

Artificial Intelligence and Engineering: Philosophical and Scientific Perspectives in the New Era

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In this work, a general definition, meaning, and importance of engineering are expressed generally, and the main branches of engineering are briefly discussed. The concept of technology is explored, and the relationship between engineering and technology is briefly outlined. The relationship between artificial intelligence and engineering is examined both generally and specifically. The place of artificial intelligence within science is evaluated according to different approaches. The general approach to philosophy and philosophy of science is briefly interpreted, and the perspectives of some specific philosophers of science are compared. The relationship between artificial intelligence and philosophy of science is examined in general terms according to various approaches. The meaning and importance of philosophy of engineering and philosophy of technology are then defined according to the general approach. The next section articulates the Philosophy of Artificial Intelligence and the Artificial Intelligence of Philosophy using John McCarthy's approach, and also defines the philosophy of artificial intelligence according to this general approach. The New Philosophy Perspective is then defined by the author, and the eight basic branches of Philosophy and Hybrid Philosophy, along with their relevant theories, are briefly outlined. A new perspective has been defined for Philosophy of Science which is one of the basic branches of philosophy. Accordingly, the main sciences, branches of science, and hybrid sciences for the new basic branches of philosophy have been outlined. The new branches of science and the corresponding hierarchy of sciences, based on the broader scale of the universe, have been defined, and the ideal scientific system has been illustrated. The next section briefly outlines the relationships between old and new branches of science. Finally, the structure of some old and new branches of philosophy is examined due to the new perspective of philosophy. The reconstructions of the Philosophy of Computer Science, Philosophy of Statistics, Philosophy of Monetary Values, Philosophy of Artificial Intelligence, Philosophy of Engineering, Philosophy of Information Technologies, Philosophy of Information Law, and Philosophy of Digital Technology, Philosophy of Digital Art, Philosophy of Architecture as defined by the new philosophical perspective, are outlined. The interaction of artificial intelligence philosophy with these branches of philosophy has been generally expressed.

Keywords: artificial intelligence, engineering, technology, science, Philosophy of Science, Philosophy of Artificial Intelligence, Philosophy of Engineering, New Era Philosophy, Hybrid Philosophies, Basic Philosophies

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Introduction

The 20 engineering achievements that influenced the new era, in other words, changed human life in the 20th century, were defined by NAE (National Academy of Engineering) in 2003 as follows: (1) Electrification, (2) Automobile, (3) Aircraft, (4) Water supply and distribution, (5) Electronics, (6) Radio and television, (7) Agricultural mechanisms, (8) Computers, (9) Telephone, (10) Ventilation and cooling, (11) Freeways, (12) Spacecraft, (13) Internet, (14) Imaging, (15) Household appliances, (16) Health technologies, (17) Petroleum and petrochemical technologies, (18) Laser and fiber optics, (19) Nuclear technologies, (20) High-performance materials.

The first study on artificial intelligence emerged in 1956 at a workshop at Dartmouth College in the US. The participants in this workshop became leaders in artificial intelligence research for decades, predicting that machines would be as intelligent as humans within a generation. The US government made large financial donations to realize this vision. Various interactions followed in 1974, the 1980s, 1990s, and 2000s, with investment in artificial intelligence increasing rapidly in the 2020s.

In the developing process, while the effectiveness of computers, electronics, and communication in the 20 engineering applications mentioned above is gradually increasing, artificial intelligence applications in these fields as well as in other branches are being reconstructed and developed from scientific, engineering, and philosophical perspectives and making human life easier.

In this work, the subjects of artificial intelligence, engineering, science and philosophy in the new era were examined, and basic information about the disciplines effective in shaping the new era was given from these perspectives.

Author considered R-Synthesis as a method for the evaluation of the philosophy, of all related branches of philosophy, science, all branches of science, and for all other disciplines defined in the past (Ramiz, June 2016b). This synthesis is different from the one which is defined in the past literature. It is a kind of synthesis of supernaturalism (someone is responsible for all that people see) or naturalism (all that people see is responsible for itself), a kind of synthesis of physical science and non-physical science, a kind of synthesis of physics and metaphysics, science and non-science, physical science and non-physical science, politics and non-politics, religious and non-religious, theism and non-theism. General and specific contents of the new synthesis were expressed in the other work (Ramiz, June 2016b; July 2016c).

Author defined new perspective for philosophy, religion, science, ideology, justice, social science, administration, politics, system, and for other subjects as result of the synthesis to arrange sense of justice in some manner (Ramiz, 2010; 2015; 2016b).

Author evaluated all the disciplines, generally/specifically, and in this work he focused on R-Philosophy and R-Science disciplines and its some interactions with other disciplines generally.

The roles of philosophy, science, engineering, and artificial intelligence in human life are considered generally/specifically.

As a result of synthesis, some new words are defined by the author, which are not available in the literature. In the history, only some few philosophers, experts considered more than one discipline at the same time, and in some time-periods, if one considers today where there are many new disciplines comparing with the history, some/most/all people can understand the new perspective defined by the author better.

Here “R-abcde... xyz” are used to express that they are considered by the author and they are new defined and/or re-constructed from the past/present one, or modified, or used as it is same with the past/present one, or

arranged due to the R-Synthesis (Ramiz, June 2016b), and by applying definitive/certain result cases of the synthesis to science and philosophy disciplines in general manner. Author used (*) signs together with some words to denote that these words, “sciences”, “philosophies”, “branches of philosophy” are defined in the “past” and due to past philosophical/scientific/religious perspectives. There are “®©” symbols/signs which denote that it is re-constructed by the author, and there are “®®” symbols/signs which denote that it is new defined by the author.

This article includes and expresses the specific philosophical/scientific perspective of the synthesis of the author in some manner. Author defined all other related philosophical, ideological, political, religious, lawful, etc., perspective of the synthesis in other work generally/specifically (Ramiz, 2010; 2015; 2016b).

Each of the letters, words, sentences, tables, figures, definitions, comparisons, and others within this article is considered by the author generally/specifically, and some of them indicate some real life experienced subjects.

Engineering and Technology

Engineering

Engineering is the practice of using the natural sciences*, mathematics*, and the engineering design process to solve problems in technology, increase efficiency and productivity, and improve systems. The engineering discipline encompasses a broad range of more specialized engineering fields, each with a more specific emphasis on the applications of mathematics and science.

According to the American Engineers’ Council for Professional Development (AECPD), engineering is defined as:

The creative application of scientific principles to design or improve structures, machines, devices, or manufacturing processes, or works employing them singly or in combination; or to construct or operate them with full awareness of their design; or to predict their behavior under specified operating conditions; all with due regard for their intended function, economics of operation, and safety of life and property. (Engineering, August 2025).

According to another approach in the literature,

Engineering is the discipline and profession that applies scientific theories, mathematical methods, and experimental evidence to design, build, and analyze technological solutions, often on an industrial scale, while balancing technical requirements with concerns or constraints related to safety, human factors, physical limits, regulations, practicality, and cost.

The fundamental aspects of engineering can be expressed from one perspective into the following four groups:

(a) Problem solving: Engineers identify and analyze problems and then develop solutions using their technical knowledge and skills.

