



## USE OF ARTIFICIAL INTELLIGENCE IN DUYUNOV'S MOTORS TECHNOLOGY

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### ABSTRACT:

“Duyunov’s motors” is a project aimed at commercializing the unique combined winding technology “Slavyanka”. The technology allows the team of engineer Dmitriy Alexandrovich Duyunov to design a new generation electric motors used in electric transport, industry, agriculture, military industry, aviation, household appliances, medicine and other fields. The various sub-field of AI research are centered on the particular goals and the use of particular tools. The traditional goals of AI research include reasoning, knowledge, representation, planning, learning, and natural language processing, perception and the ability to move and manipulate objects. This is a research and production enterprise of technology and innovation type established in 2001. It is engaged in energy-saving technologies, developments in the field of plasma technologies, welding technologies, power supply units and lighting equipment. The project “Duyunov” motors is funded by means of crowd investing: this means that investment comes from an unlimited number of private investors. The investor becomes a co-owner of the innovative business and can count on part of the company’s profit by receiving dividends on his share. This research paper focuses on how new generation electric motors help the people to solve their lots of problem with the help of this technology. As comparative to other induction motors it helps to clean the environment and pollution from the pollute areas and give fresh breath to human being to increase their lives and enjoy the happy life by using this technology

**Keywords:** - Duyunov Motor, Artificial Intelligence, Environment and Pollution

### INTRODUCTION:

Artificial Intelligence is intelligence demonstrated by machine which is opposed to natural intelligence displayed by animals including humans. The terms is frequently applied to the project of the developing systems endowed with the intellectual processes and characteristic of humans such as the ability of reason, discover meaning, generalize or learn from past experience. Artificial intelligence was founded as an academic discipline in 1956. It has experienced several wanes of optimism followed by disappointment and the loss of funding known as AI winter followed by new approaches, success and renewed funding. AI research has tried and discarded many different approaches since its founding, including simulating the brain, modelling human problem solving, formal logic, large databases of knowledge and imitating animal behaviour. In

the decade of the 21th century. Highly mathematical statistical machine learning has dominated the field and this technique has proved highly successful helping to solve many challenging problems throughout industry and academia.

The various sub-field of AI research are centered on the particular goals and the use of particular tools. The traditional goals of AI research include reasoning, knowledge, representation, planning, learning, and natural language processing, perception and the ability to move and manipulate objects. AI researcher have adapted and integrated a wide range of problem-solving techniques-including search and mathematical optimization, formal logic, artificial neural networks and methods based on statistics, probability and economics. AI also draws upon computer science, psychology, linguistics, philosophy and many other fields.

In order to commercialize the “Slavyanka” technology on the world market, it is planned to build “Sovelmash” design and engineering technology department. Russian engineer DmitriyAlexandrovichDuyunow will develop electric motors using the “Slavyanka” technology of any complexity for various applications according to the customer needs. In 2019, the Moscow government supported the innovative project, recognizing its significance and relevance. The result of this support was “Sovelmash” obtaining the resident status in the state special economic zone “Technopolis Moscow”. A land at the “Alabushevo” site was provided to the project for lease with the right of subsequent purchase. Sovelmash will also receive other support from the state: tax incentives, infrastructure in the form of communications, motorways and railroads as well as access to the free trade zone. Developing efficient electric motors using the combined winding technology “Slavyanka’ is one of the main lines within the Sovelmash design and engineering department will earn profit. The customer of the innovative center will be manufacturers of electric transport, machine tools and equipment, household appliances, plants, military aviation and industrial enterprises. The Sovelmash project will be able to develop electric motors for any industry. The cost of motor development service on average starts from \$ 30 million and depends on the purpose, size and complexity of the product. “Sovelmash” is capable of completing up to 3 such orders per year. Today the company and its potential customers are entering into agreements of intent to cooperate.

