



*Advancing Technology
for Humanity*

IEEE *Xplore* AI Research Suite User Guide

Introducing: IEEE *Xplore* AI Research Suite

The IEEE *Xplore* AI Research Suite provides a new set of AI-powered features that enhance a user's experience with IEEE *Xplore*. These features allow users to easily search and discover articles of interest from both IEEE and other STEM publishers, accelerate their understanding of individual papers, and gain new insights.

With these powerful tools integrated into the engineering and development workflow, the IEEE *Xplore* AI Research Suite transforms the research experience to help researchers deepen understanding, quickly assimilate new ideas, and accelerate research efforts

IEEE Research Navigator

Powered by IEEE Xplore AI

IEEE Research Navigator

IEEE Research Navigator, powered by IEEE *Xplore* AI, provides an advanced query tool for journal articles and conference papers published by IEEE as well as a specially curated database of other publishers focused on STEM-related fields of study—all in one place.



The screenshot shows the IEEE Research Navigator search interface. At the top right, there is a yellow "Beta" badge. The main title "Research Navigator" is in blue, followed by a question mark icon and the text "Powered by IEEE AI". Below this, there are two radio button options: "Search IEEE" (which is selected) and "Search All STEM Articles". A search input box contains the text: "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?". To the right of the input box is a blue circular button with a white upward-pointing arrow. Below the input box is a "Clear" button.

Key Benefits of IEEE Research Navigator

- ▶ **Time Savings:** Quickly understand more about your topic with the IEEE AI Overview and AI Article Summaries.
- ▶ **Coverage:** AI Search provides access to an extensive range of STEM metadata from journal articles and conference papers. While the search is broader than the typical IEEE Xplore search, the selection is curated to scholarly articles in STEM, without the typical noise of other tools.
- ▶ **User-Friendly Interface:** As users type their searches, the system gives smart keyword suggestions, to quickly refine their search terms. It allows users to input freeform semantic queries, tailoring the search process to individual research needs.

IEEE Research Navigator

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?



IEEE AI Overview

Advances in materials science, particularly in developing new materials with enhanced conductivity and lower power consumption, have the potential to significantly impact the future of semiconductor device miniaturization and performance. The development of new materials such as 2D and 1D materials, carbon nanotubes, and graphene can offer improved electrical properties, higher carrier mobility, and reduced power consumption.

These advancements can enable the creation of smaller, faster, and more efficient semiconductor devices, which is crucial for the continued miniaturization of electronic systems. For instance, the use of low-dimensional materials like 2D semiconductors can lead to a significant reduction in power consumption, making them suitable for applications such as IoT devices and mobile electronics.

Furthermore, these new materials can also enable the development of novel device architectures, such as neuromorphic computing systems, which can process data more efficiently... [Show more](#)

- AI powered search/summarization going beyond traditional keyword search
- Users can execute a free-form search and get a summary and links to most relevant articles by understanding the intent and meaning of queries
- Learn quickly about the query topic with the IEEE AI Overview and gain insights into the content of an article with AI Article Summaries
- Discover highly relevant journal articles and conference papers from both IEEE and other STEM publishers, covering Computer Science, Engineering, Mathematics, Material Science, and Physics

