The impact of artificial intelligence techniques on innovative performance in smart entrepreneurship: case of the Algeria AI challenge (AIMx organization)

تأثير تقنيات الذكاء الاصطناعي على الأداء المبتكر في ريادة الأعمال الذكية: دراسة حالة تحدي الجزائر للذكاء الاصطناعي (منظمة الذكاء الاصطناعي)

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Abstract:
The study seeks to identify the impact of Empowering and developing AI techniques and support its growth to develop the innovative performance in smart entrepreneurship, one of the first stages of Generating ideas and research creative projects.

Data was gathered from the 68 students of Algeria AI challenge team in 2020. SPSS was used to analyze the data gathered. The result shows that Algeria has announced its first national strategy for research and innovation in artificial intelligence (AI), aimed at building a society of innovation and a generation of digitally skilled citizens.

Keywords: artificial intelligence; innovation; performance; smart entrepreneurship; organization.
JEL Classification Codes: I23, L26, D83, O52.

ملخص:

تسعى الدراسة إلى تحديد أثر تمكين وتطوير تقنيات الذكاء الاصطناعي ودعم نموها لتطوير الأداء المبتكر في ريادة الأعمال الذكية، وهي واحدة من المراحل الأولى لتوليد الأفكار والمشاريع الإبداعية البحثي.

تم جمع البيانات من 68 طالبا من فريق التحدي الذكاء الاصطناعي الجزائري في عام 2020. تم استخدام *SPSS* لتحليل البيانات التي تم جمعها. تظهر النتيجة أن الجزائر أعلنت عن استراتيجيتها الوطنية الأولى للبحث والابتكار في مجال الذكاء الاصطناعي، تهدف إلى بناء مجتمع الابتكار وجيل من المواطنين المهرة رقميا.

كلمات مفتاحية: الذكاء الإصطناعي.، الإبداع.، الأداء.، ريادة الأعمال الذكية.، منظمة.

تصنيفات JEL : .I23, L26, D83, O52.

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INTRODUCTION:

The Algeria AI Challenge is intended to put technical skill and creativity to the test. It is an opportunity for you to develop an AI project of your own invention, to practice teamwork, gain experience in project management, and to grow your professional network.

Artificial intelligence today becomes a famous concept between populations and has entered all fields of technical science, from even the human sciences, the smart phones in our hands and the TVs that azure connected to our houses are the best proof of that. Today, it has become natural to acquire smart devices and deal with smart information programs.

In order to improve the performance and increase the efficiency of Algerian institutions seeking to keep abreast of the latest developments in the economic and technological variables imposed in the world, in particular those related to economic intelligence, Institution can make quality decisions in time according to what the possession of information and knowledge. Therefore, this study aims to know the reality of the application of economic intelligence and its impact on the management of human resources in the Algerian organization.

The study of new business forms requires an assessment of the factors that cause the entire modern economic system to change. New technological capabilities transform the nature of production interactions and knowledge turns into the main resource of economic development. The modern economy generates knowledge and databases that bring economic value and can enhance business performance.

The aim of the article is to understand the bidirectional relationship between smart entrepreneurship and artificial intelligence toward innovative performance.

• The literature in smart entrepreneurship and AI challenge in Algeria.

• I discussed about the key role AI techniques plays in advancing smart innovative performance in smart entrepreneurship.

• I call up on entrepreneurship scholars to contribute for the growth of the smart business.

The research study adopted a survey research design. It was carried out as an empirical study that assesses the adequation between smart entrepreneurship and AI techniques (innovation/ performance).

This research used the quantitative method of a correlational descriptive type. The analysis technique uses simple regression and multiple regression, which aims to test the contribution of two independent variables to one dependent variable. The instrument used was scale model Likert. In this context, we carried out a quantitative study among the team of the of The AIMx Algerian challenge by developing a questionnaire and processing the data with the SPSS software

1- The first axis: the theoretical framework of artificial intelligence:

   1-1   Definition on artificial intelligence:

   - Artificial intelligence is a science and technology based on disciplines such as Computer Science, Biology, Psychology, Linguistics, Mathematics, and Engineering. A major thrust of AI is in the development of computer functions associated with human intelligence, such as reasoning, learning, and problem solving. Out of the following areas, one or multiple areas can contribute to build an intelligent system. (Tutorials point);

