



# IEEE Xplore 平台AI研究套件 使用指南（中譯）

本中文譯文僅供參考，實際內容以原文為準。

# 簡介

**IEEE Xplore AI** 研究套件提供了一系列全新的 AI 功能，旨在提升使用者使用 **IEEE Xplore** 的體驗。這些功能使用戶能夠輕鬆搜尋和發現來自 **IEEE** 及其他 STEM 出版商的文章，加快對單篇論文的理解，並獲得新的見解。

透過將這些強大的工具整合到工程和開發工作流程中，**IEEE Xplore AI** 研究套件徹底改變了研究體驗，幫助研究人員加深理解、快速吸收新想法並加速研究進程。

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# IEEE Research Navigator

*Powered by IEEE Xplore AI*

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# IEEE Research Navigator

IEEE Research Navigator 由 IEEE Xplore AI 提供支持，它提供了一個進階查詢工具，用於檢索 IEEE 出版的期刊文章和會議論文，以及一個專門整理的、專注於 STEM 相關研究領域的其他出版商的資料庫—所有內容都集中在一個平台上。.

Beta

## Research Navigator

Powered by IEEE AI

Search IEEE  Search All STEM Articles

How can advances in materials science, specifically in developing new materials with enhanced conductivity and lower power consumption, impact the future of semiconductor device miniaturization and performance?



Clear

# IEEE Research Navigator帶來的效益

- 節省時間：透過 **IEEE AI** 概述和 **AI** 文章摘要，快速深入了解您的主題。
- 更廣的涵蓋範圍：**AI** 檢索提供對期刊文章和會議論文等 **STEM** 領域廣泛元資料的存取。雖然檢索範圍比典型的 **IEEE Xplore** 檢索更廣，但其精選內容僅限於 **STEM** 領域的學術文章，避免了其他工具常見的干擾資訊。
- 使用者友善介面：使用者輸入檢索內容時，系統會提供智慧關鍵字建議，幫助使用者快速優化搜尋字詞。此外，使用者還可以輸入自由形式的語義查詢，從而根據個人研究需求自訂檢索過程。

# Accessing IEEE Research Navigator from IEEE Xplore

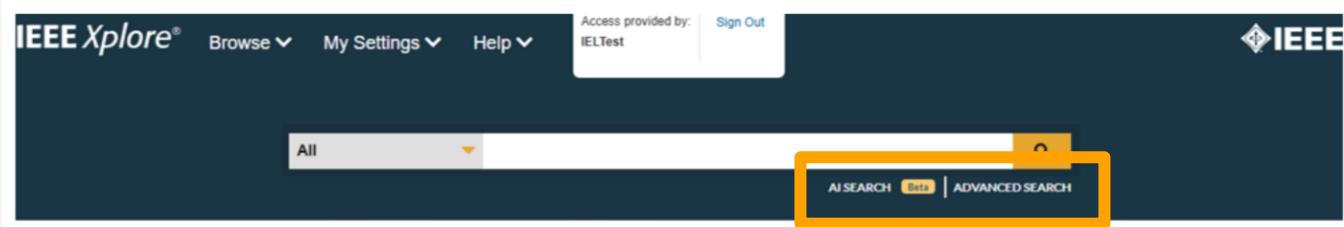
登入成功後，您將在首頁檢索列下方看到一個 AI 檢索按鈕。



**Note:** Upon session timeout, users will be redirected to the homepage. (Session timeout after 15 minutes of inactivity).