(b) Design: Engineers create detailed plans and specifications for structures, machines, and systems.

(c) Construction/implementation: Engineers oversee the construction and assembly of their designs, ensuring they are built to specifications.

(d) Maintenance and improvement: Engineers work to ensure that existing systems continue to operate effectively and efficiently and ensure their maintenance and improvement.

In general, “branches of engineering”, “interdisciplinary engineering”, and “relationships with other disciplines” are other considerations. Furthermore, the collaboration between engineers, scientists, and technicians in conducting studies is crucial.

According to the old general approach, engineering branches consist of six main branches: chemical engineering (including four sub-disciplines), civil engineering (including six sub-disciplines), electrical engineering (including six sub-disciplines), materials engineering (including 12 sub-disciplines), industrial/mechanical engineering (including nine sub-disciplines), and aeronautical engineering. Some experts also include computer engineering and biomedical engineering (including 10 sub-disciplines) in these branches, while others consider these branches to be sub-disciplines of the six main branches mentioned above.

Within the scope of interdisciplinary engineering, 23 engineering disciplines have been identified, including information engineering, mechatronics engineering, project engineering, software engineering, and systems engineering. More than 16 engineering techniques are generally mentioned in the literature. However, there are also non-technical engineering fields that involve relationships with other disciplines, such as engineering management, financial engineering, political engineering, sales engineering, social engineering, cost engineering, and so on. Additionally, there are the disciplines of astronomical engineering, megascale engineering, planetary engineering, and stellar engineering, which involve the design and analysis of hypothetical models of systems not feasible with existing technologies. Other significant engineering studies that deserve attention include engineering economics, engineering ethics, engineering psychology, and engineering philosophy. Engineering philosophy and several other engineering disciplines are also discussed in the following sections.

Technology

Technology simply refers to the tools, methods, and systems that emerge from engineering and scientific knowledge, primarily from the practical application of that knowledge. Simply put, engineering is the process, technology is the result.

An example of the focus of technology is the practical application of knowledge to create tools and systems. Examples of core activities include the production, implementation, operation, and maintenance of technologies. The primary emphasis in technology is on applied skills, practical application, and problem-solving in real-world contexts. Examples of how technology differs from engineering include using a computer, driving a car, using a smartphone, and building a bridge.

The relationship between technology and engineering can be defined as follows: (i) Engineering generally enables the creation of new technologies, (ii) Technology provides the tools and systems that engineers use to solve problems, (iii) Both fields are constantly evolving and affecting each other, (iv) other.

Artificial Intelligence and Engineering

The Artificial Intelligence (AI)-Engineering relationship is interpreted by different universities, institutions, companies, and scientists.

According to the approach of Massachusetts Institute of Technology (MIT) University officials:

Artificial intelligence engineering is the process of combining systems engineering principles, software engineering, computer science, and human-centered design to create intelligent systems that can complete specific tasks or achieve specific goals. To better explain AI engineering, it's important to mention AI engineers, or the people behind smart machines. AI engineers work with vast amounts of data to create intelligent machines. Advanced algorithms are helping businesses across all sectors, including banking, transportation, healthcare, and entertainment. AI is the groundbreaking technology behind virtual assistants, streaming services, autonomous driving, and critical diagnostics in medical centers. (Massachusetts Institute of Technology, August 2025).

According to the general approach in literature, AI engineering is a technical discipline focused on the design, development, and deployment of artificial intelligence systems. AI engineering involves applying engineering principles and methodologies to create scalable, efficient, and reliable AI-based solutions. By combining aspects of data engineering and software engineering, it creates real-world applications in diverse fields such as healthcare, finance, autonomous systems, and industrial automation.

The key components of AI engineering can be briefly explained as follows: AI engineering brings together the various technical fields and practices necessary to create scalable, reliable, and ethical AI systems. In this context, the following components are important:

(i) Data Engineering and Infrastructure: Data is the cornerstone of AI systems and requires careful engineering to ensure quality, availability, and usability.

(ii) Algorithm Selection and Optimization: Selecting the appropriate algorithm is crucial for the success of any AI system. Engineers must evaluate the problem (e.g., classification or regression) to determine the most appropriate machine learning algorithm, including deep learning paradigms.

(iii) Deep Learning Engineering: Deep learning is particularly important for tasks involving large and complex datasets. Engineers must design specialized neural network architectures for specific applications, such as convolutional neural networks for visual tasks or recurrent neural networks for sequence-based tasks.

(iv) Natural Language Processing: Natural language processing (NLP) is a key component of AI engineering, focusing on enabling machines to understand and produce human language. The process begins with text preprocessing to prepare data for machine learning models.

(v) Reasoning and Decision-Making Systems: Developing systems capable of reasoning and decision-making is a crucial part of AI engineering. Whether starting from scratch or building upon existing frameworks, engineers must create solutions that operate on data or logical rules.

(vi) Security: Security is a critical concern in AI engineering, particularly as AI systems become increasingly integrated into sensitive and mission-critical applications. AI engineers must implement robust security measures to protect models from adversarial attacks, such as evasion and poisoning, that could compromise system integrity and performance.

(vii) Ethics and Compliance: As AI systems increasingly impact societal dimensions, ethics and compliance are becoming vital components of AI engineering. Engineers design models to mitigate risks such as data poisoning and ensure that AI systems comply with legal frameworks such as data protection regulations such as the GDPR. Privacy-preserving techniques such as data anonymization and differential privacy are used to protect personal information and ensure compliance with international standards. Ethical considerations focus on reducing bias in AI systems and preventing discrimination based on race, gender, or other protected characteristics.

An AI engineer's "workload" revolves around the lifecycle of an AI system, a complex, multi-stage process. These include problem definition and requirements analysis, data collection and preparation, model design and training, system integration, testing and validation, deployment, and monitoring.

Machine Learning Operations (MLOps) or Artificial Intelligence Operations (AIOps) is a critical component of modern AI engineering that integrates machine learning model development with reliable and efficient operations practices.

AI engineering also faces a number of distinct challenges that differentiate it from traditional software development. Sustainability is another important consideration in AI engineering. Training large-scale AI models requires processing massive datasets over extended periods of time, which consumes significant amounts of

energy. This has raised concerns about the environmental impact of AI technologies, given the growing number of data centers required to support AI training and inference. The increasing demand for computing power has led to significant electricity consumption, and AI-powered applications often leave a significant carbon footprint. In response, AI engineers and researchers are exploring ways to mitigate these impacts by developing more energy-efficient algorithms, utilizing green data centers, and leveraging renewable energy sources.

Common examples of AI applications include mobile phones, cars, computers, televisions, and hospitals. AI engineers play a key role in industries because they possess valuable data that can drive companies to success. The financial sector uses AI to detect fraud, while the healthcare sector uses AI for drug discovery. Manufacturing is leveraging AI to reshape supply chains, while businesses are leveraging AI to reduce environmental impact and make better predictions. AI engineers can provide fundamental solutions. Some other engineering applications of AI are: In engineering, AI is used to optimize systems, predict maintenance, simulate designs, and automate workflows. Examples include fault detection in power systems, real-time monitoring in manufacturing, and generative design in product development.