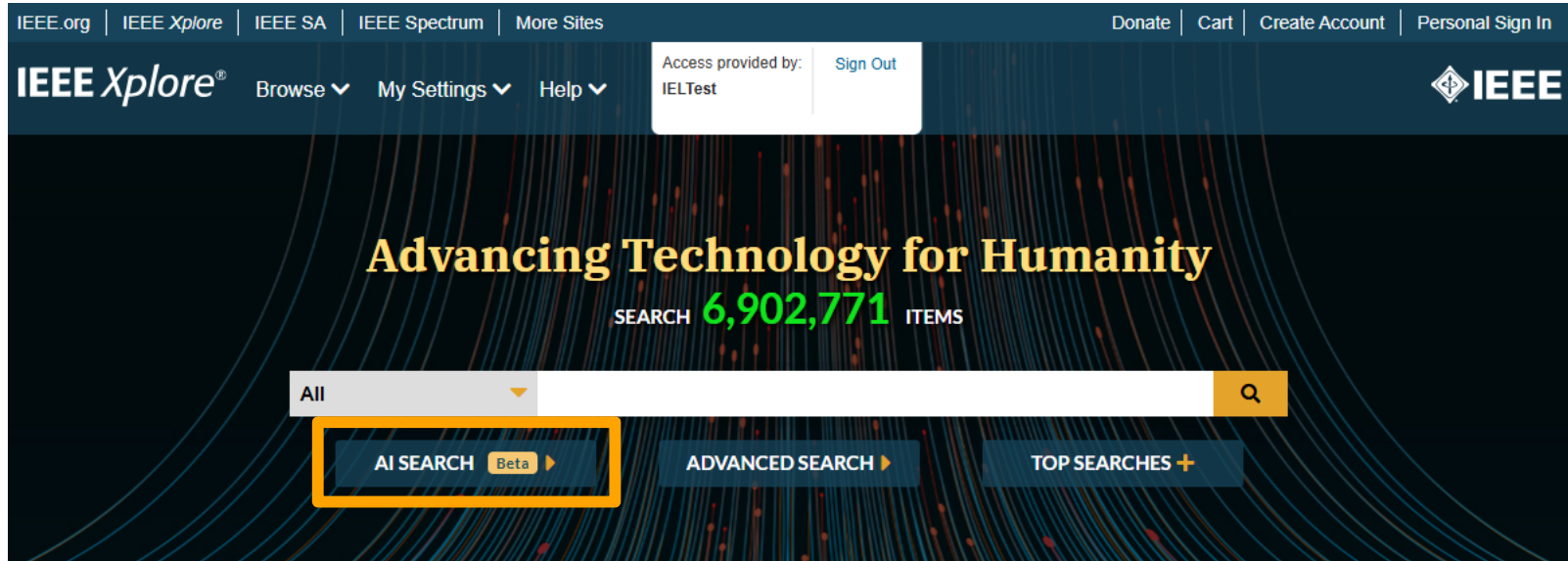
Accessing IEEE Research Navigator from IEEE Xplore

IEEE Research Navigator and IEEE Reading Lens features are only shown upon authentication, please sign in with the credentials provided using the "Institutional Sign In" button at the top of the page and select "Sign in with Username and Password".

The screenshot shows the IEEE Xplore website homepage. The top navigation bar includes links for IEEE.org, IEEE Xplore, IEEE SA, IEEE Spectrum, and More Sites. On the right side of the top bar are buttons for Subscribe, Donate, Cart, Create Account, and Personal Sign In. Below this, the IEEE Xplore logo is on the left, followed by dropdown menus for Browse, My Settings, and Help. The 'Institutional Sign In' button is highlighted with a yellow border. The IEEE logo is on the right. The main content area features the tagline 'Advancing Technology for Humanity' in yellow, with 'SEARCH 6,895,097 ITEMS' below it. A search bar is present with a dropdown menu set to 'All' and a search icon. Below the search bar are buttons for 'ADVANCED SEARCH' and 'TOP SEARCHES'.

Accessing IEEE Research Navigator from IEEE Xplore

Upon successful login, you will see an AI Search button beneath the search bar on the homepage.



The screenshot displays the IEEE Xplore homepage. At the top, there is a navigation bar with links for IEEE.org, IEEE Xplore, IEEE SA, IEEE Spectrum, and More Sites. On the right side of the navigation bar, there are links for Donate, Cart, Create Account, and Personal Sign In. Below the navigation bar, there is a white box indicating "Access provided by: IELTest" and a "Sign Out" button. The main header features the IEEE Xplore logo, "Browse", "My Settings", and "Help" dropdown menus. The IEEE logo is also present in the top right corner. The main content area has a dark background with a pattern of glowing lines. The central text reads "Advancing Technology for Humanity" in yellow, with "SEARCH 6,902,771 ITEMS" below it. A search bar is located below the text, with a dropdown menu set to "All" and a search icon. Below the search bar, there are three buttons: "AI SEARCH Beta" (highlighted with a yellow border), "ADVANCED SEARCH", and "TOP SEARCHES +".