# Accessing IEEE Research Navigator from IEEE Xplore

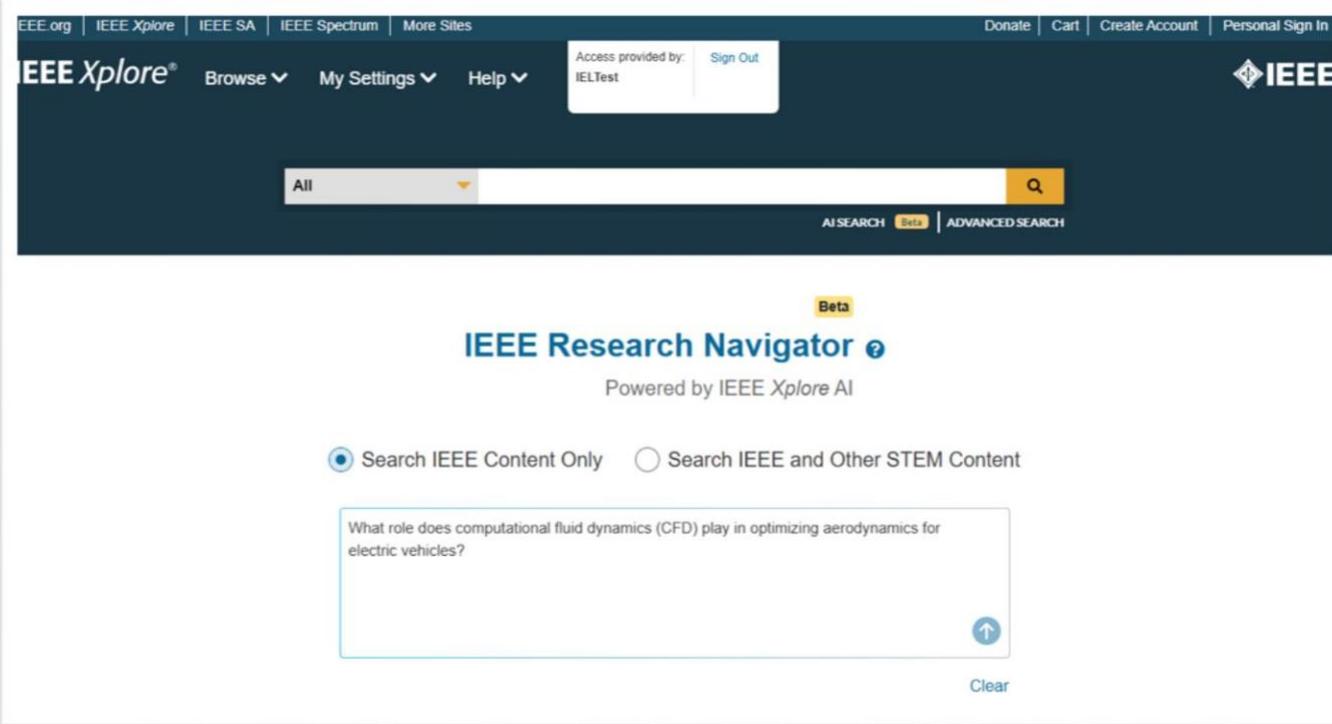
或者，從進階搜尋點按右側網頁表頭的方框



The screenshot shows the IEEE Xplore Advanced Search interface. At the top, there is a navigation bar with 'IEEE Xplore®', 'Browse', 'My Settings', 'Help', 'Access provided by: IELTest', and 'Sign Out'. Below the navigation bar is a search bar with the word 'All' and a dropdown arrow. To the right of the search bar is a yellow rectangular box containing the 'AI SEARCH Beta' button and the 'ADVANCED SEARCH' button. The main search area is titled 'Advanced Search' with tabs for 'Advanced Search', 'Command Search', and 'Citation Search'. The 'Advanced Search' tab is selected. Below the tabs, there is a placeholder text 'Enter keywords and select fields.' and a search form. The search form consists of three rows. Each row contains a 'Search Term' input field, a dropdown menu set to 'in All Metadata', and a question mark icon. The first row has an 'AND' dropdown menu. The second and third rows have 'AND' dropdown menus. To the right of the search form is a blue box with an orange border, containing the text 'New! IEEE Xplore AI Research Suite Beta', 'Your institution is enrolled in a beta test of a new AI search feature for a limited time.', and a 'Start Your Search' button.