Some of the emerging fields of AI engineering can be briefly described as follows: Machine Language Engineer, Data Scientist, Robotics Specialist, Artificial Intelligence Architect, Information Systems, Cybersecurity, and Computer Science. Furthermore, AI engineering requires interdisciplinary collaboration with other related disciplines for these applications.

Artificial Intelligence and Science

The Place of Artificial Intelligence in Science (EU Commission Approach)

According to this approach, the growing role of AI in science spans a wide range of fields, acting as a catalyst for scientific breakthroughs and a key tool in the scientific process. This heralds a new era of accelerated results, pushing scientific boundaries and producing results beyond the reach of existing tools. This acceleration can help address urgent societal challenges such as climate change, healthcare, green spaces, and digital transformations, while also keeping Europe at the forefront of scientific progress. EU-funded researchers are using AI in groundbreaking ways, from improving cancer treatments to solving environmental problems to improving earthquake impact predictions.

The EU's approach to integrating AI into science is aligned with and complements the Commission's AI strategy and the Scientific Advisory Mechanism's view on how to integrate AI responsibly into science. By collaborating with the European Scientific Community, it aims to harness the enormous potential of AI while addressing the concerns of EU citizens.

When developing AI policy in science, the EU Commission has two main directions in mind: (a) Accelerating the adoption of AI by scientists by creating key enablers such as better access to data, computational power, and talent, (b) Addressing science-specific AI challenges such as monitoring and guiding the impact of AI on the scientific process and maintaining scientific integrity and methodological rigor.

General Approaches

There are also the following approaches expressed by different scientists:

Approach 1: Knowledge Discovery and Hypothesis Generation. Advanced AI models help scientists identify patterns, anomalies, and previously hidden relationships in large data sets, generate new hypotheses, and accelerate the scientific method.

Approach 2: Data Science and AI are interconnected. Data Science provides tools and methods for collecting and analyzing data that AI models use to learn and make decisions. AI enhances Data Science by automating data analysis, making predictions, and finding hidden patterns.

Approach 3: AI is also used in science to increase the accuracy and efficiency of scientific simulations. For example, in computational biology, it is possible to simulate complex biological processes, such as protein folding or drug interactions, with extremely high accuracy using AI algorithms.

Approach 4: AI as a Force Multiplier for Scientific Research Scientific foundational models, similar to large language models but trained on domain-specific data, now helps researchers generate hypotheses, design experiments, and even automate various aspects of laboratory work.

Approach 5: Can AI solve science? No, AI cannot solve science within the current paradigm of machine learning and neural networks. The main obstacle is computational irreducibility. Fundamentally, since it is computationally limited within its current limits, as long as there is reducibility, there's no problem.

Approach 6: What is the role of artificial intelligence in modern science? Scientists are using artificial intelligence to generate hypotheses, design experiments, and collect and interpret data in ways not previously possible using traditional methods. Science education research is increasingly focusing on the role of artificial intelligence in teaching and learning.

Approach of the Organisation for Economic Co-operation and Development (OECD)

According to this approach, which was published in a book with the title *Artificial Intelligence in Science: Challenges, Opportunities and the Future of Research*:

The rapid advancement of artificial intelligence in recent years has led to numerous creative applications in science. Increasing scientific productivity may be the most economically and socially valuable of all AI applications. Leveraging AI to increase scientific productivity will support OECD countries' ability to innovate, grow, and address global challenges, from climate change to emerging infectious diseases. This publication is intended for a broad audience, including policymakers, the public, and stakeholders across all fields of science. Written in non-technical language, it brings together the perspectives of leading researchers and practitioners. Informed by this OECD approach, the book examines a variety of topics, including current, emerging, and potential future uses of AI in science, where progress is needed to better serve scientific advancements, and shifts in scientific productivity. It also addresses measures that can be taken to accelerate the integration of AI into research in developing countries. Its unique contribution is its examination of AI policies in science. This resource demonstrates that policymakers and actors in research systems can do much to deepen the use of AI in science, enhance its positive impact, and adapt to the rapidly changing impact of AI on research management. (OECD, June 2023).

NASA Approach

The Office of the Chief Science Data Officer (OCSDO) within NASA's Science Mission Directorate (SMD), which outlines its approach under the topic Artificial Intelligence for Science, is exploring how AI can help people use NASA's science data more effectively. Current projects include AI foundation models trained on large amounts of data that can be tailored to specific science studies with minimal resources, and broad language models used to develop different research steps and data lifecycles. (NASA Science, August 2025).

Artificial Intelligence and Regulations

Regulation of AI is the development of public sector policies and laws to promote and regulate AI. Therefore, AI regulation is linked to the broader regulation of algorithms. Countries worldwide have been increasingly regulating AI annually since 2016. Most recently, in November 2023, the first global AI Security Summit was held at Bletchley Park in the United Kingdom to discuss the near- and long-term risks of AI and the potential for

mandatory and voluntary regulatory frameworks. At the Summit's outset, 28 countries, including the United States, China, and the European Union, issued a statement calling for international cooperation to manage the challenges and risks of AI. Also in May 2024, at the AI Seoul Summit, 16 global AI technology companies agreed on security commitments related to AI development.

The definition of a common Artificial Intelligence Regulation separately by these and other unions, associations, or organisations will facilitate the execution of joint projects with each world country around the world and for some world countries to gain effective experience in artificial intelligence-related studies.

General Philosophy and Philosophy of Science

The author evaluated the theories/perspectives of almost all the experts, thinkers, and philosophers about the meaning, definition, and branches of philosophy generally/specifically (Ramiz, June 2016b; July 2016c).

The studies and evaluations made in this context include the following (Philosophies List, March 2016; others): (a) Philosophies according to historical periods, (b) Philosophies according to religious perspective, (c) Philosophies according to their categories, branches, or fields (Ramiz, June 2016b).

Accordingly, there are five general branches of philosophy, considered traditional: Aesthetics, Epistemology, Ethics, Logic, and Metaphysics. Including these five philosophies, the author has examined 680 philosophies from around the world, both in general and specific terms. The general status of these philosophies and their related philosophers/thinkers has been outlined in another study (Ramiz, June 2016b; July 2016c; December 2020). Here, some philosophers of science and their philosophical interests are listed in Table 1, both to emphasize the importance they place on philosophy of science and to compare other topics they do and do not consider.