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

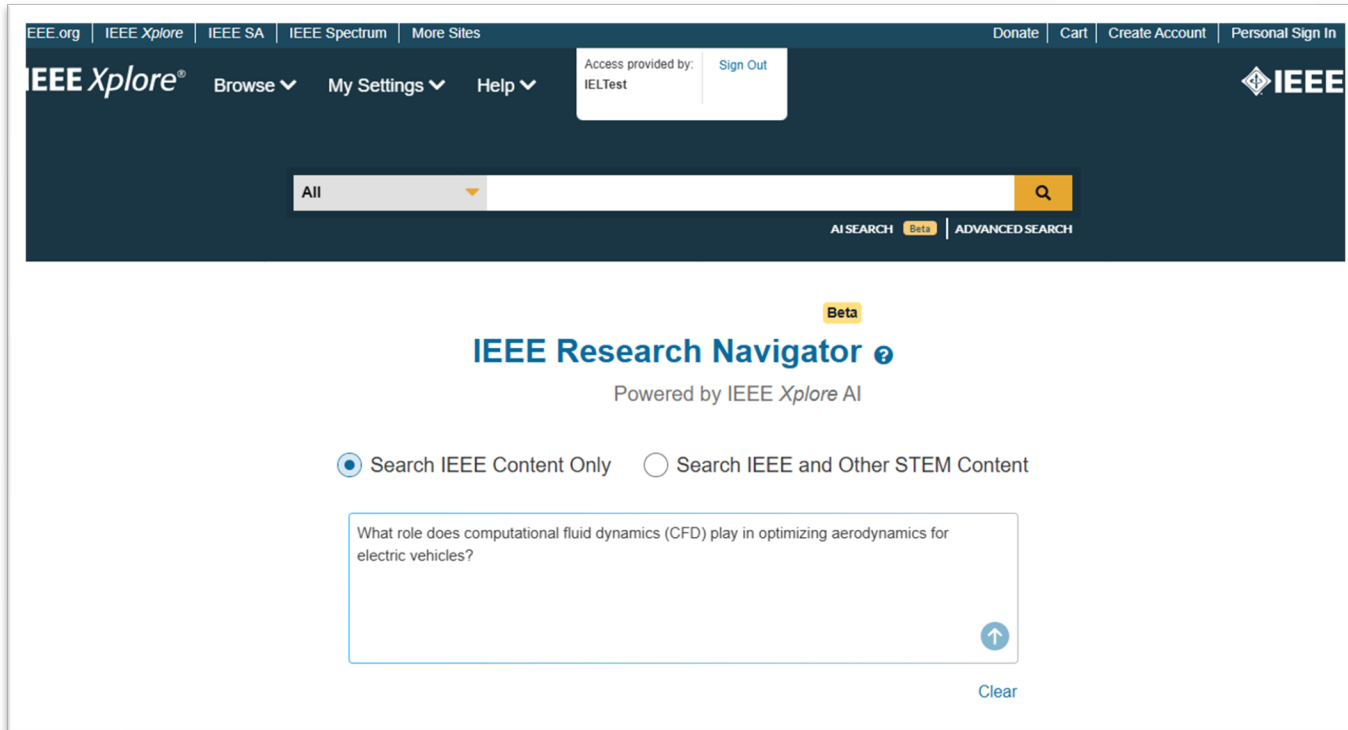
Accessing IEEE Research Navigator from IEEE Xplore

Alternatively, you can click on “AI Search” from the global header or select the link from Advanced Search.

The screenshot displays the IEEE Xplore interface. At the top, the navigation bar includes the IEEE Xplore logo, menu items for 'Browse', 'My Settings', and 'Help', and a user status box showing 'Access provided by: IELTest' and a 'Sign Out' link. The IEEE logo is positioned in the top right corner. Below the navigation bar is a search bar with a dropdown menu set to 'All'. A yellow box highlights the 'AI SEARCH Beta' and 'ADVANCED SEARCH' links located below the search bar. Below the search bar, the 'Advanced Search' section is active, with tabs for 'Advanced Search', 'Command Search', and 'Citation Search'. The 'Advanced Search' tab is selected. The main content area prompts the user to 'Enter keywords and select fields.' and features three search input rows. Each row consists of a 'Search Term' input field, a preposition 'in', a dropdown menu set to 'All Metadata', and a help icon. The first row has a '?' icon. The second and third rows include 'AND' dropdown menus and blue icons for adding, removing, and adding more search terms. A yellow box highlights a blue notification banner on the right side of the page. The banner contains 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

From the IEEE Research Navigator page, you can begin your search by leveraging the large search box provided. You can search IEEE content only or expand your search to other STEM content that has been indexed.