   - Artificial intelligence (AI) is intelligence demonstrated by machines, unlike the natural intelligence displayed by humans and animals. Leading AI textbooks define the

field as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals. Colloquially, the term "artificial intelligence" is often used to describe machines (or computers) that mimic "cognitive" functions that humans associate with the human mind, such as "learning" and "problem solving". (Journal of Information Technology, 2020)

- **Artificial intelligence (AI)**, the ability of a digital computer or computer controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from experience. Since the development of the digital computer in the 1940s, it has been demonstrated that computers can be programmed to carry out very complex tasks—as, for example, discovering proofs for mathematical theorems or playing chess—with great proficiency. (B.J. Copeland, 2020)

- **Artificial intelligence** is a science and technology based on disciplines such as Computer Science, Biology, Psychology, Linguistics, Mathematics, and Engineering. A major thrust of AI is in the development of computer functions associated with human intelligence, such as reasoning, learning, and problem solving. Out of the following areas, one or multiple areas can contribute to build an intelligent system. (Digicloud, 2020)

1-2 Importance of artificial intelligence:

Artificial intelligence allows computer systems to work with the intellectual processes of humans. However, these machines can carry out tasks more dexterously and efficiently than people can. They can also enter hazardous environments, such as areas that require deep sea diving, making certain processes much safer. In short: AI is improving the way we work. It is not about replacing humans, rather, changing our workplaces for the better.

1-3 The Impact of Artificial Intelligence on the World Economy :

Artificial intelligence has the potential to incrementally add 16 percent or around $13 trillion by 2030 to current global economic output-- an annual average contribution to productivity growth of about 1.2 percent between now and 2030, according to a September 2018 report by the McKinsey Global Institute on the impact of AI on the world economy. However, in addition to its economic benefits, AI will also lead to significant disruptions for workers, companies and economies. There will likely be considerable costs associated with managing labor-market transitions, especially for workers being left behind by AI technologies, which could reduce the gross impact of AI by around 10 percentage points, leading to the aforementioned net GDP increase of 16 percent or $13 trillion by 2030. (Irving Wladawsky-Berger, 2018).

2- The second axis: the theoretical framework of (smart entrepreneurship/innovative performance/techniques):

2-1- Performance /smart Entrepreneurship:

The performance requires objectivity to make the decision for specifications or goals. (Dransfield, 2000)Entrepreneurial Performance is the individual's ability to be effective in many careers help to achieve better outcomes in negotiations to obtain company success. Entrepreneurial performance is to promote primary company concepts, developing new products, identifying market opportunities, make a modern environment, building healthy investor relationships, and

also ready to react upon amazing market patterns.

Taylor stated that creative performance must show a certain meaning economic, social, cultural, scientific, technical, etc., value that is recognized and the results of creative activity must be made consistent intelligible.

Entrepreneurship can serve as a career path diverging from employment if prior skill-sets and performance in the area of self-employment have been inculcated. (Hattab, 2014)

In actuality, equipping accounting students to be self-employed is one of the effective solutions addressing the surfeit of graduates with accounting majors given that the labor market in most Arab economies cannot absorb them purely in the capacity of professional accountants.

"The Smart Entrepreneur *is a welcome addition to the genre of business books. Full of detailed, practical guidance and real-life examples, it will be of benefit to anyone setting out into the world of entrepreneurial 'venturing'."* (Bart Clarysse , Sabrina Kiefer, 2011)

'The Smart Entrepreneur' features real-life case studies as well as in-depth analysis by authors with direct experience of developing start-ups and venture coaching. Divided into twelve chapters that can also be read separately as mini-manuals, each section offers practical advice and guidance to cover all aspects of your new venture, from building a smart business proposition to assembling a dynamic team, carrying out affordable yet effective market research and seeking investment.

2-2- Techniques:

The etymological root of the words technique and technical is the same, from the Greek technikos: "skillful in an art." A typical dictionary definition1 of technique includes the following:

1. The manner in which technical details are treated… or basic physical movements are used…

2. Also the ability to treat such details or use such movements: a) A body of technical methods <as in a craft or scientific research> b) a method of accomplishing a desired aim.

