

Tools for Teaching Artificial Intelligence

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Abstract: Today, there is a need to list out some of the contemporary tools out there for teaching Artificial Intelligence, Due to the recent policy development in Bulgaria regarding the Concept for the Development of Artificial Intelligence in Bulgaria by 2030, the Bulgarian (Minister of Transport and Information Technology) Rossen Zheliazkov stated that "As a result of the AI development some of the sectors will be subject to complete transformation, some will be changed forever" (Anon, n.d.). one such sector is the education sector thus there is a need to analyze the tools needed for teaching artificial intelligence in our educational institutions. This paper presents some of the contemporary tools for teaching Artificial Intelligence and provides resources for both teachers and students that want to divulge information about AI to the development of Bulgarian education.

Keywords: Artificial Intelligence; AI; Tools; teaching

JEL: M42; A00; A20; C88; C89; O00; O30; O33; Q55

1. INTRODUCTION

In Keeping up with the strategic objective of integration within the EU, the Bulgarian Ministry of Transport, Information Technology and Communications [3] on 19 August 19, 2020, released a new draft strategy entitled Concept for the Development of Artificial Intelligence in Bulgaria until 2030. The aim of this policy is to define important areas for building scientific and expert capacity for the development and implementation of AI systems and to build on the measures and activities set as a priority in other relevant national strategic documents, including in particular "Vision, Objectives and Priorities for the National Development Program: Bulgaria 2030."

An additional aim of this report [2] is to put Bulgaria on the global map for AI solutions and technologies, and to highlight the value that the country and its talent can bring to the sector. For instance, it suggested that Bulgaria, with its strong IT sector has the potential to become a prolific AI market. Another suggestion by the report is that Bulgaria, with its strong IT sector has the potential to become a key AI market. To add to that, a growing popularity of AI technologies is creating a startup wave in the country.

The OECD.org report [5] showed that Bulgaria is matured enough in resources and information on the AI landscape, such as national AI policies, blog posts, trends and data visualizations, live news, and publications. supportable by an increase in growth in AI research for institutions in Bulgaria from the period of 2000 to 2022 as shown in figure1 below.

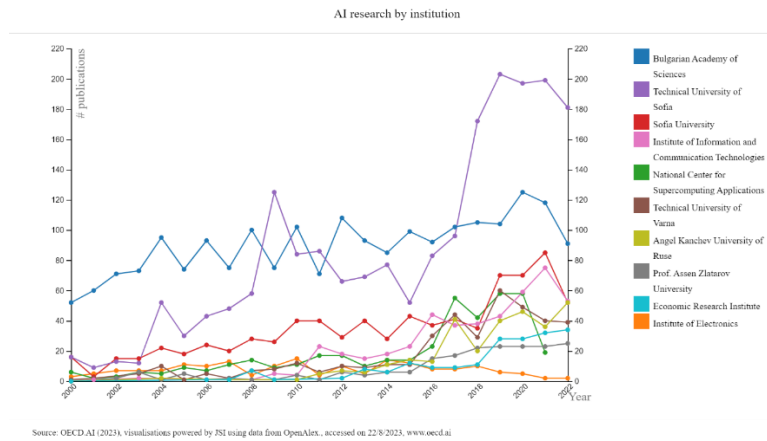


Figure 1: There has been an increase in AI research by institution in Bulgaria as shown here

Moreover, according to another report [4] the authors stated that education and lifelong learning have a key role to play in the development and adoption of AI because they train researchers who discover new methods and invent tools, experts who implement the technologies in practice, teachers who disseminate knowledge, and specialists who are able to explain the benefits of adopting specialists' systems

Furthermore, in another report [6] the author mentioned that the main impact areas and measures that are envisaged by the national framework strategy covers the development of important national policies in the areas of science and scientific infrastructure; education and skills; amongst others.

The above-mentioned reports all lead to a single direction and that is to put Bulgaria on the global map for AI solutions and technologies, and to highlight the value that the country and its talent can bring to the sector [7]. For that to happen emphasis must be focused on education and lifelong learning have a key role to play in the development and adoption of AI because they train researchers who discover new methods and invent tools, experts who implement the technologies in practice, teachers who disseminate knowledge, and specialists who are able to explain the benefits of adopting specialists' systems, thus, to disseminate knowledge, we need to understand the Tools for Teaching Intelligence.