The screenshot shows the IEEE Research Navigator search interface. At the top, there is a navigation bar with links for IEEE.org, IEEE Xplore, IEEE SA, IEEE Spectrum, and More Sites. On the right side of the navigation bar, there are links for Donate, Cart, Create Account, and Personal Sign In. Below the navigation bar, there is a search box with a dropdown menu set to "All" and a search button. To the right of the search box, there are links for AI SEARCH (Beta) and ADVANCED SEARCH. Below the search box, there is a "Beta" label and the text "IEEE Research Navigator" with a help icon. Underneath, it says "Powered by IEEE Xplore AI". There are two radio buttons: "Search IEEE Content Only" (selected) and "Search IEEE and Other STEM Content". Below the radio buttons is a search input field containing the text "What role does computational fluid dynamics (CFD) play in optimizing aerodynamics for electric vehicles?". To the right of the input field is a search button with an upward arrow. Below the input field is a "Clear" button.

IEEE Research Navigator

IEEE AI Overview

IEEE Xplore[®] Browse ▾ My Settings ▾ Help ▾

DIGITAL PULP Access provided by: IEEE-Digital Pulp Contact Administrator Sign Out

IEEE

Research Navigator[™]
Powered by IEEE AI

Search IEEE Search All STEM Publishers

computational fluid dynamics

Save Search Clear

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 prepregs 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....

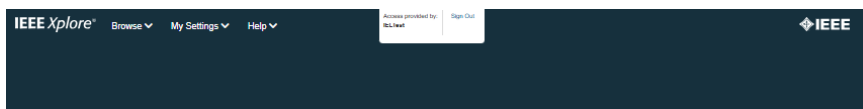
Show More

At the top of the search results, a panel called “IEEE AI Overview” shows the IEEE Large Language Model (LLM) response to the user query.

This summary is dynamically generated using **content extracted from the top search results**, which are ranked by relevance and aims to directly address the user’s query.

IEEE Research Navigator

AI Summary of Article



IEEE Research Navigator

Powered by IEEE Xplore AI

Search IEEE Content Only Search IEEE and Other STEM Content

computational fluid dynamics

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, Navier 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

Recommended Result



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, Navier 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.

Under each search result, an AI-generated summary of the article is available.

Each Summary shows three key points of the article derived from the full-text and abstract.

The AI summary provides a short synopsis of the article so that the user can quickly understand why the article was retrieved and decide whether to continue to the full article.

IEEE Research Navigator

Saved Search

The screenshot displays the IEEE Research Navigator interface. At the top, there is a navigation bar with 'IEEE Xplore' logo, 'Browse', 'My Settings', and 'Help' menus. A 'DIGITAL PULP' banner is visible, along with 'Access provided by: IEEE-Digital Pulp' and 'Contact Administrator Sign Out' links. The main header reads 'Research Navigator Powered by IEEE AI'. Below this, there are radio buttons for 'Search IEEE' (selected) and 'Search All STEM Publishers'. A search input field contains the text 'computational fluid dynamics'. A 'Save Search' button is located below the input field, and a 'Clear' link is to its right. A 'Save Search' dialog box is open in the foreground, featuring a close button (X) in the top right corner. The dialog contains the text 'Please enter the search alert name.' and a text input field with a red asterisk and the placeholder 'Search Name'. At the bottom of the dialog are 'Cancel' and 'Save' buttons. The background content is dimmed, showing an 'IEEE AI Overview' section with text about 'Computational Fluid Dynamics' and 'microstrip patch'.

Search queries can be saved so that users can access them at a later time, if needed.

This helps save time and improves research efficiency.

IEEE Reading Lens

Powered by IEEE Xplore AI

IEEE Reading Lens

- Accelerates reading and understanding of articles by highlighting and contextually defining terms within abstracts and full-text
- View term definitions to learn more about a concept without the need for external web browsing while reading an article
- Terms are assigned into 50+ categories, such as Algorithms, Hardware, Programming Languages, and more, which can be used to filter content for enhanced discoverability
- Allows for users to highlight text and provide their own personal tags and notes

