



Bertelsmann AI Curriculum

FAQs for Bertelsmann Employees

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Artificial intelligence (AI) is one of the fastest growing technologies of our time. Exponentially growing amounts of data enable the transformation of business processes and entire markets with the help of AI-based solutions. In addition to Data Science and Cloud Computing, AI rounds off the three pillars of the Bertelsmann Tech & Data strategy. The three topics are inextricably linked.

Thus, the Bertelsmann AI Curriculum builds strongly on the Bertelsmann Data Curriculum and also takes up parts of the Bertelsmann Cloud Curriculum. With the AI Curriculum, Bertelsmann University offers all Bertelsmann employees with appropriate prior knowledge another high-quality and flexibly configurable online learning experience. With the help of this curriculum, knowledge in the area of Machine and Deep Learning can be advanced and practical skills can be acquired in specific AI application areas that support Bertelsmann in leading its businesses into the digital future with the help of AI technology.

What is the Bertelsmann AI Curriculum?

What is the Bertelsmann AI Curriculum?

The Bertelsmann AI Curriculum is a curated digital learning offer for all Bertelsmann employees who wish to expand their existing skills in Data Science or Machine Learning. The AI curriculum complements the Bertelsmann Data Curriculum on the technology side of the technology-to-business spectrum by one additional role profile: Machine Learning Engineer. In addition, learners can choose from three specialization subjects (majors), in which they deal with specific areas for AI application:

- **Computer Vision**
- **Natural Language Processing**
- **Time-Series Analysis**

Together with our Bertelsmann internal AI experts, we have defined requirement profiles including specific skills and learning objectives for the new role as well as for each of the majors. Based on this, we worked closely with our renowned premium learning partners to develop suitable learning programs (learning paths) and put together the best associated content.



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What can participants expect from the AI Curriculum?

The Bertelsmann AI Curriculum is a flexible online learning experience with premium-quality standards and many interactive elements.

Learners benefit from a selected, well-structured and quality-assured digital learning curriculum with great practical relevance. Participants have a chance to exchange information about challenges and best practices in communities powered by the respective learning provider. Also, they get the opportunity to work on their own projects. Thanks to the strong practical relevance, the learning content can be used in everyday professional life.

What topics does the AI Curriculum cover?

The selection of topics covers, on the one hand, a designated learning path for the role of Machine Learning Engineer, and on the other hand, three practical major subjects which Bertelsmann employees can take on in order to learn how to develop solutions in the practical areas of Computer Vision, Natural Language Processing or Time-Series Analysis.

What are the learning objectives?

The learning objectives for the new role profile and each major were formulated together with experts from the Bertelsmann IT community - these objectives are reflective of the requirements that practice places on Machine Learning Engineers and specialists working in either of the application areas of AI. Detailed learning objectives for each role / major can be found in the detailed profile descriptions below ([pp. 9-12](#)).

Who is the curriculum for?

The Bertelsmann AI Curriculum is open to all Bertelsmann employees who would like to continue their training or deepen their knowledge in the field of AI. To ensure a successful learning experience, sound prior knowledge in Data Science or Data Engineering is strongly recommended for most of the content. The respective requirements can be found in the profile details ([pp. 9-12](#)).

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What are the requirements for successful participation?

The basic requirement for successful participation is a high level of engagement and the desire to continuously learn and explore new things. Furthermore, sound prior knowledge within the subject area of either Data Science, Data Engineering or Machine Learning is strongly recommended. Participants can build this knowledge by starting with the Bertelsmann Data Curriculum and work their way towards the technology end of the technology-to-business spectrum.

The Bertelsmann AI Curriculum offers many opportunities to learn according to one's individual learning needs. Each learner has the chance to choose and calibrate the learning path that best suits their situation. Extensive information material and advice is available from Bertelsmann University. As a starting point, anyone interested should ask themselves the following questions for orientation:

- Which data / AI role or which major is right for me given my prior experience?
- How much time can I invest in my professional training?
- Which learning provider will suit me best?
- Which courses within a learning path do I need?
- How much money can I invest?

What types of training are available?