Today every person from any country can become an investor of the project ‘Duyunov’s motors’ and get a share in the innovative business: 49.5% of the enterprise will be distributed between all the investors participating in the project. 25% part of the

project will be distributed between the management responsible for commercialization of the combined winding technology “Slavyanka’ and promotion of Sovelmash services. 25.5% part of the project will be distributed among the developer of the project who held the combined winding technology “Slavyanka” is OOO “ASiPP”. This is a research and production enterprise of technology and innovation type established in 2001. It is engaged in energy-saving technologies, developments in the field of plasma technologies, welding technologies, power supply units and lighting equipment. The company “ASiPP” worked on motors with “Slavyanka” before the project start.

“Duyunov’s motors” is a project aimed at commercializing the unique combined winding technology “Slavyanka”. The technology allows the team of engineer DmitriyAlexandrovichDuyunov to design a new generation electric motors used in electric transport, industry, agriculture, military industry, aviation, household appliances, medicine and other fields. The main advantages of electric motors with the “Slavyanka” technology. It reduces energy consumption up to 40% and production cost up to 30%. It increase reliability of electric motors and the service factor is 2.5. It is one of the ambitious projects in the world. Over 100 licensed winding specialist working with this project. This project have 20 patents for the technology. The project “Duyunov” motors is funded by means of crowdfunding: this means that investment comes from an unlimited number of private investors. The investor becomes a co-owner of the innovative business and can count on part of the company’s profit by receiving dividends on his share. Any person from any place in the world can invest. The international company Solargroup is organizing the project funding. One can start his investment from minimum 50\$. There is an opportunity to get superprofit.

The investment are protected by an agreement. The project is supported by more than 300000 people from 197 countries.

Crowdfunding is collective investment. This is the name given to the process whereby a large number of people unite to invest together in a business project. Each individual invests as much as he or she can afford but the total amount is enough for the business project to implement its idea and start making money. Then the business project shares the profit with the investors. The financial company SOLARGROUP works specifically in the crowdfunding market and has been successful at it. When SOLARGROUP started operating in 2017, the global crowdfunding market was \$34 billion. And by 2025, it will have grown to reach \$300. In other words, in less than 10 years, the crowdfunding market will increase almost times. None of the areas is currently developing so rapidly. Expert estimate that in 2030, the crowdfunding market will be about 2 trillion dollars. By that time crowdfunding will become an indispensable part of the investment portfolio of any competent investor.

Earlier it was not possible for the project to collect the money through the crowdfunding. In old age projects used to take money from banks or large-scale investors to develop and this opportunity was not accessible for an average person. But now the whole world is changing and so is the financial industry. Now business project do not need a layer in the form of banks or investment funds that can impose enslaving condition. Business can attract funding from ordinary people and people now have access to various innovative projects and can earn profit it. There are a lot of well-known companies operating in the crowdfunding market today, such as Kickstarter and Indiegogo, which were among the first ones to emerge. Solargroup appeared later but today it is already one of the leaders in the global crowdfunding market, having

achieved impressive results. Investor, partner and projects are the main components of SOLARGROUP. It gives every person the opportunity to invest in highly profitable investment projects and become a business co-owner. The project is working in different areas such as transport, energy production, IT technology, artificial intelligence, medicine etc. Now it is considering a huge number of projects which in the future will be offered for investment. These projects are leaders in development in their areas. One of the key ideas of SOLARGROUP is to make investment accessible to everyone. On other hand, in addition to the opportunity to become co-owner of the business, we give people the opportunity to support high technology and innovative business projects. Thereby, investors will not only earn money but also help these technologies to develop and improve people's lives and the environment situation in the world and beyond that. This ideas is very important for SOLARGROUP and it resonates with a large number of investors.