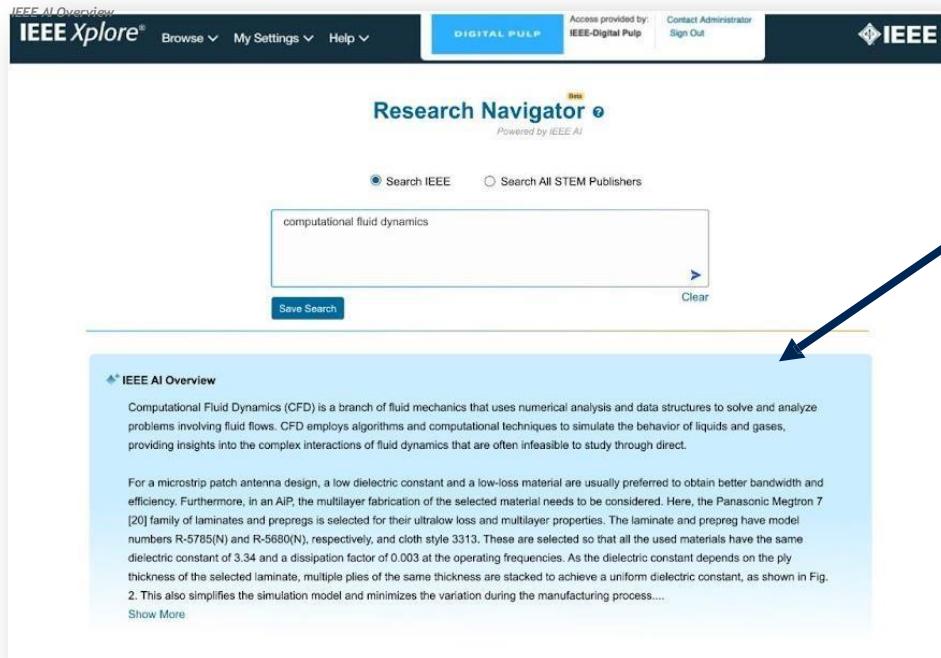
# Initiating a Search from IEEE Research Navigator

您可以只搜尋 IEEE 內容，也可以將搜尋範圍擴大到已收錄的其他 STEM 內容。



The screenshot shows the IEEE Research Navigator interface. At the top, there is a navigation bar with links to IEEE.org, IEEE Xplore, IEEE SA, IEEE Spectrum, and More Sites. On the right side of the bar are links for Donate, Cart, Create Account, and Personal Sign In. Below the navigation bar, the IEEE Xplore logo is visible, along with dropdown menus for Browse, My Settings, and Help. A sign-in box shows "Access provided by: IELTest" and "Sign Out". The IEEE logo is on the right. Below the bar is a search bar with a dropdown menu set to "All" and a search icon. Underneath the search bar are links for "AI SEARCH Beta" and "ADVANCED SEARCH". The main content area is titled "IEEE Research Navigator" with a "Beta" badge. It says "Powered by IEEE Xplore AI". There are two radio buttons: one selected for "Search IEEE Content Only" and one for "Search IEEE and Other STEM Content". Below these buttons is a text input field containing the query "What role does computational fluid dynamics (CFD) play in optimizing aerodynamics for electric vehicles?". To the right of the input field is a "Clear" button and an upward arrow icon.

# IEEE Research Navigator



The screenshot shows the IEEE Research Navigator interface. At the top, there is a navigation bar with links for 'IEEE AI Overview', 'IEEE Xplore®', 'Browse', 'My Settings', 'Help', 'DIGITAL PULP', 'Access provided by IEEE-Digital Pulp', 'Contact Administrator', and 'Sign Out'. The main content area is titled 'Research Navigator' and 'Powered by IEEE AI'. It features a search bar with the query 'computational fluid dynamics' and options to 'Search IEEE' or 'Search All STEM Publishers'. Below the search bar is a 'Save Search' button and a 'Clear' button. A large blue arrow points from the text in the right-hand column to the 'IEEE AI Overview' section. This section contains a summary of Computational Fluid Dynamics (CFD) and a detailed paragraph about microstrip patch antenna design, followed by a 'Show More' link.