Table 1

Some Philosophers of Science and Their Philosophical Interests (by Date of Birth)

Pioneer/founder people	Philosophical Interests of Philosophers (in alphabetic order)						Life period
	Philosophy of history*	Philosophy of politics*	Philosophy of religion*	Philosophy of science*	Ethics*	Philosophy of mind and/or Others	
<i>Plato</i>	X	X	X	X	X	E*, D	428BC-348BC
<i>Aristotle</i>		X	X	X	X	M, L, PoL, PoM, D	384BC-322BC
<i>Alhazen</i>				X		D	965-1040
<i>Galileo Galilei</i>				X		D	1564-1642
<i>René Descartes</i>				X		E*, M*, PoM*, D	1596-1650
<i>Isaac Newton</i>				X		D	1642-1726
<i>David Hume</i>		X	X	X	X	E, M, PoL, PoM, D	1711-1776
<i>Immanuel Kant</i>	X	X	X	X	X	E*, M*, PoL*, D	1724-1804
<i>Auguste Comte</i>	X			X		D	1798-1857
<i>John Stuart Mill</i>		X		X	X	PoL*, D	1806-1873
<i>Albert Einstein</i>				X		D	1879-1955
<i>Ernest Nagel</i>				X		PoM*, D	1901-1985
<i>Sir Karl R. Popper</i>	X	X		X		E*, M*, PoM*, D	1902-1994
<i>Hilary W. Putnam</i>				X		E*, PoM*, D	1926-2016

Note. Italicized words indicate that these philosophers were simultaneously interested in more than one branch of philosophy*; (*) indicates that these branches of philosophy were defined according to the perspective of philosophy in the past; Here A*: Aesthetics, E*: Epistemology, L*: Logic, M*: Metaphysics, MP*: Meta-Philosophy, O*: Ontology, PoL*: Philosophy of Law, PoLi*: Philosophy of Literature, PoM*: Philosophy of Mind, PoT*: Philosophy of Technology, D: denotes some other sciences.

Artificial Intelligence and Philosophy of Science

According to Masahiro Matsuo (2017), recent discussions in the philosophy of science regarding AI in 2017 appear to focus heavily on social or ethical issues, such as the “Singularity” problem or harmonious coexistence with AI. However, the meaningful relationship between philosophy of science and AI is not limited to this genre. Bayesian networks (BNs) are a core topic in AI research, and since finding the best definition of causality is a central theme in philosophy of science, this is closely related to traditional arguments in philosophy of science.

Donald Gillies (March 2020) addressed the impact of the development of Artificial Intelligence from the 1990s to 2020 on the philosophy of science. Accordingly, new AI results have implications for many questions in the philosophy of science and even in general philosophy. However, in his article, Gillies focuses on the significance of AI results for only one set of problems in the philosophy of science, albeit a very important one: problems related to induction, verification, and probability. These problems have been central to the philosophy of science since Bacon in the 17th century. According to Gillies, several of these questions can be formulated as follows: Is there an inductive process that can be used to derive theories and predictions from empirical data obtained through observation and experimentation? If so, is it related to discovery, justification, or both? Is there a concept of the verification (or falsification) of theories by empirical data? Is this the probability of verification (the Bayesian thesis), or is it different from probability? Is there such a thing as inductive logic, as opposed to deductive logic? One of the fundamental techniques in artificial intelligence today is machine learning, a procedure in which a computer derives theories or predictions from experimental data—that is, an inductive process. In this case, the analysis of successful machine learning programs is likely to shed light on the traditional problems in the philosophy of science surrounding induction just listed. Indeed, the very success of machine learning has transformed many of the previous discussions about induction. This is exemplified by the debate between Popper and Carnap over the existence of inductive logic. The question arises as to whether the conclusions drawn from the analysis of machine learning programs, which were state-of-the-art in 1996, still hold true in light of the much more powerful machine learning programs of 2020. Gillies addresses this issue in his article. Donald Gillies summarized the fundamental conclusions he reached in his 1996 book regarding artificial intelligence and the scientific method. Following this, Marco Gillies, who uses contemporary machine learning in virtual reality (VR) research, briefly describes some advances in machine learning since 1996. He examines how these conclusions should be modified in light of advances in artificial intelligence since 1996.

In addition to this and other studies in the literature, a new perspective on the relationship between artificial intelligence and philosophy of science is expressed in the following sections.

Philosophy of Engineering

Philosophy of engineering is a new discipline that deals with what engineering is, what engineers do, and how their work affects society, and therefore includes ethical* and aesthetic* aspects, as well as areas that can be studied in philosophy of science* or philosophy of technology*, such as ontology*, epistemology*, etc.

In addition to those mentioned in the section above, engineering is a profession that aims to modify the natural environment through the design, production, and maintenance of artifacts and technological systems. Therefore, it can be compared to science, whose goal is to understand nature. Engineering is essentially about causing change, and therefore, managing change is central to engineering practice. Philosophy of engineering,

on the other hand, addresses how philosophical issues apply to engineering. These issues may include the objectivity of experiments, the ethics of engineering activities in the workplace and society, the aesthetics of designed artifacts, and so on.

Philosophy of engineering, in other words, examines the fundamental nature of engineering, its relationship to society, and its impact on the world. It examines what engineers do, how they think, and the ethical, social, and cultural implications of their work. The field also explores the nature of engineering research, the role of engineering in shaping our understanding of reality, and the connection between engineering and other disciplines such as science and philosophy.

Looking more specifically at the fundamental aspects of engineering philosophy, engineering philosophy examines the cognitive processes involved in engineering, such as design thinking, problem-solving strategies, and the use of heuristics. It examines how engineers make decisions, manage uncertainty, and learn from experience. Engineering philosophy examines the professional responsibilities of engineers, including ethical behavior, public safety, and the pursuit of excellence. It explores the nature of engineering expertise and the role of engineers in shaping technological development. It also addresses the relationship between engineering and other professions, such as science, management, and law.

Philosophy of Technology

Philosophy of technology examines the nature of technology, its impact on society and human life, and its relationship to other fields such as science, ethics, and politics. Rather than focusing on technology itself, it is a branch of philosophy that examines the social and ethical implications of technology.

In this branch of philosophy, the following basic areas are generally examined:

(a) **Technology Ethics:** This field explores the moral dimensions of technology, including issues such as privacy, surveillance, and the impact of artificial intelligence on human values.

(b) **Human-Technology Relations:** This field explores how technology shapes our identities, relationships, and interactions with the world by examining issues such as automation, digital communication, and the use of technology in health and education.

(c) **Social and Political Dimensions:** This field examines how technology impacts social structures, power dynamics, and political systems. Topics include surveillance technologies, social media algorithms, and the digital divide.

(d) **The Nature of Technology:** This field examines the definition of technology, its origins, and its relationship to other forms of human knowledge and activity.

(e) **Human Existence:** This field explores how technology shapes our understanding of what it means to be human, our relationship with nature, and our place in the universe.

Why is philosophy of technology important? (i) Understanding the philosophy of technology is crucial for managing the complex relationship between technology and society in the 21st century. (ii) It encourages people to think critically about the technologies created and used by people, enabling them to assess their potential benefits and harms. (iii) By examining the philosophical dimensions of technology, it enables them to develop a more thoughtful and responsible approach to technological development and its integration into people's lives.

According to one approach, this branch of philosophy explores how technology shapes understanding of what it means to be human, our relationship with nature, and our place in the universe.

Philosophy of technology, in other words, examines the nature of technology and its relationship with society. It has various branches, such as the ethics of technology, the relationship between science and technology, human-technology relations, and the political dimensions of technology.

Four philosophies of technology, in other words, four developmental stages/processes related to technology are mentioned: (i) Technological anarchy, (ii) Technophilia; Love of technology, (iii) Technophobia; Fear of technology, (iv) Appropriate Technology; Technological suitability, design requirements for appropriate technology.