The screenshot displays the IEEE Reading Lens interface for the article "Advanced Impacts of Nanotechnology and Intelligence". At the top, it shows the publisher as IEEE and provides options to "Cite This" or download a "PDF". Below this, the authors are listed: Chao-Sung LAI, Ishita Chakraborty, Han-Hsiang Tai, Dharmendra Verma, Kai-Ping Chang, and Jer-Chyi Wang. The article has 3 citations in papers and 378 full-text views. A sidebar on the left lists document sections, including Introduction, Ecofriendly Energy, Two Dimensional (2D) Module, Nanotechnology to Mimic an Artificial Reflex Arc, and Quantum Era. The main content area shows the abstract, which discusses the fundamental contributions of nanotechnology, such as miniaturization and energy efficiency. A pop-up window titled "IEEE AI Overview" is open, providing a definition of nanotechnology and a list of references. On the right, there is a "Term Category" filter with various options like Material Structure, Device Hardware, and Energy System. Below that, a "More Like This" section recommends related articles, such as "Three Steps to the Thermal Noise Death of Moore's Law".

Key Benefits of IEEE Reading Lens

- ▶ **Increase Comprehension:** Quickly understand unfamiliar topics without leaving the article, through LLM-generated summaries
- ▶ **Enhanced Learning:** Expand your knowledge on a topic through the keyword definitions within an article.
- ▶ **Save Time:** Locate specific types of content (e.g. Algorithms, Data Structures, Software) without sifting through many words of text

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** Full Text Views

Abstract

Document Sections

- » INTRODUCTION
- » ECOFRIENDLY ENERGY HARVESTER AND SELF-POWERED PHOTODETECTION
- » TWO DIMENSIONAL (2D) MODULE DEMONSTRATION FOR ADVANCED APPLICATIONS
- » NANOTECHNOLOGY TO MIMIC AN ARTIFICIAL REFLEX ARC AND PAIN-MODULATION SYSTEM FOR THE SPINAL CORD

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 neurobotics.

Published in: IEEE Nanotechnology Magazine (Volume: 17, Issue: 1, February 2023)

Page(s): 13 - 21 DOI: 10.1109/MNANO.2022.3228154

Date of Publication: 01 February 2023 Publisher: IEEE

▼ ISSN Information:

▼ Funding Agency:

IEEE Reading Lens Beta
Powered by IEEE Xplore AI
Understand key terms and categories with AI definitions.

Term Category

- Select All
- Material Structure
- Device Hardware
- Technology
- Wave Signal
- Energy System
- Algorithm Method
- Process

Clear **Select**

[Collapse](#)

A panel on the side of the page allows the user to browse the available categories, filter highlighted terms by category, or turn off the highlighting for all terms

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

For each highlighted keyword, an AI generated definition is derived from the IEEE Large Language Model (IEEE LLM) trained on the IEEE articles.

Six IEEE references will be provided at the end of the generated text as well, so that the users can read the source material.

Navigating to IEEE Reading Lens

- Click on the document title from the search results page of Research Navigator to open Reading Lens.
- Reading Lens available for IEEE content.
- A subset of IEEE documents that do not have Reading Lens terms will link to the abstract page.

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, Navier 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

Recommended Result



Basics of computational fluid dynamics: An overview

Digambar Patil; Sachin Kadam

Publisher: IOP Publishing | 2023 | Conference Paper

[View on Publisher Site](#)

AI Summary [?](#)

- CFD deals with equations controlling fluid motion, applied in diverse technical domains.

Recommended Result



Navigating to IEEE Reading Lens



Conferences > 2021 Second International Con... ?

A Convolutional Neural Network Based Approach for Computational Fluid Dynamics

Publisher: IEEE

Cite This

PDF

Satyadhyan Chickerur ; P Ashish [All Authors](#)

2

Cites in
Papers

509

Full
Text Views



Abstract

Authors

Figures

References

Citations

Abstract:

Computational fluid dynamics (CFD) is the visualisation of how a fluid moves and interacts with things as it passes by using applied mathematics, physics, and computational software. The project is designed to simulate **fluid flow** of a particle based on provided **boundary conditions** using **High Performance Computing (HPC)**, with two-dimensional picture files as input to the software and **fluid flow** of a particle generated based on these image data. The Naiver Stokes Equation and the Lattice Boltzmann Equation are used to create these **fluid flow** particles. The **governing equations** based on the conservation law of fluid physical

Beta

IEEE Reading Lens ?

Powered by IEEE Xplore AI

Understand key terms and categories with AI definitions.