IEEE AI Overview

Computational Fluid Dynamics (CFD) is a branch of fluid mechanics that uses numerical analysis and data structures to solve and analyze problems involving fluid flows. CFD employs algorithms and computational techniques to simulate the behavior of liquids and gases, providing insights into the complex interactions of fluid dynamics that are often infeasible to study through direct.

For a microstrip patch antenna design, a low dielectric constant and a low-loss material are usually preferred to obtain better bandwidth and efficiency. Furthermore, in an AIP, the multilayer fabrication of the selected material needs to be considered. Here, the Panasonic Megtron 7 [20] family of laminates and preps is selected for their ultralow loss and multilayer properties. The laminate and prepreg have model numbers R-5785(N) and R-5680(N), respectively, and cloth style 3313. These are selected so that all the used materials have the same dielectric constant of 3.34 and a dissipation factor of 0.003 at the operating frequencies. As the dielectric constant depends on the ply thickness of the selected laminate, multiple plies of the same thickness are stacked to achieve a uniform dielectric constant, as shown in Fig. 2. This also simplifies the simulation model and minimizes the variation during the manufacturing process....

Show More

在檢索結果頂部，有一個名為「IEEE AI 概述」的面板，展示了 IEEE 大型語言模型 (LLM) 對使用者查詢的回應。

此摘要是根據從排名前幾名的檢索結果中提取的內容動態生成的，這些結果按相關性排序來解答使用者的查詢。

# IEEE Research Navigator

AI Summary of Article



## A Convolutional Neural Network Based Approach for Computational Fluid Dynamics

Satyadhyan Chickerur, P Ashish All Authors

Publisher: IEEE | 2021 | Conference Paper



### AI Summary

- Simulates fluid flow using HPC, Naiver Stokes Equation, and Lattice Boltzmann Equation.
- Proposes a convolutional neural network (CNN) model for predicting non-uniform flow in 2D to overcome computational costs.
- Provides efficient velocity field estimates and reduces processing time compared to previous approximation methods.

### Abstract

3. Computational Hydrodynamics in Air Flows Modeling : Using the Unreal engine based on the numerical solution of the Navier-Stokes equations
4. Testing OpenFOAM Computational Fluid Dynamics simulation of heat transfer and fluid flow in a mechanical engineering bachelor degree
5. Exploring the Application of Machine Learning in Computational Fluid Dynamics
6. A Software to Visualize, Edit, Model and Mesh Vascular Networks

[Save Search](#)

[Copy](#)

每個搜尋結果下方都提供由人工智慧產生的文章摘要。每份摘要都從全文和摘要中提取文章的三個關鍵點。

人工智慧產生的摘要提供文章的簡要概述，使用戶能夠快速了解文章被檢索到的原因，並決定是否繼續閱讀全文。

## A Convolutional Neural Network Based Approach for Computational Fluid Dynamics

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- Simulates fluid flow using HPC, Naiver Stokes Equation, and Lattice Boltzmann Equation.
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# IEEE Research Navigator

Saved Search

The screenshot shows the IEEE Research Navigator interface. At the top, there is a navigation bar with 'IEEE Xplore' logo, 'Browse', 'My Settings', 'Help', 'DIGITAL PULP' (Access provided by IEEE-Digital Pulp), 'Contact Administrator', and 'Sign Out' buttons. The IEEE logo is also present. Below the navigation bar, the main title 'Research Navigator' is displayed, followed by 'Powered by IEEE AI'. There are two search options: 'Search IEEE' (selected) and 'Search All STEM Publishers'. A search bar contains the text 'computational fluid dynamics'. Below the search bar are 'Save Search' and 'Clear' buttons. A 'Save Search' dialog box is open, prompting the user to 'Please enter the search alert name.' with a text input field containing '\* Search Name'. There are 'Cancel' and 'Save' buttons. In the background, there is an 'IEEE AI Overview' section with text about computational fluid dynamics and microstrip patch antennas, and a 'Show More' link.