- Web-based trainings (WBT): Both, Coursera and Udacity mainly use web-based training courses which take place in a platform environment. Participants can work through courses and lectures by themselves and at their own pace. In addition, quizzes, project work and networks of fellow students help promote students exchanging ideas about learning content and challenges and help deepen practical skills. When purchasing a license for Coursera or Udacity, participants receive access to the provider's training platform for a fixed period in order to complete their training.
- (Virtual) "Instructor-led" trainings (vILT): As for Microsoft, learners will usually go through live trainings in which they are instructed by certified trainers in a fixed cohort at a selected date. The training courses always consist of a mixture of theory and practical exercises. Those who want to deepen what they have learned also have access to complementary free learning materials. This is particularly recommended in preparation for a certificate exam.

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How can I book a license?

Bertelsmann employees can book their chosen training format independently via www.bertelsmann-university.com. The supervisor's approval is automatically requested during registration. Once the supervisor has given his or her approval, the employee will receive further information on how to start the license or course.

Where does the program take place?

All programs take place 100% online. Please note that all instructor-led trainings take place virtually. Hence, participants can work from anywhere, if they have a stable internet connection.

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How is the Bertelsmann AI Curriculum structured?

The Bertelsmann AI Curriculum is an extension of the Bertelsmann Data Curriculum. Employees who have already successfully completed learning paths for the roles of Data Scientist or Data Engineer or who have obtained comparable skills and experience otherwise, now have the chance to develop themselves further and become a Machine Learning Engineer or use the AI Curriculum to specialize in one of the three majors.



1) Who am I?

In close cooperation with AI experts from various corporate divisions, Bertelsmann University has defined requirement profiles for the role of Machine Learning Engineer as well as for the major subjects Computer Vision, Natural Language Processing and Time-Series Analysis. As with the other Bertelsmann Tech Curricula, as a first step, learners should select the target role or target specialization that fits best with their career or personal aspirations. If unsure, they can read through the detailed descriptions that are provided on pages 9-12 or on the Bertelsmann University website for further guidance.



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2) Which provider suits me best?

As a second step, participants choose a learning provider. For the AI Curriculum, Bertelsmann University works with two well-established learning partners whose learning platforms are at the same time leading the market for AI and Data learning:

- [Coursera](#)
- [Udacity](#)

In addition, interested employees can also acquire technology-specific AI knowledge for the Microsoft Azure environment. As in the Bertelsmann Cloud Curriculum, a license for the Microsoft Learner Experience Portal (LxP) can be purchased for the duration of one year. In addition to the courses and certificate exams from the Cloud Curriculum, learners can complete a wide range of content from the areas of Data and AI on the Microsoft training portal.

Each learning provider has its own profile and differs e.g. regarding content, the time to be invested and the license terms and conditions. This way, anyone interested to embark on a learning path as part of the AI Curriculum may choose an offer that can be tailored to the individual needs. The learning content is regularly updated by the providers and is therefore always up to date. Bertelsmann University provides a summary of the most important characteristics of each learning partner in the [Provider Comparison Sheet](#).

3) What do I need?

In order to build the knowledge and skills required for the target role or the selected major, Bertelsmann University has put together suitable learning programs (learning paths) with our learning partners based on the Machine Learning Engineer profile or the requirements of the respective major. Each learning path contains a curated collection of training sessions.

The time invested, largely depends on the level of knowledge of the learner. The description of the individual learning paths, including course information, can be found on the Bertelsmann University website: www.bertelsmann-university.com.