2. RATIONALE

Here I want to make a distinction between the tools for teaching AI and the Tools for teachers. Even though both set of tools can be used as a group for teaching AI, for this article I am considering the machine learning tools for model training.

Contrary to the popular notion, model training in machine learning is not simply a black box activity . For the machine learning (ML) solution to consistently perform well, the developers have to deep dive into each model to find the right fit with the data and the business use case.

In simple terms, a machine learning model is a simple statistical equation that is developed over time based on the data at hand. This learning process, also known as training, ranges from simple to complex processes. A model training tool is an interface that

enables easy interaction between the developer and the complexities of machine learning models.

Here the question of How to choose the right model training tool arises. The answer is relative in the fact that in machine learning, there is no “all -in-one software”- no one tool can fix all problems because of vast variations in real-world problems and data. But there are model training tools that can fit you like the correct size for – you and your requirements precisely.

To be able to choose a primary model training tool for your results, you need to assess your existing development process, production infrastructure, skills level of your team, compliance restrictions, and similar vital details to be able to pin down the proper tool.

However, one key feature that is often overlooked, leading to a weak foundation and an unstable series of results, in the long run, is the ability of the model training tool to either track metadata or the ability to integrate seamlessly with a metadata store and monitoring tools.

Model metadata involves assets such as training parameters, experiment metrics, data versions, pipeline configurations, weight reference files, and much more. This data is powerful and cuts down both production and model recovery time. To choose the right metadata store, your team can do a cost-benefit analysis between building new vs. buying existing solutions.

One may also want to ask what is machine learning and why?

Kate Reyes[10] in an article described machine learning is a form of artificial intelligence that automates data analysis, allowing computers to learn through experience to perform tasks without explicit programming. It's no secret that AI and machine learning skills are increasingly in demand. In a market growing as rapidly as this one, there are a plethora of machine learning tools available. If you choose the one that is right for you, machine learning can make various processes faster and more efficient. Making the right choice for you and your organization can be tricky, but we will take

Thus, according to an article by [9], Machine Learning is the Future. Powerful methods have been developed. And The principles are well understood in statistical and probabilistic frameworks.

With the help of machine learning systems, we can examine data, learn from that data, and make decisions. Machine learning involves algorithms and Machine learning library is a bundle of algorithms.

As stated by Thomas H. Davenport, an Analytics thought leader in an excerpt from The Wall Street Journal [11]: Machine learning is a method of data analysis that automates analytical model building. It is a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns, and make decisions with minimal human intervention.

While many machine learning algorithms have been around for a long time, the ability to automatically apply complex mathematical calculations to big data – over and over, faster, and faster – is a recent development. Here are a few widely publicized examples of machine learning applications you may be familiar with:

- The heavily hyped, self-driving Google car? The essence of machine learning.
- Online recommendation offers such as those from Amazon and Netflix? Machine learning applications for everyday life.
- Knowing what customers are saying about you on Twitter? Machine learning combined with linguistic rule creation.
- Fraud detection? One of the more obvious, important uses in our world today.

Why is machine learning important?

According to Cornellius Yudha Wijaya in article [12], he suggested that Machine learning is needed to understand and apply in our everyday job as data scientists. The knowledge to know is not limited to importing the code from the library, but it is expanded to the model concept, the algorithm choice, metrics, and many more.

Also According to an online article [13] ML is a subset of [artificial intelligence \(AI\)](#), thus machine learning (ML) is the area of computational science that focuses on analyzing and interpreting patterns and structures in data to enable learning, reasoning, and decision making outside of human interaction. Simply put, machine learning allows the user to feed a computer algorithm an immense amount of data and have the computer analyze and make data-driven recommendations and decisions based on only the input data. If any corrections are identified, the algorithm can incorporate that information to improve its future decision making.

In another study [14], Findings indicated that the tools can effectively leverage students' understanding of Machine Learning, however, further studies regarding the design of the tools concerning educational aspects are required to better guide their effective adoption in schools and their enhancement to support the learning process more comprehensively.