搜尋查詢可以儲存，以便使用者日後需要時存取，有助於節省時間並提高搜尋效率。

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# IEEE Reading Lens

*Powered by IEEE Xplore AI*

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# IEEE Reading Lens

- 透過在摘要與全文中標示並依情境定義術語，加速文章的閱讀與理解。
- 閱讀文章時，無需瀏覽外部網頁，即可查看術語定義，以了解更多概念資訊。
- 術語被歸類至 50 多種類別，例如「演算法」、「硬體」、「程式語言」等，並可用於篩選內容以提升搜尋與探索效率。
- 允許使用者標示內文，並新增自訂標籤和註釋。

**Advanced Impacts of Nanotechnology and Intelligence**

Publisher: IEEE [Cite This](#) [PDF](#)

Chao-Sung LAI ; Ishita Chakraborty ; Han-Hsiang Tai ; Dharmendra Verma ; Kai-Ping Chang ; Jer-Chyi Wang All Authors

3 Cites in Papers 378 Full Text Views

[Abstract](#) [Abstract:](#)  
Fundamental contributions of **nanotechnology** include but are not limited to miniaturization, **energy efficiency**, higher efficiency

[IEEE AI Overview](#)

**TECHNOLOGY**  
**nanotechnology**

Nanotechnology is the engineering and study of materials and systems at the nanoscale, typically ranging from 1 to 100 nanometers [1][2][3]. It is a highly interdisciplinary field encompassing physics, chemistry, biology, materials science, and engineering [5]. Nanotechnology involves manipulating individual atoms and molecules to design and create new materials, nanomachines, and nanodevices [2]. This technology has the potential to revolutionize various sectors, including electronics, medicine, energy, and manufacturing [1][2][3][4]. Nanotechnology is considered an enabling technology with a potentially significant impact across many aspects of life [2]. It offers the ability to create novel materials, composites, and structures on a molecular scale [4]. The applications of nanotechnology are diverse, ranging from extensions of conventional device physics to new approaches based on molecular self-assembly and the direct control of matter at the atomic scale [6]. Potential applications include faster computers, more efficient power sources, and life-saving medical treatments [3].

**References:**

1. Realizing the Internet of NanoThings:-A Review
2. Nano Technology
3. Nanotech: an Atomic, Molecular, and Supramolecular Scale for Industrial Purposes
4. New Science Technology with Many Engineering Applications - Nanotechnology
5. Nanotechnology as an Integral Part of Electronics: A Review
6. An Overview on Nano-Technology

## INTRODUCTION

For more than four decades, the semiconductor industry has been driven by Moore's law, where the number of **transistors** per chip has approximately doubled every 18–24 months at a fixed cost per chip. Furthermore, over these

**Term Category**  
 Select All  
 Material Structure  
 Device Hardware  
 Technology  
 Wave Signal  
 Energy System  
 Algorithm Method  
 Process

[Clear](#) [Select](#)

**More Like This**

Three Steps to the Thermal Noise  
Death of Moore's Law  
IEEE Transactions on Very Large Scale Integration (VLSI) Systems  
Published: 2010

# IEEE Reading Lens帶來的效益

- 提升理解力：透過 LLM 產生的摘要，無需離開文章即可快速理解不熟悉的主題。
- 增強學習效果：透過文章中的關鍵字定義，擴展您對某個主題的知識。
- 節省時間：無需瀏覽大量文本，即可找到特定類型的內容（例如演算法、資料結構、軟體）。

# IEEE Reading Lens

Highlight Toggle Panel

## Advanced Impacts of Nanotechnology and Intelligence

Publisher: IEEE [Cite This](#) [PDF](#)

