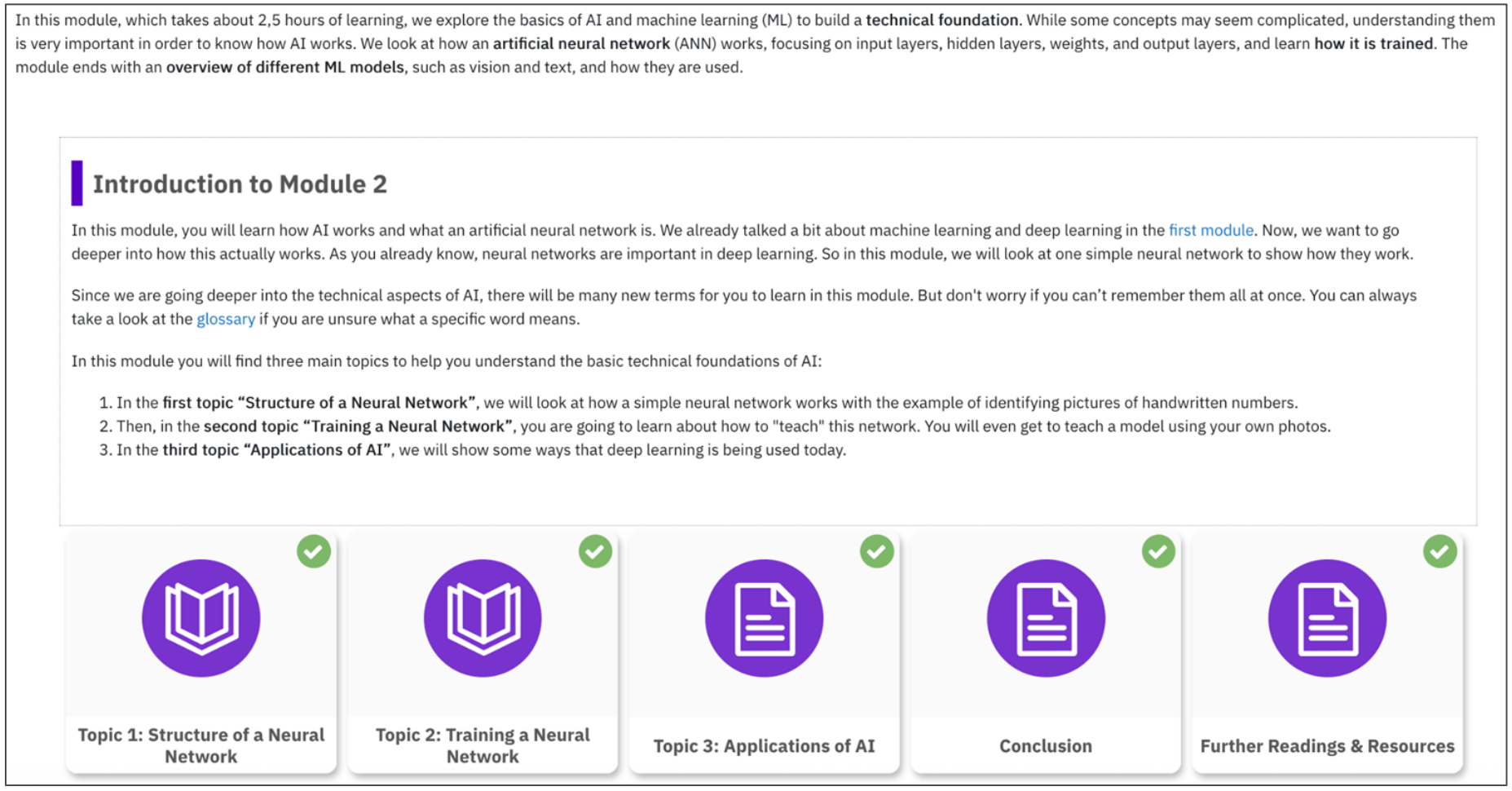


→ Short description of the module

→ Introductory section to module 2

→ Overview of the contents of module 2

## Module 2: Basic Technical Foundations

## Topic 1: Structure of a Neural Network

In this first topic of module 2, looks more closely at how a neural network is built. This topic builds on the last lesson, in which students learned about deep learning to explore how it works in more detail by looking at one specific example.

- Introduction of **different training approaches** for machine learning
- Introduction of the **steps in the training process**
- **Tasks:**
  - Simulating the training process with Teachable Machines
  - Identifying the different steps in the training process

## Module 2: Basic Technical Foundations
## Topic 2: Training a Neural Network

The second topic of module 2, looks at what steps are needed to make a neural network do its job well. Students will also try out a network that has already been taught to see how well it works.

- Introduction to **three levels of AI definitions**:
  - abstract level (general ideas about AI)
  - legal level (how laws describe AI)
  - technical level (how AI works)
- Application of each level to the case study of the **Guanajuato Use Case**, an AI system to help reduce school dropout rates in Mexico
- **Task "Applying AI Definitions":** Reflecting the different definitions of AI by applying them to the last AI application that students used.

## Module 2: Basic Technical Foundations
## Topic 3: Applications of AI

In this third topic of module 2 takes a closer look at the practical side to explore some AI application examples.

- Application of the acquired knowledge on neural networks to the case study of DeepL
- **Task:** Applying the acquired knowledge to the last AI application students used.