Why Machine Learning Has Become So Popular?[15]

Over the last few years, the machine learning and deep learning industry have been flourishing. There are plenty of new start-ups starting every year and many machine learning companies have also become multi-million companies. There are many reasons behind the popularity of Machine learning. Specifically, the Open-source tools: The availability of open-source machine learning libraries and frameworks, such as TensorFlow and PyTorch, has made it easier for individuals and organizations to get started with machine learning, reducing the barriers to entry, and enabling wider adoption.

Also, if you are studying computer science and looking for a full-time job in this field, then learning Machine learning concepts can be very helpful.

Machine learning is important because it gives enterprises a view of trends in customer behavior and business operational patterns, as well as supports the development of new products. Many of today's leading companies, such as Facebook, Google and Uber, make machine learning a central part of their operations [17].

Another question may be asked; What is the purpose of machine learning?

Interesting as its title might be, machine learning is the subset of artificial intelligence (AI) that does the least learning. Nonetheless, it is one of the most ubiquitous types of AI. Machine learning is a type of software that aims to automate and simplify processes with simple programs. It is ever present in the modern world, being used in nearly all industries. Automatic responses to queries, automated stock trading, computer vision, recommendation engines, and customer service are some examples of the utilities of machine learning. Machine learning is a large market, encompassing the majority of AI software and projects. In line with this, the machine learning market is also the largest segment of the AI market. This market is expected to grow from around 140 billion U.S. dollars to nearly two trillion U.S. dollars by 2030 [16].

There is also an increase in the Global artificial intelligence market size for the period 2021-2030.

According to Next Move Strategy Consulting the market for artificial intelligence (AI) is expected to show strong growth in the coming decade. Its value of nearly 100 billion U.S. dollars is expected to grow twentyfold by 2030, up to nearly two trillion U.S. dollars. The AI market covers a vast number of industries. Everything from supply chains, marketing, product making, research, analysis, and more are fields that will in some aspect adopt artificial intelligence within their business structures. Chatbots, image generating AI, and mobile applications are all among the major trends improving AI in the coming years [18].

[19]: This pervasive and powerful form of artificial intelligence is changing every industry. Here's what you need to know about the potential and limitations of machine learning and how it's being used.

[20]: The global Machine Learning (ML) market size was valued at \$19.20 billion in 2022 & is expected to grow from \$26.03 billion in 2023 to \$225.91 billion by 2030...

Summary

Now, you know the reasons why machine learning is popular. It is a very attractive field to study. Since the field has matured both in terms of identity and in terms of methods and tools it has varied options and thus the horizon of jobs has increased.

Apart from that, the thing which makes it popular is that there is an abundance of data to learn from. Adding to that, there is an abundance of computation to run the methods. All this makes it a bright field and a field to look up to! [9]

Another question comes up and that is What is Machine Learning and Why is it Popular?

As you can see, Machine Learning is popular today because of the advent of new hardware, greater accessibility to data, and better algorithms. These three factors together have combined to create a Machine Learning boom.

ML is popular because of the availability of large and diverse data sets, the affordability of computational power and data storage and the development of innovative algorithms and frameworks

Another question to consider is Where do we use machine learning in our daily life? Let's explore some practical examples to see the answer to this question.

Here is a list of examples [26,27,28] of how machine learning is useful in our daily life.

- Example 1

Almost everyone buys something like a digital TV on e-commerce retail websites like Technopolis.bg. Before making the purchase, you browse the internet a hundred times, looking for the right configurations. After a couple of days of intensive search, you find ads showing various digital TV 's whenever you visit any other website or search engine.

It is an ideal example of machine learning. Your computer or phone understands that you are looking for a digital TV. It endeavors to make it easy for you by displaying these ads automatically without you asking.

- Example 2

Almost all mobile apps today use machine learning tools and frameworks to deliver the best experience to their users. Social media uses machine learning tools more than anyone else. The Facebook Photo feature is an excellent example of AI and machine learning. Whenever you upload a photo on Facebook, it recognizes the person in the picture and flashes their name when you move the cursor over their faces. Of course, the person should have a Facebook account for the purpose. It is also an excellent example of machine learning.