Term Category

- Select All
- Algorithm Method

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

Keyword vs AI Search

	Keyword Search	AI (Vector) Search
Search Mode	Lexical	Semantic
Maximum Characters	25 terms per clause	4,000 characters
Wildcards	Up to 10 wildcards	Not applicable
Content Types	Periodicals, conferences, standards, books, courses	Periodicals & Conferences
Publishers	IEEE & 37 Partners	IEEE & STEM Publishers
Index	Metadata & Full-Text	Metadata Only <i>(for Beta)</i>
Year	1884-Present	2018-June 2025 <i>(for Beta)</i>
Records	6.85 Million	9.5 Million

Use Keyword Search For:

- Looking for exact matches on document title, abstract, etc.
- Searching for something very specific.
- Entering structured lexical searches using wildcards and Boolean expressions.

Use AI Search For:

- Finding content based on semantic similarity.
- When do not have a clear idea of what looking for.
- Discover articles with multiple variations of keywords and phrases.

Search For: Layered Analysis of Injury in the Rat Esophagus Induced by Photodynamic Therapy

Showing 1 of 1 result for **Layered Analysis of Injury in the Rat Esophagus Induced by Photodynamic Therapy** ×

Journals (1)

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Get notified when new research is published matching your search criteria.

[Sign In](#)

[Forgot Password?](#) | [Create Account](#)

Select All on Page




Sort By [Relevance ▾](#)

Layered Analysis of Injury in the Rat Esophagus Induced by Photodynamic Therapy Using Two-Photon Microscopy 

Shanlin Yang; Ying Wang; Hongyou Zhao; Defu Chen; Haxia Qiu; Wenzhuo Qiu; Aimin Wang; Jing Zeng; Quanbo Ji; Ying Gu

IEEE Journal of Selected Topics in Quantum Electronics

Year: 2026 | Volume: 32, Issue: 4: Adv. Biophoton. in Emerg. Biomed. Tech. and Dev | Journal Article | Publisher: IEEE

[Abstract](#) [HTML](#)   

Show

All Results

Open Access Only

Year ▾

Range Single Year

[Clear](#) [Apply](#)

Author ▾

Affiliation ▾

Keyword Search

- Keywords are processed as a phrase (assumes “AND” operator).
 - When 5-6 or more keywords entered.
- Focuses on literal matches for keywords.
- Only one result is returned with an exact match.


Search For: Layered Analysis of Injury in the Rat Esophagus Induced by Photodynamic Therapy

Recommended Result

Photodynamic therapy with 5-ALA induced PpIX effect on macrophages polarization

A.V. Ryabova; D.V. Pominova; A.S. Skobeltcin; I.D. Romanishkin; V.B. Loschenov **All Authors**

Publisher: IEEE | 2022 | Conference Paper

 **AI Summary** ⓘ

- Polarization of macrophages changes after photodynamic treatment.
- Fluorescence lifetime of respiratory chain enzymes indicates metabolic signature.
- Time-resolved fluorescence analysis determines cell metabolism type.

▼ **Abstract**

Recommended Result

Effects of photodynamic treatment on mesenteric microvessels

T. G. Grishacheva; I. A. Mikhailova; A.I. Krivchenko; N. N. Petrishchev **All Authors**

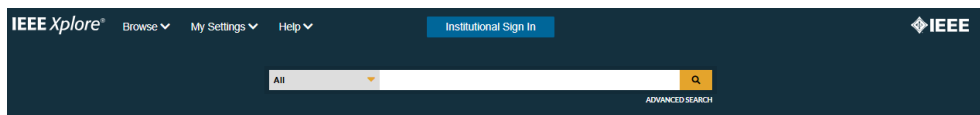
Publisher: IEEE | 2018 | Conference Paper

AI Search

- Focuses on fuzzy (approximate) matches using numerical embeddings (vectors).
- Incorporates semantic and contextual understanding.
- Returns a higher number of matches (30) than a keyword search.

Search For:

System-level test, or SLT, is an increasingly important process step in today's integrated circuit testing flows. Broadly speaking, SLT aims at executing functional workloads in operational modes. In this paper, we consolidate available knowledge about what SLT is precisely and why it is used despite its considerable costs and complexities. We discuss the types or failures covered by SLT, and outline approaches to quality assessment, test generation and root-cause diagnosis in the context of SLT. Observing that the theoretical understanding for all these questions has not yet reached the level of maturity of the more conventional structural and functional test methods, we outline new and promising directions for methodical developments leveraging on recent findings from software engineering.