# Module 2: Basic Technical Foundations
## Topic 3 – Additional Instruction

### Task: Applying AI Training Approaches

You already learned a lot about what AI is and how it works. Think about the last AI application that you used and try to apply all these new concepts to it. You can follow the example of DeepL above. If your example uses machine learning, can you identify the learning approach that is used there? What is the data that is used as the input? And what is the output that comes out of the model? Write down your thoughts and observations.

### Additional Instruction

→ After the students have reflected the structure of the neural network and the training process of the AI application they have chosen individually, they can pair up and discuss their reflections with their peers. This will deepen their understanding of how AI works.

→ After the students have reflected the structure of the neural network and the training process of the AI application they have chosen, you can conduct a **thought experiment** with them: What would the AI application look like if a different training approach would have been used?

# Module 2: Basic Technical Foundations
## Conclusion

Wrap up the structure and training processes of neural networks and reflecting on the learnings of module 2:

- The structure of artificial neural networks is made up of many different parts, such as the **different layers, neurons and weights**
- The model transforms input into output which can have many different forms, such as audio, visual or text.
- A model has to be trained in order to fulfil its purpose. There are **different approaches to training** such as supervised, unsupervised, and reinforcement learning.
- The supervised learning process has multiple steps, for example forward pass, computing the loss and backpropagation.
- The development of AI systems is an **iterative process**

# Module 2: Basic Technical Foundations
## Further Readings & Resources

If students want to dive deeper into the question of "How does AI work?", they can explore additional readings and resources:

- Train your own AI: The platform Teachable Machine by Google is an easy way to test out training an AI with your own data
- Play around with a neural network: This interactive Neural Network allows for playing around with a neural network visualisation

# Module 3: Societal Risks of Artificial Intelligence
## Outline

This module, which will take about **2,5 hours of learning**, focuses on possible harms associated with AI systems. First, it looks at **harms that come from inherent features of AI systems**. Second, it explores potential **harms that come from how AI systems can be used**. The module ends by reflecting on where AI systems pose dangers and learning about possible mechanisms to counteract harmful effects.

# Module 3: Societal Risks of AI
## Competencies and Learning Objectives

### Competencies:

- AI foundation: Learn how to facilitate human-centred considerations in the design and use of AI
- Embodied ethics: Illustrate dilemmas around AI and identify the main reasons behind ethical conflicts

### Learning Objectives:

Students…

…describe different sources of biases.

…identify real solutions to biases.

…recognise different cases of negative consequences of AI.

# Module 3: Societal Risks of Artificial Intelligence
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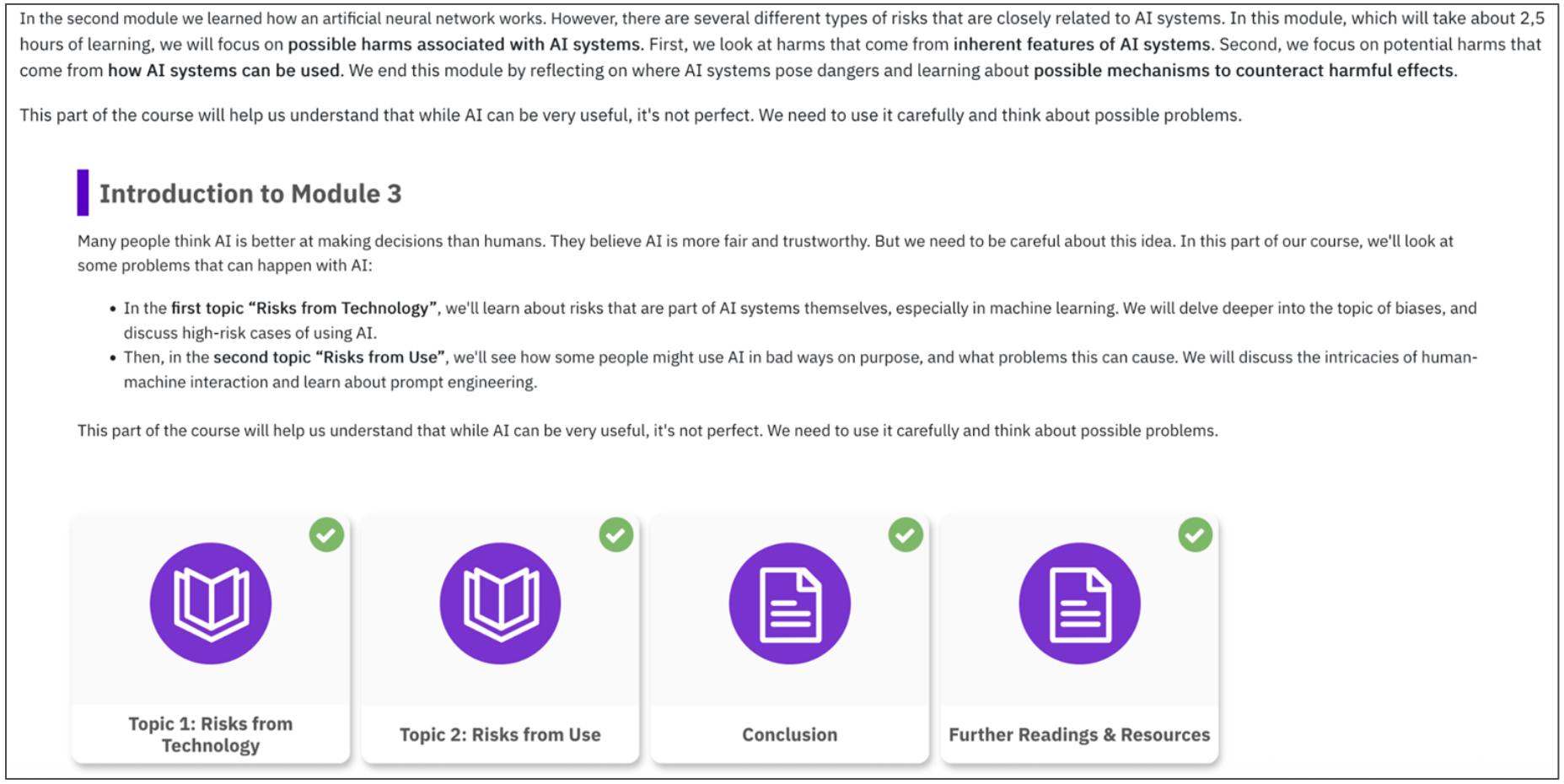