- Example 3

Music and video recommendations

People familiar with music applications have probably wondered how the application can suggest other songs they might enjoy listening to. Same with YouTube—how does it know which video people might want to view next? All of this is made possible with machine learning. The algorithm is trained with previously watched videos, and then from that info, builds and improves an algorithm that defines the listener's or viewer's taste.

- Example 4

The fourth example is Software, which shows how you will look when you get older. This image processing also uses machine learning.

- Example 5

Web search

The process to find results after searching for something in a search engine is incredibly complex and uses machine learning. How does Google know that all the thousands of results listed are related to a search inquiry? No one is manually categorizing everything on the internet—it's all a very advanced form of AI and machine learning that decides which images are "dogs" and "cats" and which articles are related to the "Loch Ness Monster" or "Bigfoot."

- Example 6

Smart Cars

Machine learning can evaluate the driving environment and driver condition based on information obtained from different external and internal sensors.

For example, a smart car can make an observation and detect an object and can then identify that object using machine learning. Since there are so many different objects in the world, it would be nearly impossible to explicitly code in what every object is or could be into the car's framework. However, if you teach the car to identify objects through machine learning, it can make those decisions itself.

- Example 7

Other Real-World Examples of (ML) may include:

- Facial recognition. ...
- Email automation and spam filtering. ...
- Financial accuracy. ...
- Social media optimization. ...
- Healthcare advancement. ...
- Advancement in Education (Lecturing, Teaching, Tutorials)
- out-Mobile voice to text and predictive text. ...
- Predictive analytics.

- Example 8

Taking Machine learning as a career.

So, it should be obvious by now that machine learning is one of the coolest emerging fields in IT—but why else should your child start learning about it? [21,22,30]

In the coming years, many companies like DeepMind and OpenAI hope to solve general artificial intelligence, which is a term for an AI that can learn and perform any task put in front of it. This breakthrough is likely still years in the future, but it has the potential to revolutionize how human beings interact with technology, the job market, and society in general.

- Example 9:

If you have used Netflix, then you must know that it recommends you some movies or shows for watching based on what you have watched earlier. Machine Learning is used for this recommendation and to select the data which matches your choice. It uses the earlier data.

- Example 10:

The tenth example would be Facebook.

When you upload a photo on Facebook, it can recognize a person in that photo and suggest you, mutual friends. ML is used for these predictions. It uses data like your friend-list, photos available etc. and it makes predictions based on that. [23], [24], [25]

All these are some examples, that help us to understand, how machine learning is used. ML is like AI up to some extent, however, there is a difference between the two. It is related to data mining.

3. FINDINGS

Artificial intelligence has been widely applied to various Machine Learning platforms as follows:

These Are The 10 ML Tools That Can Be Used for Teaching AI.

1. Google Teachable Machine
2. TensorFlow – Challenging tool to learn but great to work with
3. PyTorch – Versatile and easy to use
4. Scikit-learn – Easy to understand and use
5. Apache Mahout – Ideal for statisticians and mathematicians
6. Microsoft Azure Machine Learning
7. Amazon Machine Learning – A widely accepted machine learning tool
8. Weka3 – Excellent machine learning tool for data mining
9. Rapid Miner – One of the best machine learning tools for beginners
10. IBM Watson Studio - Watson was created as a question answering (QA) computing system that IBM built to apply advanced natural language processing, information retrieval, knowledge representation, automated reasoning, and machine learning technologies to the field of open domain question answering. Watson Studio helps you inject decision intelligence into your applications with the combined power of predictive and prescriptive analytics. This seamless collaboration in a unified environment leads to substantial productivity gains that save both time and money in building, deploying, and managing AI models.

These are the 10 ml tools that can be used for teaching AI.

1. Google Teachable Machine

Teachable Machine is a web-based tool that makes creating machine learning models fast, easy, and accessible to everyone.

A fast, easy way to create machine learning models for your sites, apps, and more – no expertise or coding required.