Having seen the success of the company, many business projects are eager to cooperate with SOLARGROUP and offer it to attract investments for their ideas and it really have something to offer these business projects. The people who make up the backbone of the SOLARGROUP team have 10 years of experience in this area and are able to arrange funding for any promising technology startup and commercial project using the crowdfunding mechanism. In the course of cooperation with a business project SOLARGROUP is ready to prepare a legal scheme, payment acceptance service, develop IT solution, such as a back office and organize marketing support for any project. There is another very important advantages of crowdfunding which many projects have discovered. Many people who support the projects financially are the company's future customers and consumers of

innovative products. The project of Duyunov motors is working under this concept. When combined winding electric motors appear on the market on a large scale, investors, partners and their acquaintances will purchase and use them themselves. This is a powerful advertisement for the technology around the world. Also, investor often work at some enterprise are businessmen and perhaps, they will also be the customers of the “SovELMash” innovative center developing electric motors. Currently this project is getting a lot of media coverage all over the world, its featured on TV and on various websites and it has become very well known. It has obtained the support from the Russian government, since “Sovelmash” is a resident of the state special economic zone” Technopolis “Moscow”

The interesting thing is that one can cooperate with SOLARGROUP no matter where he is and what language he speak. Today project website and back office are translated into more than 20 language, the online broadcast are held in 10 languages and technical support is provided in 10 languages. Also today project has 14 national representative offices in different countries of Europe, Asia and Africa. And project has ambitious plans to open new national representative offices. Currently 9 national partners working in these 14 national representative offices. They are some of the best and most experienced partners, who work daily with their teams in different regions around the world and promote SOLARGROUP and the project “Duyunov’s motors”. The company’s achievement now are to large extent the merit of its partners. The power of crowdfunding is that when there are hundreds of thousands of us, a small efforts from everyone yields incredible results and together team can do things that we could never do alone. So join the large community of SOLARGROUP partners and investors to be part of the team, earn and promote innovations around the world.

SOLARGROUP stands firmly on its own two feet, and the past year of 2020 was very indicative in this respect. Despite the difficult economic situation around the world, when some projects went bankrupt, companies lost everything, people were made redundant, SOLARGROUP and the project “Duyunov” motors continued to work develop and show good results. This happened because SOLARGROUP is a reliable company where all the processes are stable and well-adjusted and the project “Duyunov’s motors” is really interesting for a large number of investors. SOLARGROUP is now a large organization. The company is divided into several departments such as Management, Marketing, Customer and Partner. All these departments have a large number of units, which perform different tasks to ensure effective work of the company. Today Solargroup covers almost all the world countries, so we can safely say that the project is international and involves different people with different mentalities. However we are all united by one common goal. It is worth nothing that SOLARGROUP works completely legally. In addition to the fact that each investor signs the investment agreement and is issued a certificate of share ownership, each partner enters into the “Partnership Agreement”. It approaches legal issues very seriously because the company has very ambitious plans for the future which cannot be implemented without an appropriate legal framework.

Now the main task of SOLARGROUP is to ensure timely and full funding of the project “Duyunov’s motors” whose main task is the construction of the “Sovelmash” innovative center, where new-generation electric motors will be developed. Three will be new business projects offered to investor and partners. Now SOLARGORUP is engaged in one project, but in the future it will be possible to run and support several projects at once. Therefore there are lots of prospects

and new opportunity in coming years. The company has not yet implemented all the potential that it has. There are still many people in the world who would like to invest and collaborative with SOLARGROUP, but they do not yet know anything about the company. Crowd investments are collective investments that everyone can afford, so everyone is a potential customer of SOLARGROUP. Also there are so many more business projects and innovative technologies in the world that need investments to implement their ideas. Thanks to crowdinvesting, they can get funding, make money for themselves and their investors and improve the lives of many people with their innovation.