Philosophy of Artificial Intelligence

Philosophy of Artificial Intelligence and Artificial Intelligence of Philosophy (John McCarthy Approach)

It was stated as follows by Prof. John McCarthy (2006), who is described as the father of Artificial Intelligence:

Philosophy of X, where X is a science, involves philosophers analyzing the concepts of X and sometimes commenting on which concepts are consistent and which are not. Artificial intelligence (AI) has closer scientific ties to philosophy than other sciences because it shares many concepts with philosophy, such as action, consciousness, epistemology (what makes sense to say about the world), and even free will. This article examines the philosophy of AI and analyzes some concepts common to philosophy and AI from an AI perspective. Philosophy X generally includes advice for practitioners of X on what they can and cannot do.

We reverse this trend somewhat and offer advice to philosophers, particularly philosophers of mind. From an AI perspective, philosophical theories are useful for AI only if they do not preclude human-level artificial systems and provide a basis for designing systems that possess beliefs, reason, and plan. AI research has particularly emphasized formalizing the actions available in a situation and the consequences of each. To achieve this, AI has largely been concerned with simple approaches to phenomena.

A fundamental problem for both AI and philosophy is understanding common-sense knowledge and its capabilities. We consider the concept of common-sense cognition as the situation in which a person or computer program's available knowledge, both from an observational and theoretical perspective, is partial and requires the use of ill-defined concepts. Generally, ill-defined concepts can be precise in specific contexts. (McCarthy, J., June 2006)

Philosophy of Artificial Intelligence (General Approach)

Philosophy of artificial intelligence is defined by some scientists as a branch of the philosophy of mind* and the philosophy of computer science* that explores artificial intelligence and its implications for the understanding and acquisition of knowledge, including intelligence, ethics, consciousness, epistemology, and free will. Furthermore, the technology is concerned with the creation of artificial animals or artificial humans (or at least artificial creatures), making this discipline significant interest to philosophers. These factors have contributed to the emergence of the philosophy of artificial intelligence*.

The philosophy of artificial intelligence attempts to answer questions such as:

- (a) Can a machine act intelligently? Can it solve any problem that a human can solve by thinking?
- (b) Are human intelligence and machine intelligence the same? Is the human brain essentially a computer?
- (c) Can a machine have a mind, mental states, and consciousness, just like a human? Can it sense what objects are like (i.e., does it have qualities?)?

Such questions reflect the diverse interests of AI researchers, cognitive scientists, and philosophers, respectively. The scientific answers to these questions depend on the definition of “intelligence” and “consciousness” and the precise “machines” being discussed.

Important propositions in the philosophy of artificial intelligence include the followings:

(i) Turing's "rule of politeness": If a machine acts as intelligently as a human, then it is as intelligent as a human.

(ii) The Dartmouth proposal: "Any aspect of learning or any other aspect of intelligence can in principle be described so precisely that a machine could simulate it."

(iii) Allen Newell and Herbert A. Simon's physical symbol system hypothesis: "A physical symbol system possesses the necessary and sufficient means of general intelligent action."

(iv) John Searle's strong artificial intelligence hypothesis: "A properly programmed computer, with the right inputs and outputs, will have a mind just as humans have minds."

(v) Hobbes's mechanism: "For 'mind' ... is nothing but the 'calculation', that is, the addition and subtraction, of the results of the agreed-upon general names for the 'marking' and 'meaning' of our thoughts..."

New Perspective for Philosophy

The author defined a new perspective for philosophy (R-Philosophy) by performing R-Synthesis (Ramiz, June 2016b). The scope, period, and content of the topics considered in this synthesis can be summarized as follows: according to written sources covering the past 12,000 years, 1,600 ethnic origins in the world, 27 federations, all ideologies, 130 mythologies, organizations in the world, 680 philosophies, 87 philosophers of religion, 48 political philosophers, 55 philosophers of science, 42 philosophers of history, 20 philosophers of law, 132 philosophers of mind, ethics, epistemology, metaphysics, logic, ontology, 168 religions-beliefs, 703 branches of science, and other topics (Ramiz, June 2016b).

As a result of R-Synthesis the Ideal Philosophical System was defined with a figure (Ramiz, June 2016b), the definitive result situations of the synthesis were applied to all known branches of philosophy as follows: (1) some topics were added to some branches; (2) the priority of some branches was changed; (3) some common branches were evaluated; (4) some branches converged to some topics; (5) all branches were defined under a single framework; (6) new branches were defined; (7) some branches were eliminated; (8) all new and restructured ones were fixed in the framework; (9) the values/importance of some branches was improved; (10) all branches were integrated into the framework; (11) philosophical judgment was taken into account; (12) some branches were kept (preserved); (13) some branches were changed; (14) progress was suggested for all branches; (15) some rules were set about branches; (16) some branches were restructured; (17) some branches were redefined; (18) some branches were removed but immediately replaced by new branches; (19) the philosophical revolution was taken into account; (20) some branches were separated; (21) training was recommended for all branches; (22) some branches were combined; (23) some branches were merged into the upper phase; (24) some branches were transformed into hybrid structure; (25) others.

The author defines the discipline of R-Philosophy to encompass all subjects directly related to philosophy. In this context, the following concepts are included: New Philosophical Perspective, New Era Philosophy, "xD" Hybrid Philosophies (x: 1 to 8), upper constructional philosophies, lower constructional philosophies, Basic Branches of Philosophy (Basic Philosophies), branches of philosophy, sub-branches of philosophies, the Ideal Philosophical System, a new perspective for Philosophy of Science (Ramiz, July 2016c), and a new perspective for Philosophy of Religion (Ramiz, December 2020).

From a new philosophy perspective, New Era Philosophy is defined as the 8D Hybrid Philosophy of eight basic philosophies and is considered a major branch of philosophy for the design, definition, and expression of

certain issues in daily life, according to the established perspective. It recognizes that the basic philosophies are complementary to each other.

Upper constructional philosophies and lower constructional philosophies are stated in another study (Ramiz, 2016b).

Basic Philosophies are defined as follows (Ramiz, June 2016b): (1) Philosophy of Administration®®, (2) Philosophy of Information®©, (3) Philosophy of Justice®®, (4) Philosophy of Politics®©, (5) Philosophy of Religion®©, (6) Philosophy of Science®©, (7) Philosophy of Social Science®©, (8) Philosophy of Systems®®. Basic philosophies are defined as being related to upper constructional philosophies and lower constructional philosophies as well.

Although the sub-branches of the Basic Philosophies are generally stated in another study (Ramiz, June 2016b; July 2016c), here, for some of the basic philosophies that may be relevant in evaluations with artificial intelligence, these sub-branches are briefly explained below together with the relevant theories:

(A) Philosophy of Administration®®

Theories of Administration are considered under this philosophy. These theories are proposed basically to have information about: (a) existence of administration, (b) knowledge of administration, (c) nature of administration, (d) sense of administration, (e) purpose of administration; administration of information, administration of justice, administration of political services, administration of religious services, administration of scientific services, administration of systems, others.

Sub-branches of this philosophy are: (1) philosophy of decision making®®, (2) philosophy of inspection®®, (3) philosophy of organization®®, (4) philosophy of planning®®, (5) philosophy of security®®, (6) philosophy of stability®®, (7) Hybrid sub-branches.