Thus, in contrast to the word technology which implies systematic treatment (i.e., from Greek technologia: "systematic treatment of an art"), technique signifies manners, ways, and capabilities involved in implementing systematic technical knowledge. Thus in a general sense, technique can be any manner in which basic physical movements are used, and is sometimes associated with non-scientific activities (e.g., dance technique, flower arranging technique).

In general then, we can think of technique as a method or style of implementing systematic technological knowledge. This general definition of technique includes cultural behaviors as well as human interactions with tools and products associated with human arts, crafts, and skills.

For (Couger , 1995), techniques can be classified as analytical or intuitive. Analytical techniques generate logical patterns of thinking that tend to follow a linear pattern or sequence of steps. These techniques take advantage of different ways of organizing information known to approach problems from new viewpoints, by means of a linear pattern or a sequence of steps. Intuitive techniques rely on a single image or symbol to provide a one-time response and jump-start solutions. In general, they skip steps of a sequence.

2-3- Innovation:

Innovation is the successful exploitation of new idea; it is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or service.

They approach innovation in its broadest sense including both new technologies and new ways of doing things (Porter, 1990) Innovation is a process of creating, experimenting, transforming not only what is offered but also the way in which it is offered. Successful innovators are not focus on risk, but on the potential for exploiting an opportunity. Creativity leads to innovation. Thus, Entrepreneurship is all about innovation as delineates. (Drucker , 1985) Describes an entrepreneur as not just someone who starts his own, new and small business: You can be a corporate employee and still be entrepreneurial. He further states that not every new small business is entrepreneurial because entrepreneurship is the practice of consistently converting good ideas into profitable commercial; ventures. In the same book, Prof. Drucker challenges common knowledge by showing through real-world examples that Innovation does not have to be technical, and does not have to be an idea, information, etc.) Into a resource that is of high value to its target market.

3- Research Method

This work focuses on highlighting the importance of mastering the use of AI techniques to stimulate the culture of innovative performance in smart business and entrepreneurship. Artificial intelligence takes shape through a set of methods or techniques that boost innovation stimulate and develop imagination and invention.

In this context, we carried out a quantitative study among the students of the artificial intelligence mission of The Algerian AIMx team by developing a questionnaire and processing the data with the SPSS software. The study concluded that mastering different ideation techniques had a positive effect as well as an effective mechanism for the development of creative ideas. It also represents a solid foundation explains the complementary role played by the organization to fill these gaps.

We developed a survey, which was completed by all 80 participants. The survey had several continues questions, that build on each other. Thus, not every participant answered every item. The complete survey and the data are attached to the paper. With our findings, we attempt to provide valuable information to entrepreneurs, who consider using AI support techniques to enhance their creative and innovative process spirit and improve their overall smart business.

AIMx is a non-profit organization that aims to promote AI as a tool for sustainable development in all areas including economy, environment, and society, as well as in the growing field of technology. We plan to organize and design events that will provide education about AI and its potential. We hope to demystify aspects of AI that are often perceived as threatening, such as the idea that AI will compete with or overwhelm the capabilities of the human mind. Promoting the well-being of humankind is our primary directive. Our mission is to encourage the use of AI for the betterment of our society and for the preservation of our planet.

3.1 RESULTS AND DISCUSSION

The data of this research was collected from march to April 2020 using online questionnaires, as they were distributed to a group of Algerian team students studying at the undergraduate (Bachelor's and Master's levels) and postgraduate studies (PhD). AIMx organization was chosen because it is the organization to which the researcher belongs. The questionnaire was distributed on the social media sites of Algerian team students, and only 68 responses were

received. The questionnaire was formulated using a Likert scale ranging from strongly. Agree (5) to strongly disagree (1) to provide information on creative techniques.

