TO PROBE THE BELIEF OF ANIMATIONS & ARTIFICIAL INTELLIGENCE IN THE DISCIPLINE OF AGRICULTURE

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Abstract: *Information technologies has never failed to astound us in any way whether be it in field of Science, Agriculture, Arts, Film & media, Sports, education, making virtual reality possible, all we can say in almost all the field that we can name. Many incidents occurred, where IT sector maintained it expanse & it was on the top of all (for say; covid-19 pandemic period), with the help of this sector the pace of time or situation found to be normal at a times. As the old axiom says that; time is money and money is time so by this we can understand and imagine the value of time in a second. Animations & creative sector (the main part of IT Sector) played a very vital role in fulfilling this adage. As there are many state of affairs where animated videos can save time by becoming a strong source of communication. Communicating anything through visuals can make better understanding of the subject or the concept. This paper will deal out with the role of graphics & animations in the meadow of agriculture. It will show how cropping & techniques used in the agriculture can be modified or used in more effective way. Other salient terms that will throw light in this research will use & impact of Artificial Intelligence & usage of SAWBO program in terms of agricultural practicing. The results obtained from this study urge that animated imaginal or visuals are a well-received approach as a training & guiding tool in agriculture with diverse literacy levels.*

Keywords: *Animations, 3D Model Layout, Graphic Designs, Agriculture, Agronomist, SAWBO, AI, Data Driven Farming.*

INTRODUCTION

Information technologies has never failed to astound us in any way whether be it in field of science, agriculture, arts, film & media, sports, healthcare, in any sort of educational or industry field, making virtual reality possible, all we can say; in almost all the field that we can name. We have entered the new millennium & can observe that how IT sector has proved its importance. The planet has become easier & contented to live in. Day by day advancement in the IT field, are making virtual things more realistic & informative. One of the most important fragments of IT sector & that is in the limelight now a days; is the animation industry.

The word animation, itself gives the vibe of creativity, designing, illusion, motion & colorfulness. Animation means showing the successive drawings or images to form an illusion of the movement. There are several types of animations, that can be used according to the demand. Animation has already left its impact on almost all the sectors which we could think & name of it.

Another fragment of creative industry is graphic designing; a part of creative industry also plays an equal & same importance as animation, the only difference that can be noticed is that they are the still images showing informative designs whereas animations are shown in motion. From communicating the complex ideas in simpler way to demonstrating the techniques, they can be used in any way.

Graphic designs are created to make the infographics for spreading the awareness or to convey the information. Focusing on the agriculture precinct, animated videos & infographic designs have its predominant locus. From exchanging the information to sharing the technical knowledge, animation has made its precise spot.

Furthermore, the use of Artificial Intelligences can also be noted in the field of agriculture sector. Artificial Intelligence is the clone of human intelligence processes by computer systems. This technology allows something to be done in a way that is indistinguishable to the way a personage would do it. From using autonomous robot to use of data driven farming, AI has made its place in the zone of agriculture. With the help of IT sector & creative industry, everything has become easier & more accessible & same is applied in the agricultural zone.

MATERIAL AND METHODS

The objective to do this research is to know more about the agricultural problems & their impact on productivity. Also, to illustrate he emphasis of animation & artificial intelligence in the belt of the agriculture. The method used in completing this research is primary observation. I visited farms, factories & laboratories of Timisoara, Romania. By visiting these farms, I got the idea of the methods used in farming & in agriculture practices. I also attended the conferences to know more about the theme. Those observations gave me a thought that how animations & AI can help in improving & increasing the productivity of the farms. Some of the names of conferences, farms, & factories are named below, which helped in reaching at the conclusion stage-:

- A trip at MERPANO SRL, a company which provides products for plants' protection, seeds of high genetic value, fertilizers, as well as professional agricultural services.
- A visit at company which was also visited was AGROSAMI SRL SĂCĂLAZ, whose main activity is the cultivation and the conditioning of cereals, leguminous plants and producing oilseeds.
- Another participation in the "Agricultural Field Day for Research and Development" organised by Agricultural Research and Development Station LOVRIN (S.C.D.A.)
- Conference on the topic of "Biofertilizers in Ecological Agriculture" with Dr. Vincenzo Michele Sellitto (from Italy).
- Another Multidisciplinary Conference on Sustainable Development. Even I presented paper in the conference; entitled-: "To probe the Belief of Animations & Graphics in The Discipline of Agriculture."

Statement of Problems

Everything has complementary contrary forces, in the same way usage of AI & animations has positive & negative sides, but negative impact is not on the productivity of the crops, it's just making people aware about the advantages of animations & AI. On the top of that, animation visuals can help in that case also by showing informative clips about the ascendancy to the farmers.