Link1: <https://teachablemachine.withgoogle.com/>

You can use Teachable Machine to recognize images, sounds or poses. Upload your own image files or capture them live with a mic or webcam. These examples stay on-device, never leaving your computer unless you choose to save your project to Google Drive

Link2: <https://blog.google/technology/ai/teachable-machine/>

2. TensorFlow

When it comes to deep learning and machine learning, TensorFlow is a prominent framework used by both programmers and academics. The Google Brain team introduced TensorFlow in 2007, and since then, it has developed into a full-fledged machine learning ecosystem. It also aids in data pre-processing, feature engineering, and model serving, expanding its use beyond simple training.

TensorFlow's main library is used on ARM and AMD systems after being imported as a Python module. Train and deploy models in the browser and on Node.js with the help of the TensorFlow.js JavaScript library. The TensorFlow version is a simplified variation of the original TensorFlow software for model inference on mobile, IoT, and edge devices.

[[Learn Complete TensorFlow Tutorial](#)]

TensorFlow was initially developed by Google, TensorFlow is an open-source Machine Learning software library for numerical computation using data flow graphs. It has a comprehensive and flexible suite of tools, libraries, and resources that allow you to build, train, and deploy ML applications without any hassle.

TensorFlow is an excellent Machine Learning tool for Deep Learning systems and neural nets. Another great feature of TensorFlow is that it can run on GPUs and CPUs as well as on mobile computing platforms.

TensorFlow is a deep learning tool that was written in highly optimized C++ and CUDA (Nvidia's language for programming GPUs) and provides an interface to languages like Python, Java, Go. It is an open-source library that was developed by the tech giant, Google, for the smooth running of deep learning applications.

TensorFlow makes it fairly easy for beginners and even experts to create machine learning models for mobile, web, desktop, and cloud.

It is also used to create large-scale neural networks with multiple layers. If you want to solve deep learning or machine learning problems like Classification, Perception, Understanding, Discovering, Prediction and Creation, TensorFlow is the right deep learning tool for you.

[TensorFlow](#), which is used for research and production at Google, is an open-source software library for dataflow programming. The bottom line, TensorFlow is a machine learning framework. This machine learning tool is relatively new to the market and is evolving quickly. TensorFlow's easy visualization of neural networks is likely the most attractive feature to developers.

3. Pytorch

Facebook is responsible for developing the open-source Deep Learning framework known as PyTorch. It used the Torch library as its foundation and was created with one fundamental goal: to speed up the entire process, from research prototyping to production deployment. One of its most noteworthy features is that PyTorch includes a C++ frontend in addition to a Python interface.

The "torch. distributed" backend encourages scalable distributed training and performance optimization in research and production, and the front-end acts as the primary foundation for model creation. You can't get much better than this regarding deep learning frameworks.

PyTorch is an open-source machine learning library that is widely used for deep learning tasks. It was developed by Facebook's artificial intelligence research group and is based on the Torch library. PyTorch's dynamic computational graph system, flexibility, and easy-to-use interface make it a popular choice among researchers and practitioners. Its features include:

- Dynamic computational graph system
- Support for tensor computation with GPUs
- Easy-to-use interface and extensive documentation

4. Scikit-learn

SciKit Learn is free and easy to use, even for people who need to learn more about machine learning. It also comes with much documentation. It simplifies the process of tuning and debugging models by allowing the developer to alter the algorithm's predefined parameters while the method is being used or during runtime.

With its rich Python library, SciKit-Learn makes it possible to construct machine-learning applications. In terms of data mining and analysis, it is one of the most effective technologies currently on the market. The pre-processing capabilities of Sci-Kit Learn are vast, and the software also makes it possible to construct algorithms and models for clustering, classification, regression, dimensionality reduction, and model selection.

Scikit-Learn is one of the most useful libraries for ML in Python. Built on NumPy, SciPy, and Matplotlib, this Python-based library contains an array of efficient tools for Machine Learning and statistical modeling. These include classification, regression, clustering and dimensionality reduction, model selection, and pre-processing.

Since it is an open-source library with an active community, it is always being improved. And rest assured, if you ever get stuck in a dead-end problem, you can always reach out to the Scikit-Learn community for help.

5. Apache Mahout – Ideal for statisticians and mathematicians

Apache Mahout is an open source, distributed linear algebra framework and mathematically expressive Scala DSL designed for developing scalable ML applications. It is mainly used by Data Scientists, Mathematicians, and Statisticians for speedy implementation of ML algorithms.