Table 1. Characteristics of study's sample

Variable	Frequency 68)	percentage
Age		
18-25	38	50.66%
26-30	20	38.67%
More than 30	10	10.67%
Gender		
Male	52	69.33%
Female	16	30.67%
Specialty		
Economic, commercial and management sciences	35	58.67%
humanities, social, political sciences, languages, and law …	19	24%
exact sciences and life sciences (mathematics, computer sciences, medicine, pharmacy, geology …)	14	17.33%

Source: made by researchers using the outputs of SPSS 21

In order to now the validity and reliability of the study questionnaire, we relied on Cronbach's alpha coefficient. Moreover, found it equal to (0.875) and it is bigger than (0.7) which means that the study tool has consistency, which indicates a good internal consistency for all the questionnaire variables, and the results are shown in the table below:

Table 2. The validity and reliability of the questionnaire

Cronbach's alpha	Number of items
0.875	30

Source: made by researchers using the outputs of SPSS 21

Table 03: Innovative performance indicators in smart business

indicators	Level of support					Standard deviation	Mean (average)
	agree ⟶ disagree						
Economic and social additions to contractors.	28	22	8	4	6	1.857	3.63
	41.2	32.4	11.8	5.9	8.9		
Provide innovative project ideas and create new institutions.	22	33	9	2	2	.917	.369
	32.4	48.5	13.2	2.9	2.9		
Teamwork, commitment and adherence to project steps	16	22	14	11	5	.638	3.56
	23.5	32.4	20.6	16.2	7.4		
Utilization of available resources and capabilities	28	38	0	2	0	.970	3.63
	41.2	55.9	0	2.9	0		
Immediate response to environmental disturbances and uncertainty	11	13	22	10	12	.819	4.31
	16.1	19.1	32.4	14.8	17.7		
Exploit opportunities and vigilance for potential threats.	14	33	15	4	2	.973	4.18
	20.6	48.5	22	5.9	2.9		
Follow-up performance, monitor and evaluate results	19	19	20	6	4	.960	3.88
	27.9	27.9	29.4	8.8	5.9		
Propose innovative and innovative solutions to organizational issues	10	18	20	12	8	.726	4.41
	14.8	26.5	29.4	17.7	11.8		

Source: made by researchers using the outputs of SPSS 21   *p<0.05, **p<0.001

Analysis of the innovative performance indicators of student's performance towards AI techniques, revealed positive means ranging from 0.638 to 1.857. The statement "Propose innovative and innovative solutions to organizational issues." had the highest mean (4.41) while the statement "Teamwork, commitment and adherence to project steps" (methods adapted from psychology);" had lowest mean (3.56).

Table 4. Impact components of AIMX training on student4s skills and performance

Statements	Level of support					Standard deviation	Mean (average)
	agree ———————→ disagree						
Careful study of the project (expected costs and profits)	18	22	15	11	2	.652	3.80
	26.5	32.4	22.0	16.2	2.9		
Better compilation of information and knowledge about the surrounding environment	24	35	2	3	4	1.267	3.94
	35.3	51.5	2.9	4.4	5.9		
Creating creative ideas to create projects (private institutions)	18	30	6	4	0	.873	4.08
	26.5	44.1	8.9	5.9	0		
Determine the competitive location of competing projects and competitors	16	22	14	11	5	1.296	3.83
	23.5	32.4	20.6	16.2	7.4		
Control of information systems and technology tools	28	38	0	2	0	.845	4.43
	41.2	55.9	0	2.9	0		
Ways to collect, sort, arrange and select the most appropriate information	22	33	9	2	2	1.080	3.97
	32.4	48.5	13.2	2.9	2.9		
Predictability and medium- and long-term outlook	30	28	10	0	0	.826	4.31
	44.1	41.2	14.7	0	0		
Make the right decisions at the right time depending on the environment and situation	28	22	8	4	6	.980	3.88
	41.2	32.4	11.8	5.9	8.9		
Develop tech-social skills (collaboration, coordination, integration...)	22	33	9	2	2	.869	4.01
	32.4	48.5	13.2	2.9	2.9		
Outstanding elegance before, during and after the initiation of innovative projects	18	30	6	4	0	.920	3.51
	26.5	44.1	8.9	5.9	0		
Creative and creative response to customer requirements and the environment as a whole	22	38	8	0	0	.913	3.65
	32.3	55.9	11.8	0	0		
Building good perceptions and strong customer relationships	16	26	18	6	2	.798	3.97
	23.5	38.3	26.5	8.8	2.9		
Keeping pace with modern trends and keeping pace with development and competition	28	28	10	2	0	.917	3.59
	41.2	41.2	14.8	2.9	0		
	25	33	6	2	2	.688	3.76