RESULTS AND DISCUSSIONS

Dossier

This section will include the explanation of the concepts used in the research. With the help of these elucidations, the research has clutch to the below conclusion.

Animation & Graphics Role in the Sector of Agriculture

From the above discussion it can be noted that how animations & graphics play an important role in all the zones. When we talk about the agriculture field. There are many ways in which visuals can help.

- **3D Layout in correlation to cropping:**

When we talk about cropping the plants in the farm, it is perceived that many steps are followed to check the soil or to monitor the distance between the crops & many more. Yes, it is true that visuals cannot sort out all the consequences but can help in some of the techniques & methods. For say; in which visuals can help the farmers or agronomist is that; while doing farming, farmers check the distance between the crops, if there will not be a proper distance then crops would not grow suitably.

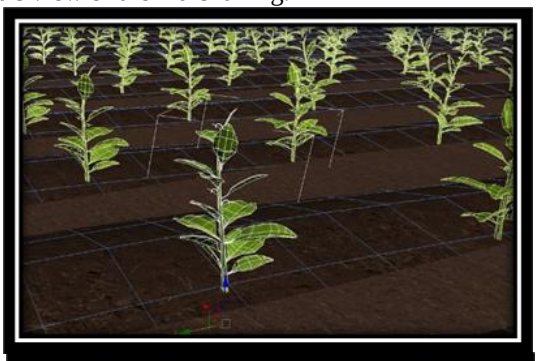
To overcome this problem- 3D Model Layout can be one of the solutions. Before planting the fauna, a 3D Model Layout can be prepared, (3D images or motions are always more realistic as they give a proper virtual idea of the things that relay in real life) while preparing that model a space can be decided betwixt the crops according to the demand or requirement, even that can be examined in motion through the animation.

If any mistake is notified in the model, then it can be rectified, with the help of this technique money & time both can be saved, and farmers can be less stressed out of the end result regarding the erroneous arrangements of the crops.

Another instance in which 3D Model Layout and animation can help is in the arrangement of trees. When farmers plant the trees, they need to check that tall trees canopy should not cover the small trees, because that can hamper the growth of small trees because as they will not get the proper sunlight as required.

For overcoming this loss, a realistic model can be prepared, a 3D facsimile of the sapling will give a realistic view of the marshalling.

(a)



(b)

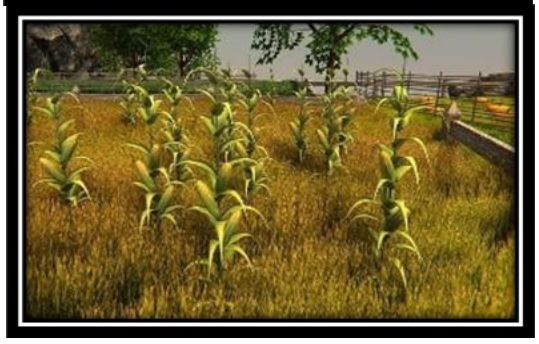


Figure 1. The above image (a) shows the 3D Layout model, prepared in the software showcasing the crop arrangement and another image (b) shows the realistic output of the farm that would look like at the end.

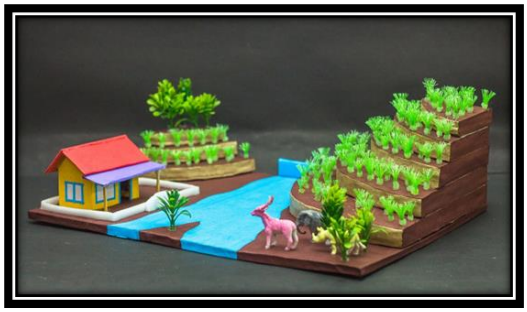


Figure 2. The above image represents the 3D Model layout of the terrace farming. With the help of this realistic arrangement farmers can easily get the idea of the end result & if any mistake notified can be corrected immediately.

- **Animations & Graphics in Link to Communication:**

It is well said that communication is key to success. In the same way this citation can precise over here as animated videos & infographics can provide the information in a simple way on complex ideas and techniques that could improve livelihoods. Animated videos and design creatives can be a well-received approach as a communication tool in agriculture, amongst population with diverse literacy rate. There are number of people practicing farming but some of them belong from the family with low literacy rate & it becomes difficult for them to understand the technical points different language rather than their regional or other few languages. In this manifestation, animated clips or shots can assist a lot, as they are totally in the visuals form with diverse languages even without languages or verbal communication in the videos, they can help in the better understanding of the concept because of their alluring way of presenting the shots or clips. Especially when we talk about the 3D animation (an animation showing live actions in realistic virtual form), those type of clips are more pragmatic while bestowing the ideas or concepts.