→ Short description of the module

→ Introductory section to module 3

→ Overview of the contents of module 3

# Module 3: Societal Risks of Artificial Intelligence
## Topic 1: Risks from Technology

Not only can certain uses of AI be risky, some risks are already part of the technology itself. This first topic of module 3, takes a look at what we need to remember when we use AI, even when we try to use it in a good way. It looks at the technical problems of AI and where we need to be careful.

- Introduction to **hallucination** with the example of a chatbot of the World Health Organisation, to **opacity** by looking at the example of applying for a loan online, and to **bias** by highlighting the implications for marginalised groups
- Showcasing **different perspectives on biases** and introducing **countermeasures**
- **Tasks:**
  - Matching the descriptions of the three risk types.
  - Evaluating high-risk cases of AI.

## Module 3: Societal Risks of Artificial Intelligence
## Topic 2: Risks from Use

The second topic of module 3 looks at risks that come with using AI in bad or ill-intentioned ways. AI can be used in ways that hurt people or communities, so it is important to find out when using AI can be harmful and where we need to be careful when AI is being used.

- Introduction to **disinformation** with examples from India and the U.S., to **deepfake porn** by looking at the example Taylor Swift, and to **pseudo-science** with the example of a study at Stanford University
- Introduction to the **differences between human communication** and **communication with AI**
- Introduction to **prompt-engineering**
- **Tasks:**
  - Matching the descriptions of the three risk types.
  - Experimenting with prompt-engineering.

# Module 3: Societal Risks of Artificial Intelligence
## Topic 3 – Additional Instruction

### Task: Experimenting with Prompt Engineering

Now that you have learned a bit about prompt engineering, it is time to try it yourself. Think about a certain task that you want the AI to do, such as summarising a news article or explaining a concept. Try different prompts: start with the simplest one and then work your way towards a more refined version. Experiment with different perspectives, lengths, tones, formats and audiences and see how the answers differ. What differences do you notice between the outputs? Which prompt gave you the best result? Why do you think that is?

### Additional Instruction

→ After the students have experimented with different prompting strategies individually, they can pair up and discuss their observations with their peers. This will deepen their understanding of how AI generates output.

→ You can let students experiment with different prompting strategies on a variety of tasks and topics. Choose one that is relevant to your current course or context to further student engagement.

# Module 3: Societal Risks of Artificial Intelligence
## Conclusion

Wrap up the structure and training processes of neural networks and reflecting on the learnings of module 3:

- When used for the wrong purposes, even systems that are built for entertainment can cause harm. For example, a system that is meant to generate funny videos can be used to generate deepfakes for disinformation or revenge porn.
- If the application is based on pseudo-science, a facial recognition system can claim to classify inner characteristics of people based on their appearance.
- Even if the system is applied for beneficial purposes, it comes with inherent limitations. AI systems are known to hallucinate, are notoriously opaque, and often have gender, race, or other biases. This is not by accident. It lies in their very nature.
- Being aware of these limitations, making them transparent, and mitigating them as best as possible is therefore key.

# Module 3: Societal Risks of Artificial Intelligence
## Further Readings & Resources

If students want to dive deeper into the question of "What harms does AI cause?", they can explore additional readings and resources:

- Have you ever seen artificially generated portraits of people? On this website, you can generate one and learn about the generator: https://this-person-does-not-exist.com/en. On this website, you see two images of faces - one generated, one photographed. Can you find out which one is which? https://www.whichfaceisreal.com/index.php
- Try out the DetectFakes Experiment, a research project at Northwestern University that examines how well people can distinguish AI-generated from real images.

# Module 4: Governing AI
## Outline

This module, which takes about **2 hours of learning**, explores how AI systems are managed and controlled by looking at **laws, norms and rules** that apply to running AI projects. For that, it looks at **external governance** the legal rules for AI projects, like laws and policies. Second, it concentrates on **internal governance** by following the **AI lifecycle** to explain what needs to be considered in each step of designing, developing and deploying AI systems. In this context, the module also provides insights into **datasheets**, which are a way to make data sets and how they were made easier to understand.