Ways to collect, sort, arrange and select the most appropriate information	36.8	48.5	10.3	2.9	2.9		
Avoid the risk of external dealers	16	20	24	4	4	.920	3.93
	23.5	29.4	35.3	5.9	5.9		
Study opportunities and predict risks and threats Exploring funding difficulties and obstacles	21	30	12	5	0	.985	3.98
	30.9	44.1	17.7	7.4	0		
Identify the most important sources of funding available and legal	10	18	20	12	8	1.052	3.79
	14.8	26.5	29.4	17.7	11.8		
Personal and social responsibility to achieve customer satisfaction	11	13	22	10	12	1.016	3.82
	16.1	19.1	32.4	14.8	17.7		
Protection of industrial property, innovations and patents	14	33	15	4	2	1.113	3.88
	20.6	48.5	22	5.9	2.9		
Access to support and privileges for institutional activities	19	19	20	6	4	.899	4.01
	27.9	27.9	29.4	8.8	5.9		
Adopting legal and legitimate mechanisms and approaches to obtain information	10	25	22	7	4	.826	4.28
	14.7	36.8	32.3	10.3	5.9		
facilities of used in course create atmosphere in creating impulse for becoming more understand about the course and willing to do business	19	22	16	4	0	.845	4.13
	27.9	32.4	23.5	5.9	0		

Source: made by researchers using the outputs of SPSS 21   *p<0.05, **p<0.001

Analysis of the Impact components of AIMX training on student4s skills and performance towards AI techniques, revealed positive means ranging from.652 to 1.267. The statement "Control of information systems and technology tools" had the highest mean (4.43) while the statement "Outstanding elegance before, during and after the initiation of innovative projects." had lowest mean (3.51).

3.2 The hypothesis of this study is as follows:

Hypothesis 01

Ho1: there is a significant relationship between artificial intelligence techniques and innovative performance.

Table 05: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	.428*	.183	.174	.43210

a.   Predictors (constant), artificial intelligence techniques (AI) techniques

b.   Dependent variable: innovative performance

Table 06: ANOVA Table

			Sum of squares	Df	Mean Square	F	Sig
innovative performance	Between Groups	(combined)	4.407	8	.551	2.823	.008
		Linearity	3.805	1	3.805	19.503	.000

*(AI) techniques		Deviation from linearity	.602	7	.086	.440	.874
	Within groups		16.389	84	.195		
	Total		20.796	92			

Interpretation of results

The result from the model summary table 05 revealed that the extent to which the variance, innovative performance can be explained by (AI) techniques is 18.3% (R Square = 0.183).

Table 06 shows the result of the linearity assumption of linear regression test. Based on ANOVA output table 06, value of significance for deviation from linearity of 0.874>0.05, it can be concluded that there is a linear relationship between the variables of innovative performance with AI techniques. It also shows the fcal 19.503 at 0.000 significant level. The output from table shows that there is a significant relationship between innovative performance and (AI) techniques.

Table 07: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std.Error	Beta		
1	(Constant)	1.732	.673		2.573	.012
	AI techniques	.579	.128	.428	4.514	.000

a. Dependent variable: innovative performance

The coefficient table 07 above shows the simple model. The model is shown mathematically as follows: $Y = a + bX$ where 'Y' is innovative performance and 'X' is AI techniques, 'a' is a constant factor and 'b' is the value of coefficient.

From this table there for, innovative performance = 1.732 + 0.579 (AI) techniques. Therefore, a unit (or 100%) change in (AI) techniques. will lead to 0.579 (57.9%) change in innovative performance. The above result implies that there is a significant relationship between (AI) techniques. In addition, innovative performance i.e. since the P value (0.000) is less than 0.05. Thus, the decision would be to accept alternative hypothesis (Ho1), i.e. there is a significant relationship between (AI) techniques. And innovative performance among business team of the Algeria AI challenge

Hypothesis 2

Ho2: there is a significant relationship between smart entrepreneurship and AI techniques training for Algeria AI challenge team.

Table 08: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	.667*	.445	.439	.27741

a. Predictors (constant), smart entrepreneurship
b. Dependent variable: AI techniques training

Table 09: ANOVA Table

			Sum of squares	Df	Mean Square	F	Sig
AI techniques training *smart entrepreneurship	Between Groups	(combined)	6.139				
		Linearity	5.619				
		Deviation from linearity	.520	6	.087	1.135	.349
	Within groups		6.483	85	.076		
	Total		12.622	92			

Interpretation of results

The result from the model summary table 08 revealed that the extent to which the variance, AI techniques training can be explained by smart entrepreneurship is 44.5% (R Square = 0.445).