(a)

(b)

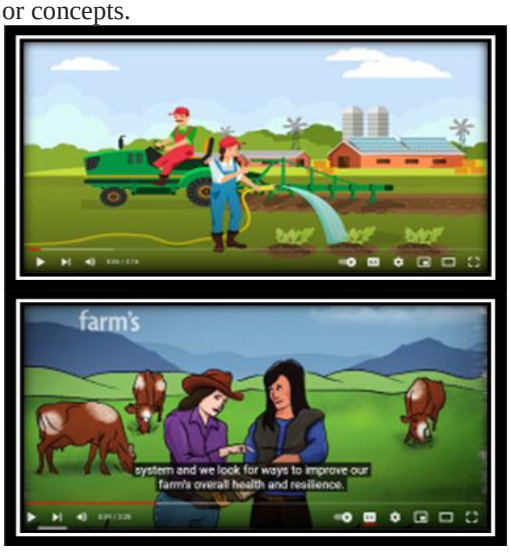


Figure 3. The above creatives are taken from the animated videos, showing the importance of communication in the agricultural sector. With the help of this communication becomes easy with different range of people.

- **SAWBO:**

Scientific Animations Without Borders (SAWBO) is a university-based program that designs and participates with local groups to situate informative videos in regional languages, providing access to facts and knowledge to individuals in the evolving world.

These animations provide information and knowledge in a simple way, on complex ideas and techniques that could boost livelihoods.

The animators & creative artists in that group creates & designs the scientifically accurate animated clips & that are construed in more than hundred languages.

In another way we can say it is an initiative from the global experts to the end users. Their project mainly deals with agriculture & health care concepts.

If focusing to the agricultural sector, there are several videos showing the techniques & methods used in farm in various languages & rational animations.

- **Use of AI in Agricultural Sector:**

Now a days Artificial Intelligence is used in almost every part of the industry or part sector. In the same way AI can be used in the agriculture sector & can help in monitoring the farms, crops, fields & much more.

Agriculture is a field that requires a lot of hard work & even a good supervision to complete a small task & even a skilled eye to recognize when crops are ready to be used & to even check if crops are not getting infected with the diseases.

Here comes the AI to help & checking in the problems. With the help of AI production can be increased with the better quality.

- **In Field Monitoring with Computer Vision:**

With the help of AI, fields & crops can be monitored thoroughly. Even progress of the crops can be monitored very easily.

Another issue which agricultural farms face is of pests, they are the major reason of decreasing the quality & quantity of crops.

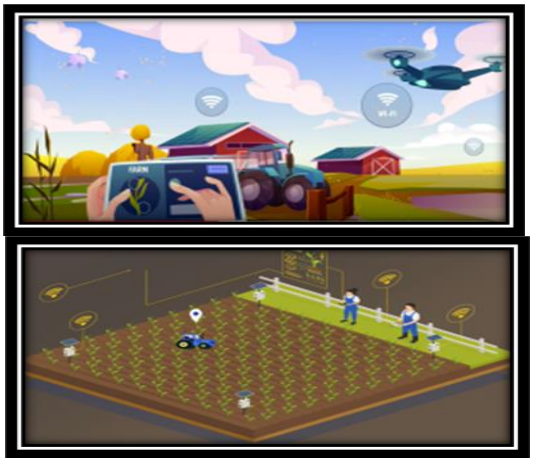
To save this reduction, AI technology can help a lot as drones with the AI features can help in monitoring the pests & even can spread the pesticides on the infected crops.

Farmers can also have a super vision to check where the disease is spreading & can have an immediate solution.

- **Predictive Analysis:**

This contains collecting data from solar censors, GPS & other external sources & allow farmers to increase the productivity & decrease the manpower.

(a)



(b)

Figure 4. The above figures (a) and (b) demonstrates the use of AI in agriculture sector. The image (a), depicts the monitoring with the help of computer & another image (b), depicts the data collection through censors, GPS or other external sources & implementing in the field with the help of AI technique.

- **Autonomous Robot:**

Another major application of AI in agriculture sector is autonomous robot, this can help in increasing the productivity & can give farmers time to think more on important aspects. Harvesting intaking is one of the most important applications of autonomous robot in agricultural executions. Due to the high accuracy & speed, robots can help to improvise the yields & can reduce the waste of the crops left in the field. Also, with the help of autonomous robot technique & computer vison, robots can select the good crops; which means based on the merits like; crops which are ready to use, or which are not bacterially infected and many more aspects.

So, this is precise to say, AI applications can succour a lot in agricultural exercises & can improve in expanding the fecundity incredibly.