# Module 4: Governing AI
## Competencies and Learning Objectives

### Competencies:

- Human agency: Develop an understanding on the necessity of exercising sufficient human control over AI
- Human accountability: Incorporate a view that human accountability is a legal obligation of AI creators and AI service providers

### Learning Objectives:

Students…

…recognise and recite different tasks within the AI Cycle.

…recognise how data is governed within the AI lifecycle.

…recite legal approaches to AI regulation.

# Module 4: Governing AI
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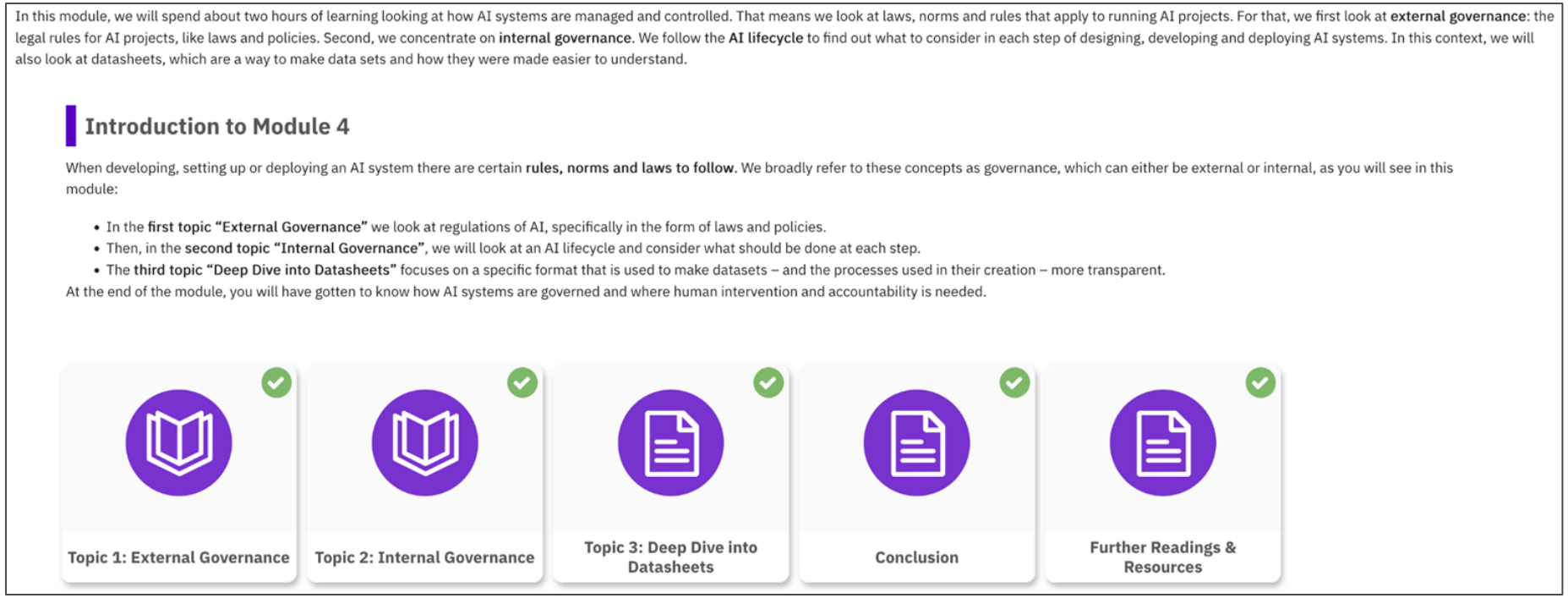



→ Short description of the module

→ Introductory section to module 4

→ Overview of the contents of module 4

# Module 4: Governing AI
## Topic 1: External Governance

This first topic of module 4 focuses on external governance. That means all the **rules set by people outside an AI project**, for example laws. Laws are made to keep security safe. They affect which AI systems can be done and what safety steps they must take.

- Introduction to the **risk-based approach** of regulation by differentiating four different levels of risks for AI systems
- **Overview** of risk-based approaches across the globe, including AI strategies in Bangladesh, India, and Viet Nam
- **Task:** Evaluating the risk level of three AI applications: Samagra Vedika (AI-based system to give out social welfare), Radiant MLHub (open library for geospatial training data), Amazon hiring tool (AI-based hiring tool)

## Module 4: Governing AI
## Topic 2: Internal Governance

The second topic of module 4 looks at how AI projects are set up: what steps are needed to make an AI system – from the first idea to keeping it up to date? It's not just about setting up the technology, it's about thinking about what problem we want to solve with AI, where we can get data from, and how to put the AI system to work safely.

- Introduction to the **AI lifecycle** using the case study of an AI application designed to support social welfare programmes to explain the three phases of **design**, **development**, and **deployment**
- **Task:** Labelling the AI lifecycle

# Module 4: Governing AI
## Topic 2 – Additional Instruction

### Task 2: Labelling the AI Lifecycle

Now that you have gotten to know all the different steps, let's see if you can remember, where they belong in the AI lifecycle.

### Additional Instruction

→ After ensuring that the students have understood the AI lifecycle, students can apply this process to AI applications of their choosing to help them better understand the underlying processes and engage in critical discussions around them.

→ If prototyping fits the scope of your course, you can also let students plan the design, development, and deployment of an AI system that addresses a specific problem by using the AI lifecycle.