No results found from entire library

You have exceeded 25 consecutive search terms. [Learn More](#)

Keyword Search

- Unable to process search.

Search For:

System-level test, or SLT, is an increasingly important process step in today's integrated circuit testing flows. Broadly speaking, SLT aims at executing functional workloads in operational modes. In this paper, we consolidate available knowledge about what SLT is precisely and why it is used despite its considerable costs and complexities. We discuss the types or failures covered by SLT, and outline approaches to quality assessment, test generation and root-cause diagnosis in the context of SLT. Observing that the theoretical understanding for all these questions has not yet reached the level of maturity of the more conventional structural and functional test methods, we outline new and promising directions for methodical developments leveraging on recent findings from software engineering.

IEEE AI Overview

System-level test (SLT) has become a crucial process step in integrated circuit testing flows, aiming to execute functional workloads in operational modes [1]. The importance of SLT stems from the limitations of traditional testing methods in ensuring overall system performance, quality, and reliability, particularly in complex systems with multiple interacting components [2].

SLT is used despite its considerable costs and complexities, and it covers various types of failures, including those resulting from complex component interactions [2]. These interactions can lead to abnormal scenarios that cannot be attributed to simple root causes, highlighting the need for a system-level fault model [2]. The approaches to quality assessment, test generation, and root-cause diagnosis in SLT are being explored, but the theoretical understanding of these aspects has not yet reached the level of maturity of conventional structural and functional test methods [1].

Recent industrial findings have ...

[Show More](#)

References:

1. Exploring the Mysteries of System-Level Test
2. Beyond structural test, the rising need for system-level test
3. Making System Level Test Possible by a Mixed-mode, Multi-level, Integrated Modeling Environment
4. System-Level Test: State of the Art and Challenges
5. Leveraging ATE to Optimize System-Level-Test for Multicore Automotive SoCs
6. Applicative System Level Test Introduction to Increase Confidence on Screening Quality

Save Search

Copy

Recommended Result

Exploring the Mysteries of System-Level Test

Ilia Pollan, Jens Anders, Steffen Becker, Paolo Bernardi, Krishnendu Chakrabarty, Nourhan El-Hamawy, Matthias Sauer, Adit Singh, Matteo S... [All Authors](#)

Publisher: IEEE | 2020 | Conference Paper



AI Summary

- System-level testing (SLT) executes functional workloads in operational modes.
- SLT aims to assess system quality despite high costs and complexities.
- New directions for methodical developments leverage software engineering findings.

AI Search

- Returns AI overview and semantically relevant results.