So if anyone wants to be a part of this big community, part of the big ideas that Solargroup promotes, be sure to join, the projects are waiting for you. Anyone can be an investor, a partner or an author of a new projects. If we take the examples of Google, Amazon, Facebook, Microsoft and Apple, that all were technology based projects. Those were invested in this project in its startup point now they have earned lots of wealth and living luxurious life with their family. But those who are missed that opportunity, they have a chance to invest in Solargroup and complete their dream and fulfill all their hidden desire which they have seen with their naked eye. So many people are thinking that there is a risk in this project but according to my point of view when someone can read the information about the project and clear his vision about that then there is no risk but opportunity. The law of economic give us ideas that without risk no one can get profit and this law works everywhere in the world. This is one of the best project which is working in the world, so it is the best opportunity to all reader and investor to invest in the starting stage of the project and earns lots

of profit. Opportunity comes and go in front of our eyes but one should see tWork Cited:

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<https://solargroup.pro/en/technology>

he opportunity not only with eyes but also mind.

## **MATERIALS AND METHODS:**

### **1.a Chemicals**

All the chemicals used in this study were of analytical grade and procured from CDH and Hi-media, India. Media components used were of bacteriological grade.

### **1.b Microorganism**

The pyocyanin pigment producing culture was isolated from clinical sample procured from IGMC, Shimla, India and identified as *Pseudomonas aeruginosa* MH038270 by 16s rRNA sequencing. The *P. aeruginosa* MH038270 was maintained on Nutrient agar medium (pH 7.0).

### **1.c Test microorganism**

The antifungal effect of pyocyanin pigment was examined against *Fusariumoxysporum* MTCC 284. This fungus was purchased from Institute of Microbial Technology, Chandigarh, India. *F. oxysporum* was responsible for *Fusarium* wilt disease in mung beans.

### **2.a Preparation of purified fungicide solution**

The pyocyanin pigment was produced in the medium (pH 6.5) containing peptone 0.5 (% w/v), beef extract 0.25 (% w/v), NaCl 0.875 (% w/v) and glycerol 2 (% v/v), inoculated with 24h

old inoculums and incubated at 37°C in orbital shaker (50rpm). The size of the inoculum was in accordance with the previously optimized value (3%, v/v) for maximum pyocyanin production. The fermentation broth was centrifuged at 10,000rpm for 10 min and the supernatant was used to extract pyocyanin by using chloroform extraction method. The extracted crude pigment was then purified by silica gel chromatography.

### 2.b Assay for quantification of pyocyanin

Pyocyanin was extracted from culture supernatant and measured based on the absorbance of pyocyanin in acidic solution at 520nm (Essar et al., 1990). The fermentation broth was centrifuged at 10000rpm for 10min. The culture supernatants were transferred into new test tubes and extracted with chloroform (1:2) and the aqueous phase was removed. The bottom layer was re-extracted with 1ml of 0.2N HCl until color change was observed. Following this, the absorbance of the pigment solution was measured using spectrophotometer at 520nm. The concentration of was calculated as microgram pyocyanin pigment produced per milliliter of culture supernatant. The optical density at 520nm was multiplied by 17.072 (extinction coefficient) to determine the concentration of pigment (Sarkisova et al., 2005).

### 3.a Determination of antifungal activity of pyocyanin

Agar well diffusion technique is widely used to evaluate the antimicrobial effect of plants or microbial extracts (Magaldi et al., 2004; Valgas et al., 2007). Antifungal assay of purified filter sterilized pyocyanin pigment was performed by agar well diffusion method in Mueller Hinton Agar, Modified (MHA, Modified) plates containing 2% glucose with 0.0005g/L methylene blue (as per CLSI for antifungal). The plate was spread with standardized (0.5McFarland) fungal culture broth. Pyocyanin pigment of 100µg/mL concentration was prepared in chloroform. Each

well of 6mm was filled with different concentration of pyocyanin. It was allowed to diffuse for about 30 minutes at room temperature and incubated for 18-24h at 35±2°C. The observed zone of inhibition (ZOI) was measured in mm.