## Module 4: Governing AI

## Topic 3: Deep Dive into Datasheets

The third part of module 4 looks more closely at datasheets. Datasheets are a way to explain a specific set of data, which are needed to train AI systems. And to make good AI systems, it is important to know if the information used for it was right for this specific job. One way to learn about that is to look at and think about the datasheet.

- Introduction to **datasheets** through an explanatory video
- **Tasks:**
  - Reflecting the use of datasheets for AI systems
  - Exploring datasheets through specific examples

# Module 4: Governing AI
## Conclusion

Wrap up the structure and training processes of neural networks and reflecting on the learnings of module 4:

- Learning about the approaches, implementation and shortcomings of regulations can provide good **insights into external governance**, especially since the EU AI Act could become an inspiration for global AI regulation.
- When we focused on internal governance and how AI projects are developed, it is important to always **reflect on the following questions**:
  - Which steps do we follow?
  - What is important in each step?
  - How can we make sure to develop AI systems in a sound way?
- Looking at datasheets as a specific way to document the mechanisms related to data in an AI application and a way to make it more transparent, we explored the **importance of documentation** throughout the AI lifecycle.

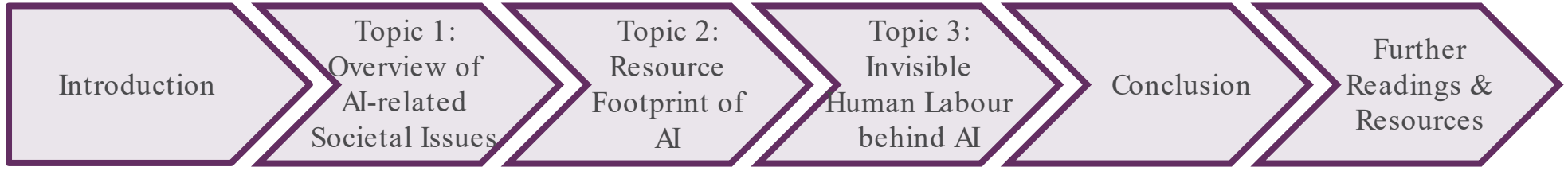
# Module 4: Governing AI
## Further Readings & Resources

If students want to dive deeper into the question of "How can AI be governed?", they can explore additional readings and resources:

- This short article summarises the AI Act and especially explains the risk-based approach of the EU AI Act, while this summary is a little longer but provides some more examples.
- This blog post by Kai Zenner, negotiator in the developing process of the AI Act, reflects on the results of the EU AI Act negotiations.
- This explanation dives deeper into the GDPR, while this study explores the impact from the GDPR on AI.

# Module 5: Artificial Intelligence and Inequality
## Outline

This module, which takes about **2,5 hours to complete**, looks at AI and inequality. After starting with an **overview of societal issues and inequality in connection to AI**, there are deep dives into specific inequalities: One is the **environmental footprint of AI**, meaning carbon emissions, water usage and the development of the hardware which requires many rare earths and minerals. The other is the **labour force behind an AI system**, because often, the human labour that goes into the preparation of data and the content moderation of running systems takes place under very bad working conditions, is underpaid and underappreciated and even made invisible to users.



# Module 5: Artificial Intelligence and Inequality
## Competencies and Learning Objectives

### Competencies:

- Embodied ethics: Develop an embodied reflection and internalization of ethical principles on AI
- AI society citizenship: Gain awareness of being a critical AI citizen