(B) Philosophy of Information®©

Theories of Information are considered under this philosophy. These theories are proposed basically to have information about: (a) existence of information, (b) basic principles of information, (c) nature of information, (d) administration of information, (e) inspection of information.

Sub-branches of this philosophy are: (1) methodology, (2) ethics, (3) philosophy of classification®®, (4) philosophy of communication®®, (5) philosophy of informatics®©, (6) philosophy of education®©, (7) philosophy of history®©, (8) philosophy of language®©, (9) philosophy of mind®©, (10) philosophy of teaching®©, (11) philosophy of agreement®®, (12) philosophy of archive, (13) Hybrid sub-branches; philosophy of archaeology, others.

(C) Philosophy of Justice®®

Theories of Justice are considered under this philosophy. These theories are proposed basically to have information about: (a) existence of justice, (b) knowledge of justice, (c) nature of justice, (d) sense of justice, (e) purpose of justice; inspection of administration, inspection of information, inspection of judicial services, inspection of political services, inspection of religious services, inspection of scientific services, inspection of the systems, others. Here, sense of justice is generally/specifically defined in other work (Ramiz, September 2015).

Sub-branches of this philosophy are: (1) philosophy of defense®®, (2) philosophy of equivalence®®, (3) philosophy of judgment®®, (4) philosophy of law®©, (5) philosophy of protection®®, (6) philosophy of punishment®®, (7) philosophy of rights®®, (8) Hybrid sub-branches.

(D) Philosophy of Politics®© (Ramiz, June 2016b)

(E) Philosophy of Religion®© (Ramiz, June 2016b; December 2020)

(F) Philosophy of Science®©: expressed shortly below and generally in other work (Ramiz, July 2016c)

(G) Philosophy of Social Science®©

Theories of Social Science are considered under this philosophy. These theories are proposed basically to have information about: (a) existence of social values, (b) knowledge of social values, (c) nature of social values, (d) purpose of social values.

Sub-branches of this philosophy are: (1) philosophy of anthropology, (2) philosophy of area studies, (3) philosophy of beauty and art, (4) philosophy of culture and art, (5) philosophy of dance, (6) philosophy of demography, (7) philosophy of ethnic and cultural studies, (8) philosophy of film, (9) philosophy of gender and sexuality studies, (10) philosophy of geography (human), (11) philosophy of linguistics, (12) philosophy of love and relations, (13) philosophy of music, (14) philosophy of pedagogy, (15) philosophy of psychology, (16) philosophy of sociology, (17) philosophy of social works, (18) philosophy of sports, (19) philosophy of theatre.

(H) Philosophy of System®©

Theories of system are considered under this philosophy. These theories are proposed basically to have information about: (a) existence of system, (b) knowledge of system, (c) nature of system, (d) purpose of system.

Sub-branches of this philosophy are: (1) Philosophies due to administration systems®®, (2) Philosophies due to information systems®®, (3) Philosophies due to justice systems®®, (4) Philosophies due to political systems®®, (5) Philosophies due to religious systems®®, (6) Philosophies due to scientific systems®®, (7) Philosophies due to hybrid systems®®.

(I) Hybrid Philosophy®®

Hybrid Theories are considered under this philosophy. These theories are proposed basically to have information about: (a) existence of hybrid structure, (b) knowledge of hybrid structure, (c) nature of hybrid structure, (d) purpose of hybrid structure.

Here, the dimension of hybrid philosophy (xD) is defined with the number of the basic philosophy considered together among the eight basic philosophies. Here, each of the “xD” Hybrid Philosophy defines and includes a new philosophy perspective as follows: (1) 8D Hybrid philosophy, (2) 7D Hybrid philosophies, (3) 6D Hybrid philosophies, (4) 5D Hybrid philosophies, (5) 4D Hybrid philosophies, (6) 3D Hybrid philosophies, (7) 2D Hybrid philosophies.

New Perspective for Philosophy of Science

In order to state the “new perspective for philosophy of science” and the relationship between “sciences”, “philosophy of science”, and “branches of philosophy”, the author defined and took into account the following: (i) New Philosophy perspective, (ii) Basic Philosophies, (iii) main sciences according to Basic Philosophies, (iv) new or reconstructed sciences, (v) new or reconstructed branches of science, (vi) Ideal Scientific System (Ramiz, July 2016c).

Philosophy of Science®©

Here, author considered the philosophy of science, a basic philosophy defined by the perspective of new philosophy. The relationship of this branch of philosophy to the sciences is outlined below.

Philosophy of science*, branches of philosophy of science*, and the content, effectiveness, value, levels, importance, meaning, and/or weight of branches of science have been reconstructed/defined due to the 27 (+)

definitive result cases of R-Synthesis. Some new branches of philosophy of science and some new branches of science have also been introduced.

Theories of Science are considered under this philosophy. These theories are proposed basically to have information about: (a) existence of science, (b) knowledge of science, (c) nature of science, (d) purpose of science.

Major Sciences due to New Basic Branches of Philosophy

The main branches of science and the relevant fundamental principles for the new basic branches of philosophy are briefly described below:

(A) Science of Administration®®/Administration Science®©

(B) Science of Information®©/Information Science®©

Basic principles of this science are defined as: (i) Information forming, (ii) Information protection, (iii) Information acquiring, (iv) Information presenting, (v) administration/directing of information, (vi) Information inspection, (vii) eight-basic senses for information, (viii) transformation of information.

(C) Science of Justice®®

(D) Science of Politics®®

(E) Science of Religion®®

(F) Basic Sciences®®

Basic principles of these sciences are defined as: (i) formation of sciences, (ii) protection of sciences, (iii) to acquire/to have science, (iv) to supply/to serve sciences, (v) administration of sciences, (vi) inspection of sciences, (vii) eight-basic senses for sciences, (viii) transformation in sciences.

Basic sciences are: biological sciences, chemical sciences, electromagnetic sciences, information sciences, mathematical sciences, and physical sciences (see Figure 1).

(G) Social Sciences

(H) Science of Systems®®/systems science

Basic principles of this science are defined as: (i) formation of system, (ii) protection of system, (iii) to acquire/to have system, (iv) serving/supplying system, (v) administration of system, (vi) inspection of system, (vii) eight-basic senses for systems, (viii) transformation in systems.

(I) Hybrid Sciences®®

Hybrid sciences are defined with the following categories:

(1) Category-I: between the disciplines related with Category-A (administration, information, justice, politics, religion, science, and system);

(2) Category-II: between the disciplines related with Category-B (biology, chemistry, electromagnetics, information, mathematics, physics).

Sub-branches of Philosophy of Science

Sub-branches of philosophy of science are defined as follows: (1) philosophy of biology*, (2) philosophy of chemistry*, (3) philosophy of electromagnetics®®, (4) philosophy of mathematics*, (5) philosophy of physics*, (6) hybrid branches—(a) philosophy of medicine, (b) philosophy of pharmacy, (c) others (defined due to hybrid sciences) (Ramiz, July 2016c).