### 3.b Effect of pyocyanin on germination and growth of *Vignaradiata* infected with *F. oxysporum* MTCC 284

The *F. oxysporum* infected mung seeds (72h) and soaked seeds were treated with purified aqueous pyocyanin (200µg/mL) for 2h extracted from *P. aeruginosa* to investigate its effect on growth of plant. The seeds were selected on the basis of shape, color, appearance and weight to eliminate the bad ones. After the proper treatment, selected seeds were sown at a suitable depth in organic culturing soil in plastic tray with different segments. The planting of seed at a proper depth (10-12cm) can reduce the incidence of disease (Singh and Sandhu, 1973) whereas; shallow shown seed can be affected by various factors. The plastic tray was placed in green house for germination of seeds for 21 days. This experiment was planned as per scheme given below (Figure 1). The growth (above and below the soil) and weight of plant (fresh and dried) was measured in each case. The data was subjected to statistical analysis for calculating mean± SD.

## RESULT & DISCUSSION

### 1.a Sensitivity of *F. oxysporum* MTCC 284 to pyocyanin produced by *P. aeruginosa*

Sensitivity of test microorganism was checked by measuring zone of inhibition against the pyocyanin at different concentrations except control. The purified pyocyanin was found to show antifungal activity against *F. oxysporum* MTCC 284 on modified Mueller Hinton Agar (Figure 2). The zone of inhibition was increase with increase in concentration of pigment. The maximum zone of inhibition was 34mm, which

showed that this fungus was highly sensitive to pyocyanin (Table 1).

It has been reported that pyocyanin pigment induced triggering systemic resistance against Fusarium wilt of tomato (Audenaert et al., 2002). Pyocyanin also inhibited the growth of *Aspergillus niger* (Kerr, 1994), *A. fumigatus* and *Candida albicans* isolated from sputum of cystic fibrosis patients (Kerr et al., 1999).

### 1.b Effect of pyocyanin on the germination and growth of plant

The effect of pyocyanin pigment on the growth of mung seeds infected with phytopathogenic fungi, *F. oxysporum* MTCC 284 was studied and the results were represented in Figure 3. It was cleared from the results that pyocyanin pigment affects the growth of *F. oxysporum*. Pyocyanin treated seeds showed a good response for germination and growth with total plant height of  $21.6 \pm 1.0$  cm and  $0.5226 \pm 0.5$  g of fresh weight of plant (as shown in Table 2). The seeds infected with fungus have total plant height of only  $14.5 \pm 1.66$  cm and fresh weight of  $0.2769 \pm 0.6$  g, whereas in case of fungus infected seeds treated with pyocyanin showed a good growth. It shows that pyocyanin besides as an antifungal agent, also enhance the growth of plant when results were compared with control. Pyocyanin pigment produced from *Pseudomonas aeruginosa* PUPa3 showed biocontrol activity against phytopathogenic fungi that infect tobacco, groundnut, rice, mango, chilli, sugarcane, tea, banana crops and cotton (Sunish et al., 2005). It has been also reported that pyocyanin produced from *Pseudomonas* species isolated from rhizosphere soil were used as biocontrol agent against Fusarium, the causative agent of Phythium damping of bean and wilt of chickpea (Anjaiah et al., 2003).

### CONCLUSION

Our study showed that the pyocyanin pigment produced from *P. aeruginosa* exhibited a very

potent antifungal activity against *F. oxysporum*, which is responsible for causing vascular wilt disease in plants. Pyocyanin pigment is also responsible for enhancement of growth in mung bean plant. As many investigations focus on agricultural bioactivities, our study suggest that exploring pyocyanin pigment as an antiphytopathogenic agent represent a promising alternative for discovering new non-toxic fungicide. Pyocyanin can be used in sustainable agriculture as a biocontrol agent against food spoilage and pathogenic fungi and bacteria.

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### CONFLICT OF INTEREST:

The authors declare that there is no conflict of interest.