Apart from offering an extensible platform for building scalable algorithms, Apache Mahout also includes matrix and vector libraries. It can run on top of Apache Hadoop using the MapReduce paradigm.

Apache Mahout is an open-source machine learning library designed to provide scalable and efficient implementations of machine learning algorithms. It includes a range

of algorithms for clustering, classification, and collaborative filtering, among others. Some of the key features of Apache Mahout are:

Scalability: Mahout can efficiently handle large datasets and can scale up to handle big data with the help of Apache Hadoop.

Flexibility: It supports multiple programming languages.

Extensibility: Mahout provides a framework for building custom algorithms and integrating with other tools and libraries.

6. Microsoft Azure Machine Learning

[Microsoft Azure](#) customers can use Azure ML Studio to build and train models, then publish them as APIs for usage by other applications. The service provides up to 10 GB of storage per user for model data, while users can link their Azure storage to the service for larger models.

Algorithms from both Microsoft and outside developers are readily available. You can test out Azure ML Studio for up to eight hours without providing any personal information before deciding whether or not to sign up for an account.

[[Learn More About Azure Machine Learning](#)]

Microsoft Azure Machine Learning Studio is a fully-managed cloud service that allows you to build, deploy, and share predictive analytics solutions in a hassle-free manner. It is a collaborative, drag-and-drop tool that enables you to build, test, and deploy predictive analytics solutions on your data.

Azure ML Studio publishes models as web services to facilitate easy consumption by custom apps or BI tools. It offers an interactive, visual workspace for developing, testing, and iterating on a predictive analysis model. The tool demands no programming – it visually connects the datasets and modules to build your predictive analysis model.

[Azure Machine Learning](#) is a cloud platform that allows developers to build, train, and deploy AI models. Microsoft is constantly making updates and improvements to its machine learning tools and has recently announced changes to Azure Machine Learning, retiring the Azure Machine Learning Workbench.

7. Amazon Machine Learning – A widely accepted machine learning tool

Amazon Machine Learning, also known as Amazon ML, is a powerful service hosted in the cloud that makes it simple for software developers of varying levels of experience to implement machine learning technology.

Amazon ML gives users access to visualization tools and wizards that walk them through the process of developing machine learning (ML) models without requiring them to grasp the complicated ML methods and technology involved in the process. Once your models are complete, Amazon ML makes it easy to receive predictions for your application using simple APIs. You won't have to create custom prediction-generating code or manage any infrastructure because Amazon ML does everything for you.

Amazon Machine Learning tool is a cloud-based, Machine Learning software application. It is primarily used by developers all over the world to build machine learning models and for generating predictions. The best part about it is that it can be used by web/mobile app developers of all skill levels.

AML supports three types of ML models, including regression, multi-class classification, and binary classification. It can integrate data from multiple sources like Redshift, Amazon S3, and RDS. Also, it allows you to create data source objects from the MySQL database.

It should come as no surprise that Amazon offers an impressive number of machine learning tools. According to the AWS website, [Amazon Machine Learning](#) is a managed service for building Machine Learning models and generating predictions. Amazon Machine Learning includes an automatic data transformation tool, simplifying the machine learning tool even further for the user. In addition, Amazon also offers other machine learning tools such as [Amazon SageMaker](#), which is a fully-managed platform that makes it easy for developers and data scientists to utilize machine learning models.

8. Weka3 – Excellent machine learning tool for data mining

When working with WEKA, users can access many machine-learning techniques. Experts in machine learning can extract useful information from massive amounts of data using the ML framework methodologies. Within this setting, the professionals can establish an environment to develop new machine-learning techniques and put those strategies into practice using actual data.

Researchers in the disciplines of machine learning and applied sciences make use of WEKA to achieve their goals in terms of learning. It is a valuable instrument that may be used for many data mining tasks and responsibilities.

Auto-WEKA is a data-mining tool designed to perform combined algorithm selection and hyper-parameter optimization over the classification and regression algorithms that WEKA implements.

So, when a dataset is fed in WEKA, it explores the hyperparameter settings for several algorithms and recommends the most preferred one to the user – the one that offers a reliable generalization performance. The tool uses a fully automated approach and by leveraging the recent innovations in Bayesian optimization.