Branches of Sciences due to New Perspective of Philosophy of Science and Ideal Scientific System

As a result of his R-Synthesis, the author applied the 27 (+) definitive result cases of the synthesis to the scientific discipline and old science branches according to the new philosophy of science perspective that he

defined, and classified the new and/or re-constructed science branches, the hierarchy of science, and the following subjects in general under the R-Science perspective: (1) sciences according to structural categories—(a) Basic Sciences (biological sciences, chemical sciences, electromagnetic sciences, information sciences, mathematical sciences, physical sciences), (b) hybrid sciences (2D-6D Hybrid sciences); (2) basic components of each science branch; (3) sciences according to size, content, and precision—(a) micro-sciences, (b) functional sciences, (c) macro-sciences; (4) sciences according to their characteristic methods: theoretical, experimental, applied, computational, analytical, comparative; (5) branches of science according to “characteristic methods” and “size” (Table 2); (6) hierarchy of science according to the scale of the universe (Figure 1); (7) sciences according to subjects of services; sciences according to 39 service subjects (Ramiz, September 2015); (8) sciences according to the Ideal Scientific System (Ramiz, July 2016c).

Scale of Universe
Diameter (m)

10^{27} m	Macro Systems	Macro Biology	Macro Chemistry	Macro Electromagnetics	Macro Information	Macro Mathematics	Macro Physics	Macro Sciences
10^0 m	Functional Systems	Functional Biology	Functional Chemistry	Functional Electromagnetics	Functional Information	Functional Mathematics	Functional Physics	Functional Sciences
10^{-36} m	Micro Systems	Micro Biology	Micro Chemistry	Micro Electromagnetics	Micro Information	Micro Mathematics	Micro Physics	Micro Sciences
	Basic Systems	Biology	Chemistry	Electromagnetics	Information	Mathematics	Physics	Basic Disciplines
	System Sciences	Biological Sciences	Chemical Sciences	Electromagnetic Sciences	Information Sciences	Mathematical Sciences	Physical Sciences	Basic Sciences

Figure 1. New branches of science and related hierarchy of science due to scale of universe (in alphabetic order).

Here, Biological Sciences®©, Chemical Sciences®©, Electromagnetic Sciences®®, Mathematical Sciences®©, and Physical Sciences®© are defined in other work.

Table 2

Branches of Science due to Characteristic Methods and Size

	Micro science	Functional science	Macro science
Theoretical	Micro/theoretical	Functional/theoretical	Macro/theoretical
Experimental	Micro/experimental	Functional/experimental	Macro/experimental
Applied	Micro/applied	Functional/applied	Macro/applied
Computational	Micro/computational	Functional/computational	Macro/computational
Analytical	Micro/analytical	Functional/analytical	Macro/analytical
Comparative	Micro/comparative	Functional/comparative	Macro/comparative

Information Sciences®© as an academic discipline is defined as follows: (1) administration—(a) administration and ideology, (b) administration and politics, (c) administration and religion, (d) administration and science, (e) business administration, (f) sustainable administration, (g) public administration, (h) systems administration, (i) others; (2) Archaeology; (3) Banking; (4) Communication—(a) personal communication, (b) social communication, (c) business communication, (d) public communication, (e) languages, (f) internet communication, (g) media communication, (h) mobile communication; (5) Sustainable Development; (6) Criminology; (7) Finance/Monetary Values; (8) Education—(a) science education, (b) others; (9) Ethics—(a) business ethics, (b) medical ethics, (c) political ethics, (d) scientific ethics, (e) welfare ethics, (f) others; (10) History; (11) Social Sciences®©; (12) Law and Justice—(a) administration and justice, (b) knowledge and justice, (c) politics and justice, (d) religion and justice, (e) science and justice, (f) system and justice, (g) ideology and justice, (h) others; (13) Library Science; (14) Political Science®©; (15) Philosophy®©; (16) Relations—(a) international relations*, (b) industrial relations, (c) public relations, (d) social relations, (e) others (Ramiz, 2015); (17) Religion and Ideology; (18) Religion and Science—(a) Theology, (b) others; (19) Justice and Religion; (20) Ideology and Science; (21) Ideology and Politics; (22) Statistics; (23) Economics; (24) Informatics; (25) Accounting; (26) Archive Science®©; (27) Data Science; (28) Other Hybrid Sciences—(a) Data Engineering, (b) Information Engineering, (c) other.

An important point here is that, according to the old definitions in the current literature, these sciences also show the newly defined 1D-6D hybrid sciences as sub-branches.

According to the new philosophy of science, all known and unknown branches of science can be expressed under a single umbrella called the Ideal Scientific System (Ramiz, July 2016c).

Relations Between Some Old Branches and New Branches of Science

The author has defined some old branches of science as reconstructed sciences below: (1) Physical science* reconstructed, (2) Chemistry science* reconstructed, (3) Biology science* reconstructed, (4) Mathematics science* reconstructed, (5) Earth and Space sciences*, considered as part of macro-sciences®®, are also considered as hybrid sciences®® and are more specifically classified as follows—(a) Earth science*, (b) Planetary science*, (c) Solar System science®®, (d) Galaxy science®®, (e) Universal science®®; (6) Social sciences* have been redefined and reconstructed. Here, archaeology*, economics*, history*, criminology, law, political science, and international relations sciences have been excluded from social sciences* and defined as more important disciplines within the Philosophy of Knowledge®©, Political Philosophy, and Philosophy of Justice; (7) Interdisciplinary sciences* have been redefined and reconstructed as hybrid sciences; (8) Applied sciences* have been reconstructed as methods and accepted as applicable to all basic sciences.

Engineering majors, and some engineering disciplines within these majors, can be described as 1D Basic Sciences and 2D-6D Hybrid Sciences (in alphabetical order): Information Engineering (4D Hybrid Science); Computer Engineering (3D Hybrid Science); Biomedical Engineering (6D Hybrid Science); Electrical Engineering (5D Hybrid Science); Electronics and Communication Engineering (5D Hybrid Science); Aeronautical Engineering (5D Hybrid Science); Civil Engineering (4D Hybrid Science); Chemical Engineering (3D Hybrid Science); Mechanical Engineering (4D Hybrid Science); Materials Engineering (4D Hybrid Science); Mechatronics Engineering (3D Hybrid Science); Artificial Intelligence Engineering (4D Hybrid Science); Software Engineering (2D Hybrid Science).

Some Old and New Branches of Philosophy due to New Philosophy Perspective

Since there are some engineering, technological, scientific foundations/discoveries that interact with human life and somehow affect the disciplines of administration, justice, politics, religion, social sciences, the author has defined the following branches of philosophy (in alphabetical order) to express the interaction/relationship between these foundations and the Ideal Philosophical System (Ramiz, June 2016b) and also to indicate the level of hybrid philosophy perspectives behind these scientific foundations:

(a) Philosophy of Architecture®©: As a 3D Hybrid Philosophy, it is envisaged to include Philosophy of Information, Philosophy of Science and Philosophy of Social Science.

(b) Philosophy of Artificial Intelligence®©: As a 3D Hybrid Philosophy, it is envisaged to include Philosophy of Information, Philosophy of Science, and Philosophy of Systems.

