Patent Search

Invention Title	ARTIFICIAL INTELLIGENCE USING TRANSPORT OF WATER AND CARBON DIOXIDE VIA PLANT AQUAPORINS
Publication Number	43/2023
Publication Date	27/10/2023
Publication Type	INA
Application Number	202321064730
Application Filing Date	26/09/2023
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	COMPUTER SCIENCE
Classification (IPC)	G06N0020000000, G06Q0030020000, G06N0003020000, G06N0005020000, G06N0003000000

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Abstract:

The invention encompasses a sophisticated system that harnesses artificial intelligence to model and analyze the transport mechanisms of water and carbon dioxide focusing on the role of aquaporins. By integrating a plethora of variables, from environmental factors to genetic nuances, the system offers a comprehensive, real-tim understanding of plant behavior at a molecular level. Furthermore, the invention is designed to be adaptive, refining its knowledge base and predictions with continu inputs. Potential applications range from optimizing agricultural practices to guiding innovations in biomimetic technologies. This fusion of botany and technology off groundbreaking approach to studying plant physiology in the context of a rapidly changing environment.

<u>Complete Specification</u>

Description:The present invention pertains to the domain of artificial intelligence, specifically in relation to analysing, understanding, and modeling the transport mechanisms of water and carbon dioxide via plant aquaporins. This system endeavours to harness computational models and machine learning techniques to shec on the dynamics of plant cellular processes, particularly focusing on the movement of water and carbon dioxide molecules through aquaporins, which are intrinsic membrane proteins of plants responsible for facilitating the transport of these molecules. Such an AI-driven approach has potential applications in agriculture, bota environmental science, and bioinformatics.

Background of the invention:

The continuous evolution of artificial intelligence has enabled its fusion with a variety of scientific disciplines, paving the way for innovations that were previously considered far-fetched or even impossible. Among these, the intricate world of cellular processes in plants, specifically the transport mechanisms of water and carb dioxide via plant aquaporins, has always been of paramount significance.

Aquaporins, often described as the plumbing system of the cell, are small integral membrane proteins that serve as specialized channels, permitting water and, in s cases, small solutes to traverse across cellular membranes. The intricacies of how these proteins function in plants is a subject that has captured the curiosity of bic for decades. In plants, these processes are essential, as water transport aids in photosynthesis, nutrient uptake, and maintaining cellular turgor pressure, while the movement of carbon dioxide is vital for the photosynthetic conversion of CO_2 and water into glucose.

Historically, the study of water and carbon dioxide transport in plants was predominantly focused on physiological and biochemical methods. These traditional app have provided valuable insights, but they often fall short when trying to understand the high-resolution dynamics and the real-time adaptability of plants to varying

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