WEKA supports the widely used machine learning classification algorithms like i.e., Support Vector Machines, Linear regression, Logistic regression, Naive Bayes, Linear discriminant analysis, Decision trees, k-nearest neighbor algorithm, and Neural Networks (Multilayer perceptron).

Weka is a popular open-source machine learning tool that provides a collection of algorithms for data preprocessing, classification, regression, clustering, and visualization. It is widely used in academic and industrial settings and supports a variety of file formats. Some of the key features of Weka are:

User-friendly interface: Weka provides a graphical user interface that allows users to easily explore and analyze data.

Extensibility: Weka allows users to develop and integrate their own algorithms and extensions into the tool.

Comprehensive documentation and support: Weka has a large community of users and developers, and provides extensive documentation, tutorials, and forums for support.

9. Rapid Miner – One of the best machine learning tools for beginners

Rapid Miner provides a platform for [machine learning, deep learning](#), data preparation, text mining, and predictive analytics. It can be used for research, education and application development.

Features:

- Through GUI, it helps in designing and implementing analytical workflows.
- It helps with data preparation.
- Result Visualization.
- Model validation and optimization.

Pros:

- Extensible through plugins.
- Easy to use.
- No programming skills are required.

Cons:

- The tool is costly.

Tool Cost/Plan Details:

It has four plans:

- Free plan
- **Small:** \$2500 per year.
- **Medium:** \$5000 per year.
- **Large:** \$10000 per year.

Official Website: [Rapid Miner](#)

10. IBM Watson Studio

IBM Watson Studio is a platform that allows you to build and train scalable ML models with faster optimization. It offers you with all the tools required to solve business problems through a collaborative data experience. There are [tools for data analysis](#) and visualization, for cleansing and shaping the data, for data ingestion, and of course, for creating and training ML models.

IBM Watson Studio accelerates the Machine Learning and Deep Learning workflows essential for the integration of AI into your business infrastructure, thereby fostering innovation.

Watson Machine Learning is an IBM cloud service that uses data to put machine learning and deep learning models into production. This machine learning tool allows users

to perform training and scoring, two fundamental machine learning operations. Keep in mind, IBM Watson is best suited for building machine learning applications through API connections.

4. DISCUSSION ABOUT TEACHING AI.

Education is not just about acquiring knowledge. Education is a complex process in which we not only acquire knowledge of various concepts but also learn to apply them in daily life with our social skills. Machines cannot teach empathy, sympathy, and other emotions that are an important part of our personality development. This means that no matter how sophisticated AI is, no matter how many examples of using AI, this technology will not be able to replace the role of teachers or educators. The role of AI is limited to helping and empowering teachers in making the learning process a fun experience for students. The role of IT is also often used in supporting learning, either in schools or for self-learning. In the future, learning activities will apply more artificial intelligence. AI can be used to present learning materials, conduct assessments, provide learning feedback. Artificial intelligence has been widely applied to various educational technology platforms. [29]

The following are some examples of applying artificial intelligence to support learning such as 1) Virtual Mentor, for example, Blackboard to publish notes, homework, quizzes, and tests that allow students to ask questions and assignments for the assessment process.

Applications are widely used by professors/lecturers to publish notes, homework, quizzes, and tests that allow students to ask questions and assignments. Applications can also be used for assessment/assessment. 2) Voice Assistant, for example, Google Assistant (Google), Siri (Apple), Cortana (Microsoft), and others.

5. CONCLUSION.

The existence of artificial intelligence may be able to provide knowledge to students, but developing character cannot be done. That is an educator's job. How to inspire, motivate, make students become good students." So, the role of the teacher in providing motivation, inspiration, and developing character are what AI cannot replace because AI is not given feelings and emotions like humans in general. In the end, if we look at technological developments, we must be able to adapt as technology advances. If we do not adjust, we are an educator (teacher/lecturer) may be replaced by technology.

I have compiled some of the popular Machine learning tools that you should know presently. Though this list is by no means comprehensive. There are more machine learning tools in the online marketplace, but these are the ones that are popular. These machine learning tools help solve real world problems and their knowledge can help you become job ready with appropriate AI competence.