From visiting the different farms & attending the different conferences, it was observed that animations & AI technology can help a lot in improving the productivity, The agronomists also agree with this fact & the people who attended the conference also concured that, implementing the new technology or taking an initiative towards the innovation can bring out the cut above output.

CONCLUSIONS

Digital Green has observed that visual based grounding to be more successful as compared to the conventional system in expanding the adoption of some agricultural techniques & methods. Even it is also observed that it is one time investment as the videos can be used several times and at various location, so cost per video will be less as opposed to customary adjunct system. Another limelight point in the research was to showcase the feature of AI used in the farms. At last, SAWBO projects has also shown that how their animations helped many farmers & agronomists in bringing out the better output.

The practice of agriculture requires so much of guess work, farmers need to uniformly spread pesticides & water to the crops. But the problem is some crops need the additional water

& pesticides, but some can have adverse effects too. To reduce the wastage of water & pesticides also to save the crops, data driven farming method can be used. Data Driven Farming means using of data to elevate decision making while practicing farming. This can ameliorate the quality & quantity of crops, also in environmental sustainability & food security. In this farmer can pression farming, which detects & identifies the crops which require pesticides & additional water. This will reduce the cost & wastage of the products. With the use of this big data the sustainability can also be increased.

BIBLIOGRAPHY

BELLO-BRAVO, J., TAMÒ, M., DANNON, E. A. & PITTENDRIGH, B. R., (2017), "An assessment of learning gains from educational animated videos versus traditional extension presentations among farmers in Benin", Information Technology for Development, doi:10.1 080/02681102.2017.1298077.

CRANE- DROESCH, A., (2018), "Machine learning methods for crop yield prediction and climate change impact assessment in agriculture," Environmental Research Letters, vol. 13, no. 11, p. 114003.

MAREDIA, M. K., REYES, B., BA, M. N., DABIRE, C. L., PITTENDRIGH, B. R. & BELLO-BRAVO, J., (2017), "Can mobile phone-based animated videos induce learning and technology adoption among low literate farmers? A field experiment in Burkina Faso", Information Technology for Development, 1–32, doi:10.1080/0268 1102.2017.1312245.

RAYDA BEN, A. & MOHSEN, H., (2021), "Artificial Intelligence to Improve the Food and Agriculture Sector", Journal of Food Quality, Volume 2021, Article ID 5584754, doi 10.1155/2021/5584754.

SAWADWUTHIKUL G., T. TOTHONG, T. LODKAEW ET AL., "Visual goal human-Robot communication framework with few-shot learning: a case study in Robot Waiter System," *IEEE Transactions on Industrial Informatics*, vol. 18, no. 3, pp. 1883–1891, 2022.

TATA, J. S., & MCNAMARA, P. E., (2017), "Impact of ICT on agricultural extension services delivery: evidence from the Catholic Relief Services SMART skills and Farmbook project in Kenya", The Journal of Agricultural Education and Extension, doi:10.1080/138 9224X.2017.1387160.

WU, H. AND LI, G., (2020), "Visual communication design elements of internet of things based on cloud computing applied in graffiti art schema," Soft Computing, vol. 24, no. 11, pp. 8077–8086.

ZHU, H., (2018), "On the teaching of decorative painting for the major of visual communication design," Journal of Landscape Research, vol. 10, no. 4, pp. 166–168.

ZOSSOU, E., VAN MELE, P., VODOUHE, S.D. & WANVOEKE, J., (2009), "Comparing Farmer-to-Farmer video with workshops to train rural women in improved rice parboiling in Central Benin", "The Journal of Agricultural Education and Extension", vol. 15, pp. 329-339.

ZOSSOU, E., VAN MELE, P., VODOUHE, S.D. & WANVOEKE, J., (2009), "The power of video to trigger innovation: rice processing in Cenral Benin", International Journal of Sustainability, vol. 7, pp. 119-129.

FIGURE 1-: (A) HTTPS://PREVIEW.FREE3D.COM/IMG/2018/02/1871868984781964983/8XCPYE1J-900.JPG
HTTPS://PREVIEW.FREE3D.COM/IMG/2018/02/1871868984781964983/NASD4TR6-900.JPG

FIGURE 2-: HTTPS://I.YTIMG.COM/VI/I7HNEUBPDGO/MAXRESDEFAULT.JPG

FIGURE 3-: (A) HTTPS://WWW.YOUTUBE.COM/WATCH?V=NSNPEMR1Q_K
(B) HTTPS://WWW.YOUTUBE.COM/WATCH?V=G8THEDBGRRA

FIGURE 4-: (A) HTTPS://WWW.YOUTUBE.COM/WATCH?V=NSNPEMR1Q_K
(B) HTTPS://WWW.YOUTUBE.COM/WATCH?V=NSNPEMR1Q_K