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**Table 1: Zone of inhibition of *F. oxysporum* MTCC 284 against pyocyanin**

Test Fungi	Zone of inhibition at different concentration of pyocyanin			
	2µg	3µg	4µg	5µg
<i>F. oxysporum</i> MTCC284	29±1.4	32±1.0	33±1.13	33.8±0.52

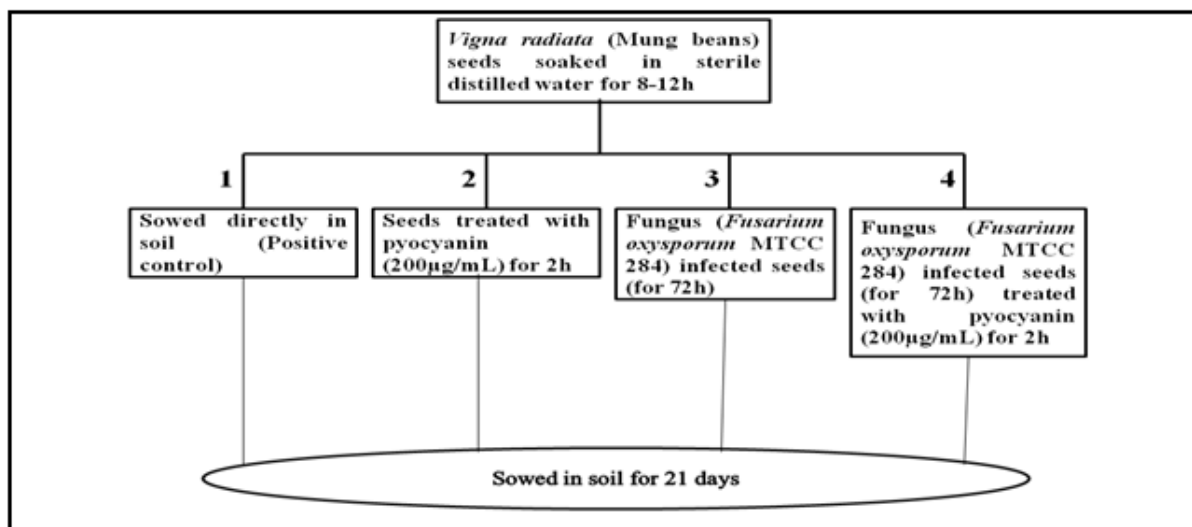
The values represented are mean ± SD, where n=3

**Table 2: Growth of *Vignaradiata* plant**

Group No.	Experiment	Plant height (cm)	Shoot height (cm)	Root height (cm)	Leaf width (cm)	Leaf length (cm)	Fresh weight (g)	Dry weight (g)
1	Soaked seeds sowed directly in soil (Positive control)	15.83±1.6	10.6±1.21	5.23±1.16	1.43±0.25	3.4±0.26	0.4294±0.05	0.0428±0.003
2	Seeds treated with pyocyanin for 2h	21.6±1.0	17.8±1.12	3.86±0.15	1.43±0.05	3.5±0.43	0.5226±0.05	.0624± 0.007
3	<i>F. oxysporum</i> MTCC 284 infected seeds	14.5±1.66	10.1±0.65	4.83±1.75	1.23±0.15	2.73±0.25	0.2769±0.06	0.0294±0.005
4	<i>F. oxysporum</i> MTCC 284 infected seeds treated with pyocyanin for 2h	17.6±0.75	13.7±0.85	3.86±0.35	1.36±0.11	3.9±0.36	0.5055±0.02	0.05956±0.005

The values represented are mean ± SD, where n=3

**Figure 1: The experimental plan to determine the effect of pyocyanin on growth of seeds**



**Figure 2: Zone of inhibition of *F. oxysporum* MTCC 284 at different concentration of pyocyanin.**

Well 1: 2 µg/20 µL; 2: 3 µg/30 µL; 3: 4 µg/40 µL; 4: 5 µg/50 µL and centre: Negative control (contain only solvent).



**Figure 3: Growth of mung seeds (*Vignaradiata*)**