If you are Still not sure which of these machine learning tools will meet your needs? Perhaps becoming better-trained machine learning training will give you the power to make a more informed decision. Probably FEBA's graduate program will help make you an expert in machine learning through hands-on exercises and real-life industry projects.

In this paper, I have explored machine learning and the top machine learning software tools in detail.

Selection of the tool depends on your requirement for the algorithm, your expertise level, and the price of the tool.

Machine learning library should be easy to use.

Most of these libraries are free except Rapid Miner. TensorFlow is more popular in machine learning, but it has a learning curve. Scikit-learn and PyTorch are also popular tools for machine learning and both support Python programming language. TensorFlow is also good for neural networks.

The machine learning tools mentioned in this paper speed up and make the process of developing algorithms more accessible. Many of today's most prominent businesses have also developed their ML frameworks to employ inside their operations.

However, one should use the best machine learning tools and frameworks to get the best out of AI and ML. Most of the applications in this machine learning tool list are free and open source, thereby enabling users to customize them to suit their individual needs. Some of the machine learning tools like TensorFlow are ideal for neural networks. Tools like Scikit Learn and PyTorch support Python programming and hence, are popular tools for ML.

When it comes to Data Science (AI, ML, Deep Learning), tools allow you to explore the depths of Data Science domains, experiment with them, and innovate fully functional AI/ML solutions. Different tools are designed for different needs. So, the choice of Machine Learning tools will largely depend on the project at hand, the expected outcome, and, sometimes, your level of expertise.

However, the goal is to keep learning and acquiring new skills. So, don't be frightened to play with new ML tools and software – who knows you might be able to create something fantastic in the future.

As previously suggested, no one tool must be the solution for every business case or machine learning problem. Even if none of the tools seem like a perfect fit for you, a combination of them can be the ideal way to go since most of them are compatible with each other.

The trick is to first list down some of the best tools in the Internet market space, which I have already done for you, and then explore the shortlisted ones to arrive at the right match gradually. The tools shared here are easy to install and have extensive documentation on their respective sites for an easy jump start.

Do you intend to learn more about popular ML Tools? Join Prof. Ivanov Data Science course to understand such concepts better and upgrade your knowledge and skills.

There are advantages and disadvantages to each of these tools; determining which is appropriate for a given work requires considering the task's unique parameters. New tools and technologies are likely to emerge as the area of AI and ML continues to evolve; as a result, it will be necessary for developers to be abreast of the most recent advancements in the field.

With the help of machine learning, systems make better decisions, at a high speed and most of the times they are accurate. Using various models is inexpensive and they can analyze large and complex data sets.

Most of the systems are totally free of costs but some require a small fee depending on its version. Most of the ML tools can be used on various platforms including Linux, Mac OS, Windows, UNIX, Cross-platform, and Cloud Services. Most of the ML tools are written in various languages including Python, Cython, C, C++, Java, CUDA, C# , The ML tools also have Algorithms or Features depending on the

Brand or product but most of the have either of the following features. Classification, Regression, Clustering, Preprocessing, Model Selection, Dimensionality reduction, Data preparation, Classification, Regression, Clustering, Visualization, Association rules mining.

Finally, we can conclude that understanding the tools for teaching AI is important to understanding

industrial applications and benefits other sectors like education in different tasks like, using it In scientific research, different tasks like Text generating Tools. Basically, the Tools are classified by the functionality of the institution. Such functionality includes Writing of texts, output of program code, search the internet; and writing of texts that are a focused-on marketing these tools are classified as Text-generating Tools.

Another set of functionalities is to Compile a paper on a research question and provide a summary of papers. It can also Show in which papers another paper is cited, show papers on similar topics. Furthermore, it can also Summarize texts easily. these tools are classified as Tools for literature search and processing

These set of tools can Summarize texts easily and are classified as Tool for text processing/comprehension.

Yet another set Improve texts grammatically, orthographically, and stylistically and are classified as Tools for Tool for text processing/comprehension.

In addition, tools for Improve texts grammatically, orthographically, and stylistically are called Text enhancement tool.

Also, to cover the functionality of Translating and improving texts stylistically through "back-and-forth" translation, such tools are referred to as Tools for translation

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