The dual interactions of Artificial Intelligence with social values, administration, justice, and politics are undoubtedly issues that will be examined from the perspective of high-level hybrid philosophies (4D Hybrid Philosophies). In this context: (i) The interaction between artificial intelligence and social sciences will add importance to the 4D Hybrid Philosophy, which considers the Philosophy of Social Sciences together with the Philosophy of Artificial Intelligence; (ii) The interaction between artificial intelligence and administration will add importance to the 4D Hybrid Philosophy, which considers the Philosophy of Administration together with the Philosophy of Artificial Intelligence; (iii) The interaction between artificial intelligence and justice will add importance to the 4D Hybrid Philosophy, which considers the Philosophy of Justice together with the Philosophy of Artificial Intelligence; (iv) Artificial intelligence-Politics interaction will add importance to the 4D Hybrid Philosophy, which takes into account Philosophy of Politics together with Artificial Intelligence Philosophy. In an extreme society where Administration, Justice, Politics, Science, Information, Social Science and System are all included, in a futuristic society, country, or world where artificial intelligence is active, it may be possible to examine the issues with 4D-7D Hybrid Philosophy.

(c) Philosophy of Computer Science®©: As a 3D Hybrid Philosophy, it is envisaged to include Philosophy of Science®©, Philosophy of Information®©, and Philosophy of Systems®©.

(d) Philosophy of Digital Art®©: As a 4D Hybrid Philosophy, it is envisaged to include Philosophy of Information®©, Philosophy of Science®©, Philosophy of Social Science, and Philosophy of Systems®©.

(e) Philosophy of Digital Technology: As a 4D Hybrid Philosophy, it is envisaged to include Philosophy of Science, Philosophy of Information, Philosophy of Social Science, and Philosophy of Systems.

(f) Philosophy of Engineering®©: As a 3D Hybrid Philosophy, it is envisioned to include Philosophy of Science®©, Philosophy of Information®©, and Philosophy of Systems. The dual interactions of engineering with social values, management, law, and politics are issues to be examined from the perspectives of higher-level hybrid philosophies (4D Hybrid Philosophies). Furthermore, in cases where more than four disciplines are active, engineering-related issues can be examined through 5D, 6D, and 7D Hybrid Philosophy.

(g) Philosophy of Information Technology®©: As a 4D Hybrid Philosophy, it is envisaged to include Philosophy of Science, Philosophy of Information, Philosophy of Social Science, and Philosophy of Systems.

(h) Philosophy of Information Technology Law®©: As a 5D Hybrid Philosophy, it is envisaged to include Philosophy of Justice, Philosophy of Science, Philosophy of Information, Philosophy of Social Science, and Philosophy of Systems.

(i) Philosophy of Monetary Values®: As a 4D Hybrid Philosophy, it is envisaged to include Philosophy of Science, Philosophy of Information, Philosophy of Social Science, and Philosophy of Systems.

Its sub-branches are: (i) philosophy of digital currency®, (ii) philosophy of money, (iii) philosophy of finance®, (iv) philosophy of banking®, (v) philosophy of economy®, (vi) other.

(j) Philosophy of Statistics®: As a 2D Hybrid Philosophy, it is envisaged to include Philosophy of Science and Philosophy of Information.

In this way, old/new branches of philosophy are reconstructed and expressed as branches of philosophy that should be considered with higher concept, scope, value, and importance.

Conclusion

In this article, a general definition, meaning, and importance of engineering are expressed generally, and the main branches of engineering are briefly discussed. The concept of technology is explored, and the relationship between engineering and technology is briefly outlined.

The relationship between artificial intelligence and engineering is examined both generally and specifically. The place of artificial intelligence within science is evaluated according to different approaches.

The general approach to philosophy and philosophy of science is briefly interpreted, and the perspectives of some specific philosophers of science are compared.

The relationship between artificial intelligence and philosophy of science is examined in general terms according to various approaches.

The meaning and importance of philosophy of engineering and philosophy of technology are then defined according to the general approach.

The next section articulates the Philosophy of Artificial Intelligence and the Artificial Intelligence of Philosophy using John McCarthy's approach, and also defines the philosophy of artificial intelligence according to this general approach.

The New Philosophy Perspective is then defined by the author, and the eight Basic Branches of Philosophy and Hybrid Philosophy, along with their relevant theories, are briefly outlined. A new perspective has been defined for Philosophy of Science which is one of the basic branches of philosophy. Accordingly, the main sciences, branches of science, and hybrid sciences for the new basic branches of philosophy have been outlined. The new branches of science and the corresponding hierarchy of sciences, based on the broader scale of the universe, have been defined, and the ideal scientific system has been illustrated.

The next section briefly outlines the relationships between old and new branches of science.

Finally, the structure of some old and new branches of philosophy is examined due to the new perspective of philosophy. The reconstructions of the Philosophy of Computer Science, Philosophy of Statistics, Philosophy of Monetary Values, Philosophy of Artificial Intelligence, Philosophy of Engineering, Philosophy of Information Technologies, Philosophy of Information Law, Philosophy of Digital Art, Philosophy of Architecture, and Philosophy of Digital Technology, as defined by the new philosophical perspective, are outlined. The interaction of artificial intelligence philosophy with these branches of philosophy has been generally expressed.

Since there are some technological, scientific founding/inventions which are/were effective and interacting with human life and also affecting the religion, science, social science disciplines in some manner, author defined these above branches of philosophy to express the interaction/relation between these foundings and Ideal

Philosophical System, and also to express the level of hybrid philosophy perspectives behind these scientific founding.

This study examines the meaning and significance of the disciplines of engineering, science, and artificial intelligence, both individually and together. The general and specific philosophical approaches considered in the formation and application of these disciplines are defined. The indispensable relationship and interaction of these three disciplines, which influence and transform human life and the face of the world, is revealed through a new philosophical perspective, using hybrid sciences and hybrid philosophies.

The facts that managers/administrators and experts working in the public and private sectors have the necessary and sufficient knowledge and training in engineering, science, and artificial intelligence, and that they have a correct perspective on the philosophy of science in the work they will carry out in this context, play an important role in the rapid development of processes in the new era and in the correct shaping of human life.

In a life of an extreme society where Administration, Justice, Politics, Science, Information, Social Science, and System are all included, in a futuristic society, country, or world where artificial intelligence is active, it is important to examine the issues with 4D-7D Hybrid Philosophy.

Considering the basic philosophies defined or reconstructed according to the new philosophical perspective, in the light of theories, sub-branches of philosophy, and hybrid philosophies related to them, it is obvious that the philosophy of artificial intelligence in practice can never replace some of these basic philosophies, but the question that should be asked here is whether it is desired for artificial intelligence to replace humans in every respect.

Some sources indicate artificial intelligence engineering, renewable energy engineering, biomedical engineering, cybersecurity engineering, robotics and automation engineering, environmental engineering, computer science and software engineering, mechanical engineering, civil engineering, electrical-electronics engineering, electronics and communications engineering, chemical engineering, and aerospace engineering as priority subjects for effective engineering applications of the 21st century.

These are just a few examples of how engineering is shaping the 21st century. It's clear that as technology continues to advance, engineers will play an increasingly important role in addressing global challenges and improving the quality of life.

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