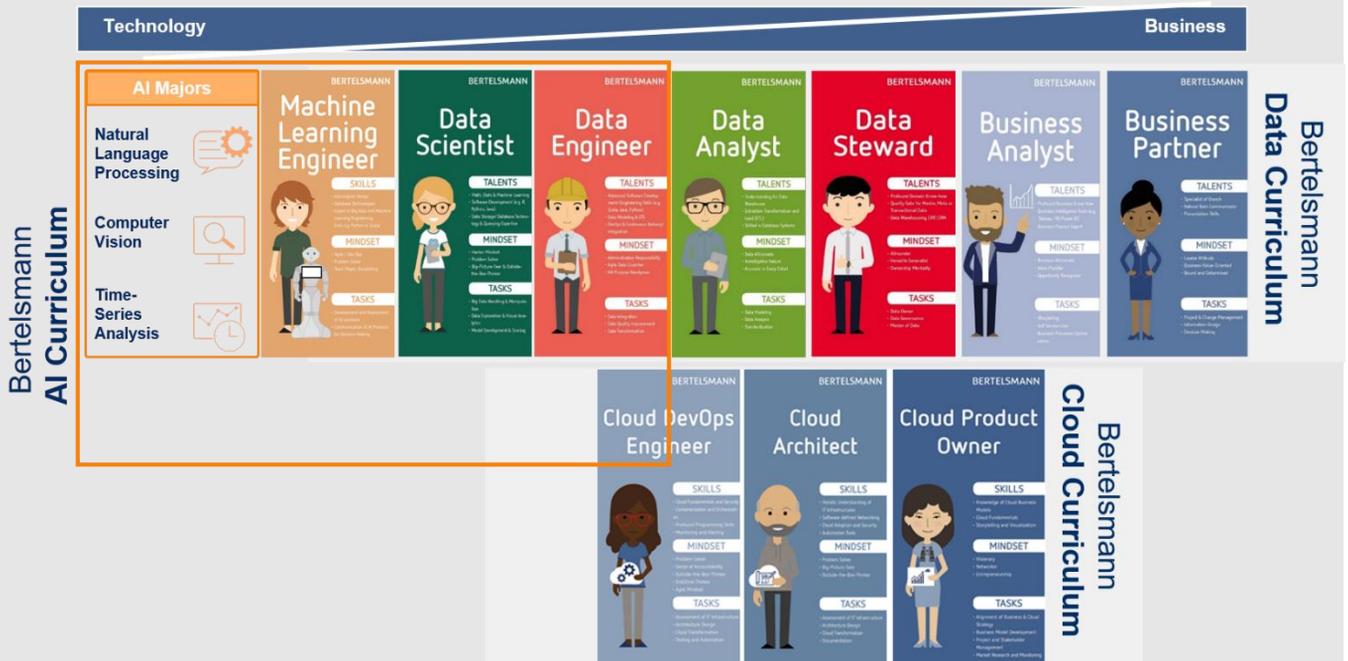
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Which AI role profiles and majors are there?

Below is an overview and detailed descriptions, requirements and learning objectives for the Machine Learning Engineer and the three majors.

Overview

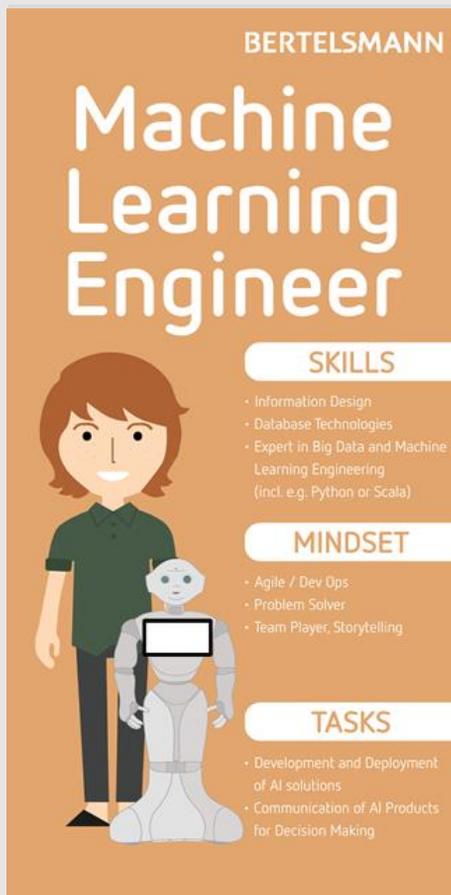
The Bertelsmann AI Curriculum adds to the Bertelsmann Data Curriculum on the technology end of the technology-to-business spectrum. It supplements the existing curriculum with the role of Machine Learning Engineer and three specialized majors: Computer Vision, Natural Language Processing, and Time-Series Analysis.



In order to find a suitable role or the right major subject, interested participants can use the following detailed descriptions and the specified requirements for orientation.