Chao-Sung LAI ; Ishita Chakraborty ; Han-Hsiang Tai ; Dharmendra Verma ; Kai-Ping Chang ; Jer-Chyi Wang [All Authors](#)

3  
Cites in  
Papers  
378  
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Text Views

### Abstract

Fundamental contributions of **nanotechnology** include but are not limited to miniaturization, **energy efficiency**, higher efficiency and/or effectiveness. The exploration of new computing paradigms such as bioinspired computation and **quantum computing** belongs to the latter. Continuous advances in semiconductor technology include "more Moore" technology, which follows Moore's law of scaling, and "more than Moore" technology realized by hybrid integration with new materials. Much success appears in functionality and scaling in the fields of **electronics**, **optics**, sensors, and **biomedical applications**. In this article, we will show how one can further combine **graphene**, new **2D materials**, and novel **nanomaterials** extending into the quantum realm that are at the cutting-edge of modern scientific and engineering research. This article demonstrates the impacts of **nanotechnology** and **quantum computing** including materials to devices, module demonstration, and the quantum era. In addition, a hybrid-transistor-based artificial reflex arc (ARA) and artificial pain modulation system (APMS) are discussed that illustrate future intelligent alarm systems, neuroprosthetics, and neurorobotics.

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Page(s): 13 - 21

DOI: 10.1109/MNANO.2022.3228154

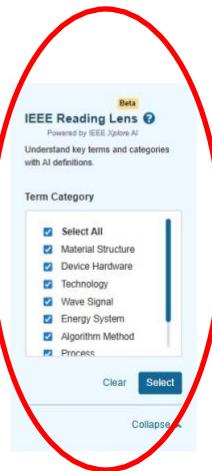
Date of Publication: 01 February 2023

Publisher: IEEE

ISSN Information:

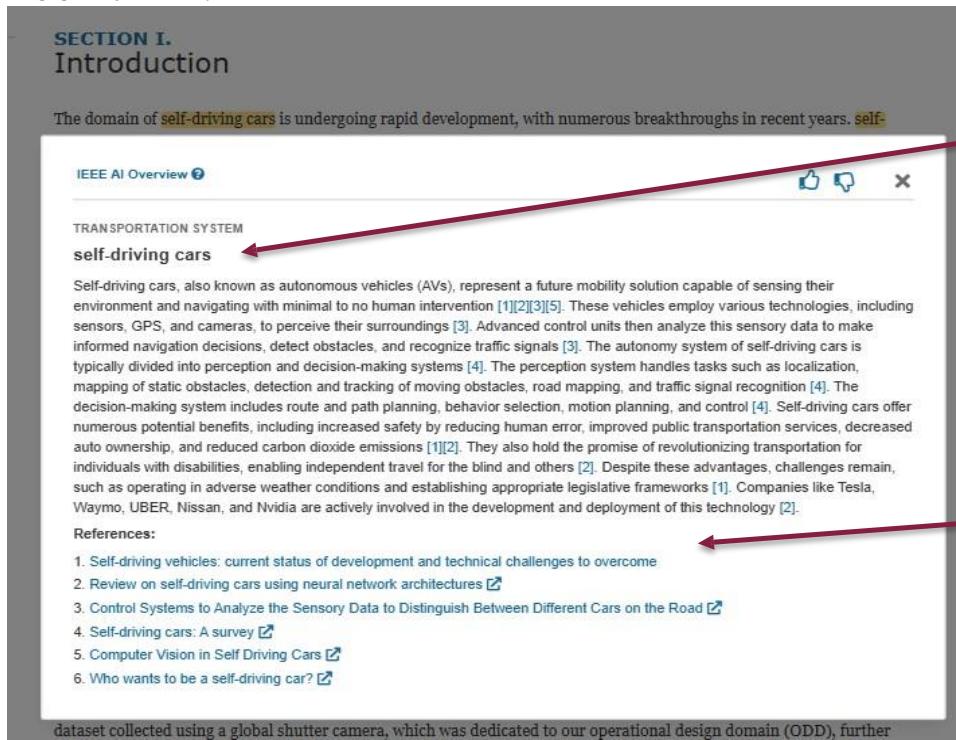
Funding Agency:

頁面側邊的面板可讓使用者瀏覽可用的分類、依分類篩選已標示的術語，或關閉所有術語的標示功能。



# IEEE Reading Lens

Highlighted Key Terms - AI definition



SECTION I.  
Introduction

The domain of self-driving cars is undergoing rapid development, with numerous breakthroughs in recent years. self-  
IEEE AI Overview [?](#)

TRANSPORTATION SYSTEM  
**self-driving cars**

Self-driving cars, also known as autonomous vehicles (AVs), represent a future mobility solution capable of sensing their environment and navigating with minimal to no human intervention [1][2][3][5]. These vehicles employ various technologies, including sensors, GPS, and cameras, to perceive their surroundings [3]. Advanced control units then analyze this sensory data to make informed navigation decisions, detect obstacles, and recognize traffic signals [3]. The autonomy system of self-driving cars is typically divided into perception and decision-making systems [4]. The perception system handles tasks such as localization, mapping of static obstacles, detection and tracking of moving obstacles, road mapping, and traffic signal recognition [4]. The decision-making system includes route and path planning, behavior selection, motion planning, and control [4]. Self-driving cars offer numerous potential benefits, including increased safety by reducing human error, improved public transportation services, decreased auto ownership, and reduced carbon dioxide emissions [1][2]. They also hold the promise of revolutionizing transportation for individuals with disabilities, enabling independent travel for the blind and others [2]. Despite these advantages, challenges remain, such as operating in adverse weather conditions and establishing appropriate legislative frameworks [1]. Companies like Tesla, Waymo, UBER, Nissan, and Nvidia are actively involved in the development and deployment of this technology [2].

References:

1. Self-driving vehicles: current status of development and technical challenges to overcome [?](#)
2. Review on self-driving cars using neural network architectures [?](#)
3. Control Systems to Analyze the Sensory Data to Distinguish Between Different Cars on the Road [?](#)
4. Self-driving cars: A survey [?](#)
5. Computer Vision in Self Driving Cars [?](#)
6. Who wants to be a self-driving car? [?](#)

dataset collected using a global shutter camera, which was dedicated to our operational design domain (ODD), further

對於每個突出顯示的關鍵字，都會根據在 IEEE 文章上訓練的 IEEE 大型語言模型 (IEEE LLM) 產生 AI 定義的定義。.

在產出文字的末尾也會提供六筆 IEEE 參考文獻，方便使用者閱讀原始資料。

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# Search Tips for Using the IEEE *Xplore* AI Research Suite

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# Keyword vs AI Search

	Keyword Search	AI (Vector) Search
檢索模式	詞彙	語意
最大字元數	每個子句 25 個詞彙	4,000 字元
萬用字元	最多 10 個萬用字元	不適用
內容類型	期刊、會議論文、標準、書籍、課程	期刊、會議論文
出版商	IEEE & 37 個合作夥伴	IEEE & STEM 出版商
索引	後設資料和全文	僅限後設資料 ( 用於 Beta 測試 )
年份	1884 年迄今	2018 年至 2025 年 6 月 ( 用於 Beta 測試 )
記錄	685 萬筆	950 萬筆



## Use Keyword Search For:

- 尋找文件標題、摘要等內容的精確匹配。
- 搜尋非常具體的內容。
- 使用萬用字元 ( wildcards ) 和布林運算式 ( Boolean expressions ) 輸入結構化的詞彙搜尋。

## Use AI Search For:

- 根據語義相似性尋找內容
- 當您對於要尋找的內容沒有清晰概念
- 探索包含關鍵字和詞組多種變體的文章

感謝您的試用體驗，

有任何建議或疑問，歡迎與我們聯繫。

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