Table 09 shows the result of the linearity assumption of linear regression test. Based on ANOVA output table 09, value of significance for deviation from linearity of 0.349>0.05, it can be concluded that there is a linear relationship between the variables of smart entrepreneurship with AI techniques training. It also shows the fcal 73.675 at 0.000 significant level. The output from table shows that there is a significant relationship between AI techniques training and smart entrepreneurship.

Table 10: Coefficients'

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std.Error	Beta		
1	(Constant)	2.656	.364		7.298	.000
	Smart entrepreneurship	.549	.064	.667	8.545	.000

b. Dependent variable: AI techniques training

The coefficient table 10 above shows the simple model. The model is shown mathematically as follows:

$Y = a + bX$ where 'Y' is AI techniques training and 'X' is smart entrepreneurship, 'a' is a constant factor and 'b' is the value of coefficient.

From this table there for, AI techniques training = 1.732 + 0.579 smart entrepreneurship. Therefore, a unit (or 100%) change in smart entrepreneurship will lead to 0.579 (57.9%) change in digital business process. The above result implies that there is a significant relationship between smart entrepreneurship and AI techniques training i.e. since the P value (0.000) is less than 0.05.

Thus, the decision would be to accept alternative hypothesis (Ho2), i.e. there is a significant relationship between smart entrepreneurship and AI techniques training among business team in Algerian AI challenge.

Hypothesis 03

Ho3: artificial intelligence Enhanced innovative performance for smart Entrepreneurship.

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Table 11: coefficients correlations

		Smart entrepreneurship	AI techniques training
Smart entrepreneurship	Pearson correlation	1	.328**
	Sig. (2-tailed)		.001
	N	93	93
AI techniques training	Pearson correlation	.328**	1
	Sig. (2-tailed)	.001	
	N	93	93

** Correlation is significant at the 0.01 level (2-tailed).

From table 11 above it can concluded that variables are not highly correlated with each other (i.e. at 0.7 or more) in the same analysis.

3.3 Discussion of findings:

This study empirically investigates the ad equation between smart entrepreneurship and innovative performance for artificial intelligence of business team of Algerian AI challenge team.

The result from hypothesis tested proves that:

The relationship between smart entrepreneurship and innovative performance for artificial intelligence training and smart entrepreneurship for innovative performance is strong, significant, linear and positive (P = 0.000< 0.05, R^2 = 0.0445 and deviation from linearity 0.349> 0.05).

In general, findings show that smart entrepreneurship have strongest effect on AI efficiency as a measure of smart/ innovate performance.

Conclusion:

Algeria has announced its first national strategy for research and innovation in artificial intelligence (AI), aimed at building a society of innovation and a generation of digitally skilled citizens. The strategy aims to "improve Algerian skills in AI through education, training and research and to strengthen these capacities as a tool for development"

The University World News that the AI strategy will encourage graduate students and postdoctoral researchers to develop applications in bioinformatics. Applications for big data, machine learning, autonomous systems, computer vision and intelligent decision support systems for socio-economic sectors are also envisioned. The strategy further includes support to AI start-ups for innovation.

In education, AI strategy begins with raising awareness of AI and pushing to develop programme training and apprenticeships, including aspects to fight inequalities in capacity training. Besides the contribution of AI to the improvement of human learning through techniques of learning analytics, the strategy must focus on developing partnership relations with the socio-economic sector.

The media must participate in the popularization of AI in high schools, the public service and the private sector, emphasizing that workstations, high-performance computing centers, internet networks and cloud computing must be established.

Suggestions:

Algerian universities should set short-, medium- and long-term objectives to democratize AI by introducing advanced techniques including deep learning, data mining, computer vision and image understanding along with fake news detection into almost all key sectors, including the socio-economic sector.

Algerian universities must also contribute to enhance students' skills. Applied research as well as promoting innovations, trends, concerns, and practical challenges encountered and solutions adopted in the AI fields should be supported. Moreover, universities should help to bridge the gap between the AI research community and people from the industry or those who work in other research areas, including smart cities, big data, cloud computing, social networks and energy

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