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Machine Learning Engineer



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Machine Learning Engineer

SKILLS

- Information Design
- Database Technologies
- Expert in Big Data and Machine Learning Engineering (incl. e.g. Python or Scala)

MINDSET

- Agile / Dev Ops
- Problem Solver
- Team Player, Storytelling

TASKS

- Development and Deployment of AI solutions
- Communication of AI Products for Decision Making

Role description: Machine Learning Engineers develop Machine Learning and AI models in close cooperation with other experts in the areas of data and cloud.

They are responsible for the development of powerful AI systems across application fields such as Computer Vision, Natural Language Processing and Time-Series Analysis using, for example, Deep Learning methods.

They work closely with Data Engineers and cloud specialists on the deployment and integration of AI models in applications and services.

Prerequisites: Strong affinity with IT and advanced knowledge of a relevant programming language, e.g., Python. Expertise in data management technologies, especially in a cloud and big data context. Good prior knowledge of statistics and mathematics and advanced experience with regard to Machine Learning processes and their deployment and operation using DevOps-like processes (MLOps).

Learning objectives: Build-up of basic knowledge in the area of information design and of advanced expertise in database technologies. Expert knowledge in the areas of Big Data and Machine Learning Engineering using programming languages such as Python or Scala are also conveyed.

Mindset: DevOps, agile mindset, team player, problem solver, storytelling.

Tasks: Development of AI solutions and their deployment. Communication of technical details of AI solutions to a range of stakeholders, including business decision makers.

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Computer Vision

Computer Vision



Subject description

This major offers deep insights into the field of Computer Vision. Participants will acquire skills and programming techniques that will enable them to develop applications in the field of image and video processing and even for the creation of new image and video material.

The offer is aimed at specialists in Machine Learning or Deep Learning who would like to deepen their existing skills and gain expert knowledge in the field of Computer Vision.

Prerequisites

Knowledge of Linear Algebra and Differential Calculus, advanced Python programming and Machine Learning skills, including, Deep Learning in particular.

Learning Objectives

Foundational knowledge of Computer Vision techniques in the field of image and video analysis, such as image categorization and object detection, segmentation and tracking. Expert-level knowledge of essential modeling techniques such as Convolutional Neural Networks (CNNs), Residual Networks, Single-shot Detectors (SSDs), including generative models for automatic image synthesis using, e.g., style transfer.

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Natural Language Processing

Natural Language Processing



Subject description

This major focuses on modern Natural Language Processing (NLP) techniques. It provides insights into topics such as Natural Language Understanding (NLU) and Natural Language Generation (NLG). Knowledge acquired as part of this major will help participants develop applications that process written or spoken language using Machine Learning methods.

The offer is aimed at specialists in Machine Learning or Deep Learning who want to deepen their existing skills and acquire expert knowledge of the core elements of Natural Language Processing.

Prerequisites

Knowledge of Linear Algebra and Differential Calculus, advanced Python programming and Machine Learning skills, including; Deep Learning in particular.

Learning Objectives

Basic knowledge of Natural Language Processing techniques, such as lexical, syntactic and semantic analyses. Expert-level modeling techniques, such as Embeddings, Long-Short Term Memory (LSTM), Recurrent Neural Networks (RNNs) and Transformer Models, including NLG models for automatic text generation.

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Time-Series Analysis

Time-Series Analysis



Subject description

Time-Series analysis and related topics like predictive analytics are valuable tools for companies for purposes, such as trend prediction, predictive maintenance, etc. The creation of forecasts using modern data analysis is generally of crucial importance in the context of data-based business models.

In this specialization subject, participants will learn how time-series models can be developed and used for decision support in various business scenarios.

Prerequisites

Sound knowledge of linear algebra and statistics, especially probability theory. Data analysis experience.

Learning Objectives

Basic knowledge of linear, non-linear and multivariate time-series concepts such as trends, seasonal, stationary and co-integrated time-series, autocorrelations, autoregressions, moving averages, etc. Expert-level knowledge of time-series modeling using, for example, sequence models such as Long-short Term Memory (LSTM), Recurrent Neural Networks (RNNs), 1D ConvNets and Hidden Markov Models and their use for specific forecasting and predictive analytics purposes.