### Learning Objectives:

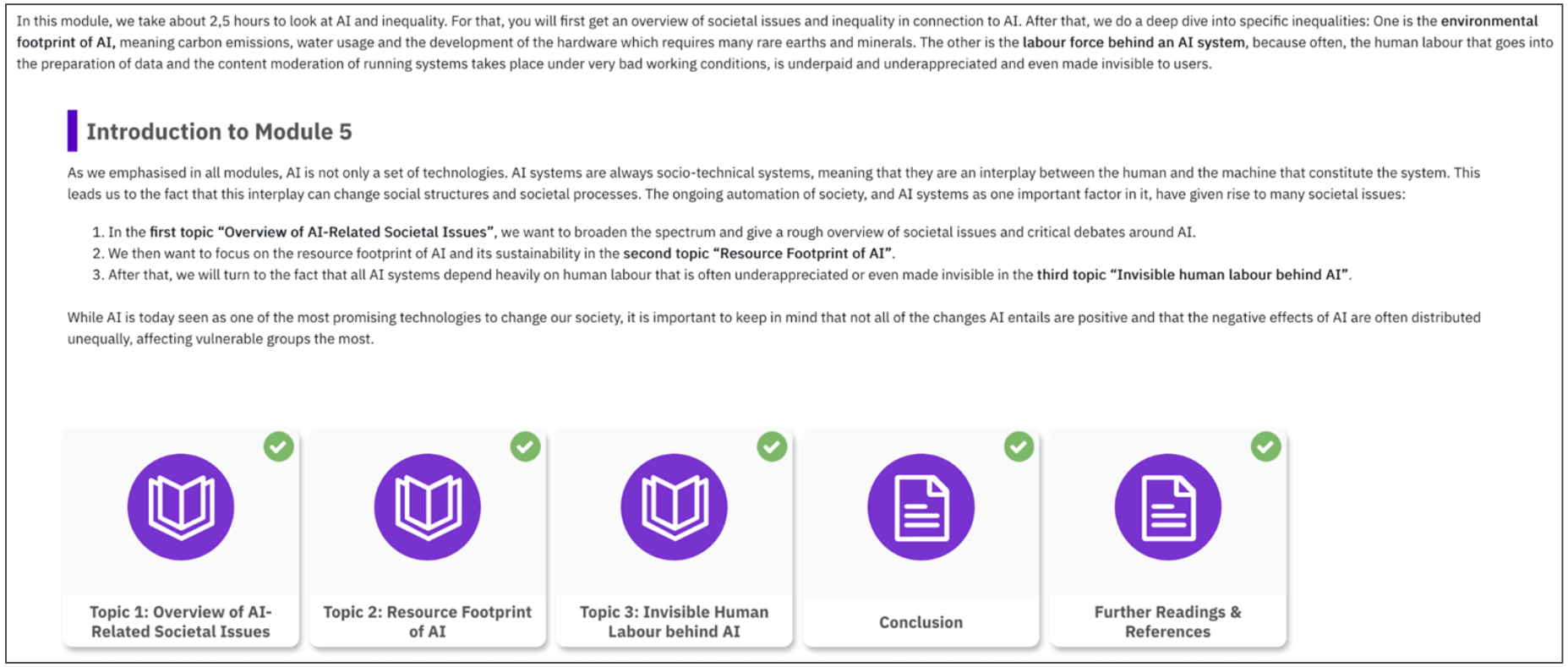
Students…

…recognise the (natural) resources used for AI.

…recognise the human work force behind AI systems.

…relate how AI reinforces inequality.

# Module 5: Artificial Intelligence and Inequality
## Display on atingi




→ Short description of the module

→ Introductory section to module 5

→ Overview of the contents of module 5

## Module 5: Artificial Intelligence and Inequality

## Topic 1: Overview of AI-related Societal Issues

The first topic of module 5 looks at the bigger picture and highlights **three main types of inequality connected to AI** which will be looked at in detail. Since AI can make existing inequalities worse, it's important to learn about these unfair situations so we can spot them and maybe make them less bad.

- Introduction to **inequality in economics and power** with the real-world example of Amazon Echo
- Introduction to **inequality in access to education about AI**
- Introduction to the **AI narrative** in general
- **Tasks:** Reflecting the different societal issues linked to AI

# Module 5: Artificial Intelligence and Inequality
## Topic 2: Resource Footprint of AI

Machine learning is a technology that works on computers. This means it needs electricity to run and water to stay cool. All the parts needed have to be made somewhere. All the materials used have to be dug up from the ground and manufactured. So, as more and more AI tools are used, this affects nature, the weather, and people's lives. This topic looks more closely at what we know about this, where and when it happens, and what we can do about it.

- Introduction to **resource consumption of AI** by looking at the **hardware manufacturing** the **training phase**, and the **model deployment**
- **Task:** Fact-checking statements about the resource footprint of AI

## Module 5: Artificial Intelligence and Inequality
## Topic 3: Invisible Human Labour behind AI

Machine Learning models need to be trained and this requires a lot of information. This information doesn't just appear, it has to be gathered, cleaned, put in order, made ready to use, and maintained. Often, people still do this work, and many times in poor working conditions. The third topic of module 5 looks at this more closely.

- Introduction to **invisible labour of AI**
- Showcasing **initiatives to counter** invisible labour like Ghostwork oder DataWorkers
- **Task:** Thought experiment to improve the situation of data workers contributing to one's own AI application.

# Module 5: Artificial Intelligence and Inequality
## Conclusion

Wrap up the structure and training processes of neural networks and reflecting on the learnings of module 5:

- Those **environmental effects** do not only consist of energy intensity and greenhouse gas emissions that contribute to global climate instability but also deal with resources like rare minerals, water, toxicity of waste and ecosystem depletion.
- Often, those **harms affect already vulnerable countries, regions and groups** the most.
- The invisible human work behind AI models is often outsourced, underpaid and takes a toll on the people doing it.
- All these aspects of inequality that come with setting up AI systems are important to know and reflect on when considering to build AI applications. The question remains whether or not an AI system does more good than harm regarding the here discussed downsides that come with it.

# Module 5: Artificial Intelligence and Inequality
## Further Readings & Resources

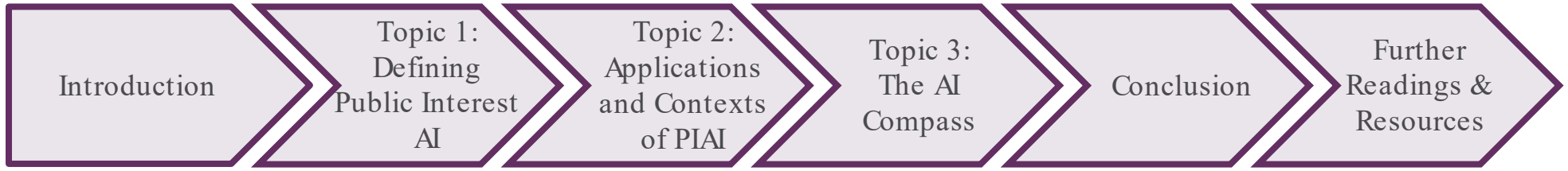
If students want to dive deeper into the question of "How inequality can be overcome?", they can explore additional readings and resources:

- This primer on the environmental impacts of AI written by Sasha Luccioni, Bruna Trevelin and Margaret Mitchell gives a good and understandable overview over impacts and existing research.
- This short article focuses on Google's approach to Carbon Emissions.
- Kate Crawford and Vladan Joler map out the human labour behind Amazon Echo, shining a light on the complex and multi layered entanglements of natural resources, human labour, and today's technologies.
- This thought piece by Rainer Rehak discusses AI and the broken promises around it in the context of sustainability.
- "The Cleaners" is a movie about data workers, this is the that gives you an impression. It's very much worth watching

# Module 6: Artificial Intelligence for Public Interest

## Outline

This module, which takes about **3 hours of learning**, introduces how to think about public interest, especially in the context of AI systems by exploring the **important factors to consider when assessing the public interest** with regard to AI. These include justification, equity, participatory design/deliberation, technical standards/safeguards, openness for validation, and sustainability. It also introduces different projects to see how Public Interest AI projects work in practice and features a card game called the **AI Compass**, which will help you think more deeply about why and how AI models should be used in the public interest.



# Module 6: Artificial Intelligence for Public Interest
## Competencies and Learning Objectives

### Competencies:

- Human agency: Learn critical thinking on the dynamic relationship between human agency and machine agency
- Problem scoping: Acquire skills in scoping a problem to be solved by an AI system

### Learning Objectives:

Students…

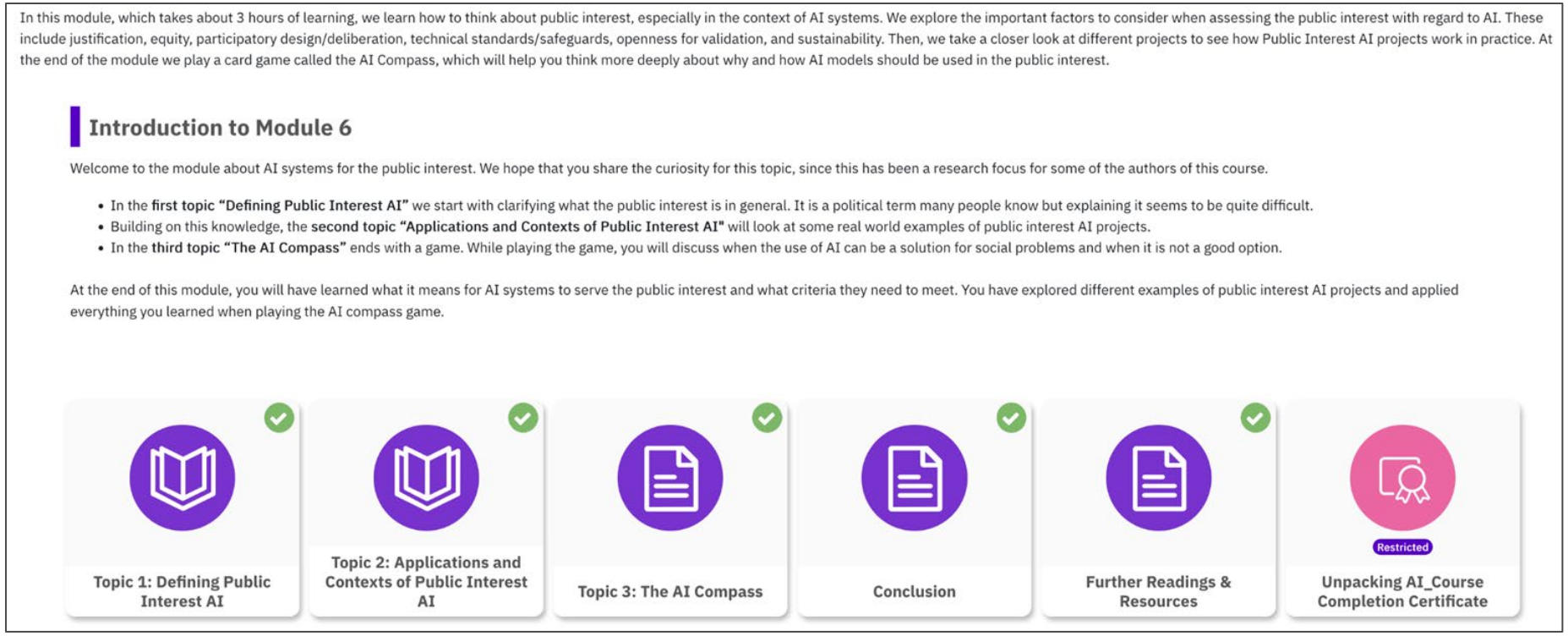
…recognise the elements of a public interest AI definition.

…identify different applications in different fields of public interest AI.

…contrast the different uses of AI applications.

…use the definition learnt to explain how examples of AI support public interest.

# Module 6: Artificial Intelligence for Public Interest
## Display on atingi




→ Short description of the module

→ Introductory section to module 6

→ Overview of the contents of module 6

# Module 6: Artificial Intelligence for Public Interest

## Topic 1: Defining Public Interest AI

The first topic of module 6 explains what public interest means. This is important for AI systems because they can be made with the public interest in mind, or they can be used in ways that harm the public interest. It introduces a framework that explains how AI systems can be developed to make sure they work in a way that supports the public interest.