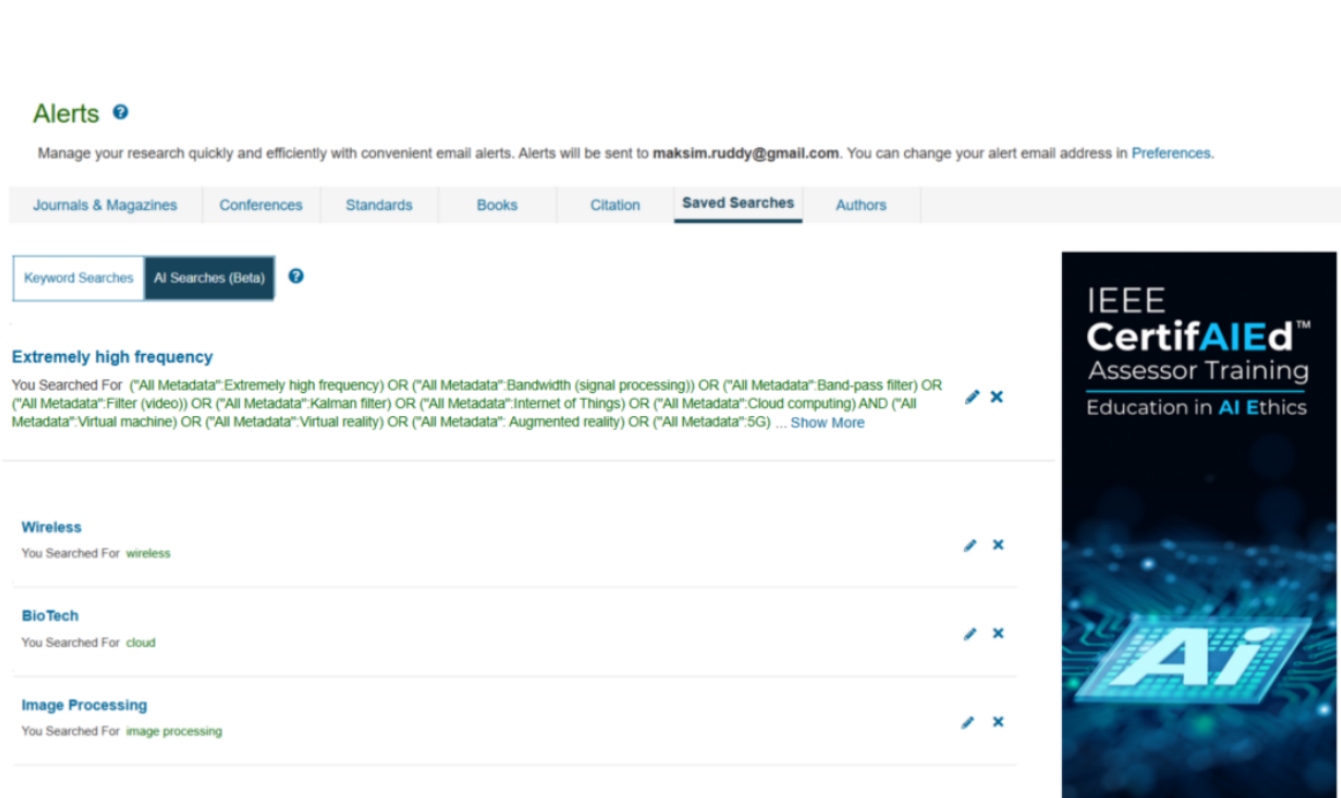
Functions Supported by Search Mode

	Keyword Search	AI Search
Boolean Operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wildcard Characters	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fuzzy Matching	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Search Paragraphs	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Search Full-Text*	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Search Legacy Content*	<input checked="" type="checkbox"/>	<input type="checkbox"/>

*During Beta, AI Search will not include full-text searching and content published prior to 2018. However, both items will be included for production launch in 2026.

AI Saved Searches

- Up to 15 AI searches can be saved.
- Alerting not available for AI saved searches.
- Available via My Settings > Saved Searches.



The screenshot displays the IEEE Xplore Alerts management page. At the top, there is an 'Alerts' section with a help icon and a message: 'Manage your research quickly and efficiently with convenient email alerts. Alerts will be sent to maksim.ruddy@gmail.com. You can change your alert email address in [Preferences](#).' Below this is a navigation bar with tabs for 'Journals & Magazines', 'Conferences', 'Standards', 'Books', 'Citation', 'Saved Searches' (which is selected), and 'Authors'. Under the 'Saved Searches' tab, there are two sub-tabs: 'Keyword Searches' and 'AI Searches (Beta)'. The 'AI Searches (Beta)' tab is active, showing a list of saved searches. The first search is titled 'Extremely high frequency' with a search query: 'You Searched For ("All Metadata":Extremely high frequency) OR ("All Metadata":Bandwidth (signal processing)) OR ("All Metadata":Band-pass filter) OR ("All Metadata":Filter (video)) OR ("All Metadata":Kalman filter) OR ("All Metadata":Internet of Things) OR ("All Metadata":Cloud computing) AND ("All Metadata":Virtual machine) OR ("All Metadata":Virtual reality) OR ("All Metadata":Augmented reality) OR ("All Metadata":5G) ... Show More'. The second search is titled 'Wireless' with the query 'You Searched For wireless'. The third search is titled 'BioTech' with the query 'You Searched For cloud'. The fourth search is titled 'Image Processing' with the query 'You Searched For image processing'. Each search entry has edit and delete icons. On the right side of the screenshot, there is a vertical banner for 'IEEE CertifAIED™ Assessor Training Education in AI Ethics' with a background image of a glowing 'Ai' logo on a circuit board.

Thank you!

We'd like your feedback! Your experiences and thoughts about this new set of features will help to shape the future of the research in IEEE *Xplore*.

As you test these new features, please take note of what you like, what could be improved, or what you might want to see in the future. A survey will be distributed during the beta testing period.



Questions about the Beta?
Contact xploreAI@ieee.org