- Introduction to the concept of public interest AI
- Overview of approaches to public interest AI
- Task: Matching concepts and explanations of public interest AI

# Module 6: Artificial Intelligence for Public Interest

## Topic 2: Application and Contexts of Public Interest AI

The second part of module 6 looks at some real-world examples of AI systems that can be seen as being good for the public interest. It examines the following questions: What can be learned from these examples? How can an AI system help the public? Which applications, areas, and people are involved in these examples?

- Overview of AI approaches to public interest by means of the **Public Interest AI Map**
- Showcasing **specific examples** of public interest AI
- **Task:** Researching and reflecting public interest AI examples.

## Module 6: Artificial Intelligence for Public Interest
## Topic 3: The AI Compass

The third topic of module 6 introduces a card game called “AI Compass.” This game helps players think about where and when AI systems can be used in a good way and where their use could be risky.

- Introduction to the game **AI Compass**
- **Task:** Playing the AI Compass game with peers.

# Module 4: Governing AI
## Topic 2 – Additional Instruction

### Task 2: Playing the AI Compass game

If you find people to play with you online, you can play it right here in a digital version. It is based on the author's research on using AI for the public interest, and it asks whether AI applications can solve problems in society or not. The game also introduces ways with which society develops and maintains AI

### Additional Instruction

→ Playing the AI compass encourages critical reflection and creative thinking about when and how to use AI systems. To support your students in this task, you may set up the digital rooms that are needed to play to game for them by downloading this file and importing to https://playingcards.io/ You can even print out your own card game to use in class.

# Module 6: Artificial Intelligence for Public Interest
## Conclusion

Wrap up the structure and training processes of neural networks and reflecting on the learnings of module 6:

- We first discussed what the **concept of public interest** means and looked at different approaches to defining the term in general and applied to AI systems.
- We covered a theoretical framework of criteria that AI systems have to meet in order to meet public interest standards, such as a **participatory design**, **equity** and **robust technical safeguards**
- Against this background, we introduced you to real world examples of public interest AI projects and you spent some time researching projects on your own.
- This module ended with the AI compass – a game where you can **practice and apply** what you have learned so far.

# Module 6: Artificial Intelligence for Public Interest
## Further Readings & Resources

If students want to dive deeper into the question of "What is public interest AI?", they can explore additional readings and resources:

- Check out the Public Interest AI Website for an overview about Public Interest AI and associated research projects such as the Public Interest AI Project Map, scroll around and see if you find projects that spark your interest.
- Take a look at the work of DAIR, an interdisciplinary research institute that works, among other topics, around the question of how the process of AI can become deliberative.
- Check out the projects of the Algorithmic Justice League that combine art and research to highlight the social implications of algorithms and advocate for equitable and accountable AI systems.

# 3 Course Assessment & Certification

# Course Assessment

## Concept & Implementation

The assessment of the foundational micro-credential "Unpacking AI: Practical Foundations for Non-Tech Students" **combines formative and summative assessment**

- **Formative assessment** is integrated into the course by following the principle of constructive alignment, thereby interweaving input, learning activities, assessment tasks, that directly address the intended learning objectives and ensure students' engagement.
- To allow for the course's integration into curricula and open up the option of awarding credit points, the **summative assessment** is designed to be graded automatically, thereby aligning with the self-paced mode of the course.

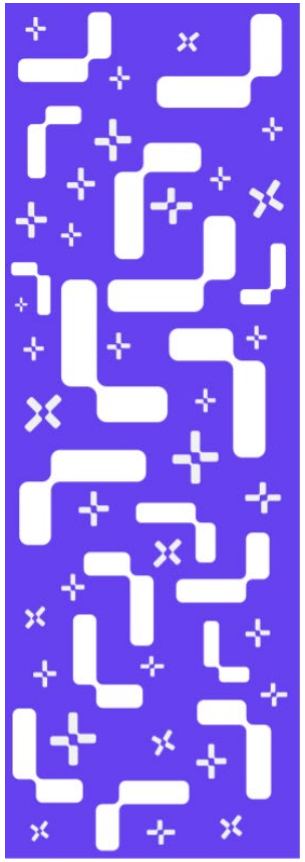
# Structure of the Summative Final Assessment

| Assessment Type | Topic | Scoring | Weight |
|---|---|---|---|
| True/False | Identifying AI | 9 points | 16,67 % |
| Drag and Drop Image | Neural Networks | 9 points | 16,67 % |
| Matching | Training a Neural Network | 6 points | 11,11 % |
| Drag and Drop Text | Risks from Use | 3 points | 5,56 % |
| Drag and Drop Text | Risks from Technology | 3 points | 5,56 % |
| Drag and Drop Image | AI Lifecycle | 10 points | 18,52 % |
| True/False | Societal Risks of AI | 7 points | 12,96 % |
| Matching | Public Interest AI | 7 points | 12,96 % |

# Course Certification

**Requirements:** The platform will automatically generate a certificate of participation once participants have finished all modules of the course and passed the questions in the assessment with 50%.

**Please note:** No credit points will be awarded for course completion but universities may integrate the course into their curricula and award credits through internal accreditation processes.



## Certificate of Completion

*Name of Student*

has successfully completed and demonstrated proficiency on the coursework of

"Understanding AI– Practical Foundations for Non-Tech Students"

This course has been designed by the Alexander von Humboldt Institute for Internet and Society in collaboration with Digital Skills to Succeed in Asia, German International Cooperation (GIZ).

*Completion date*

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