



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.

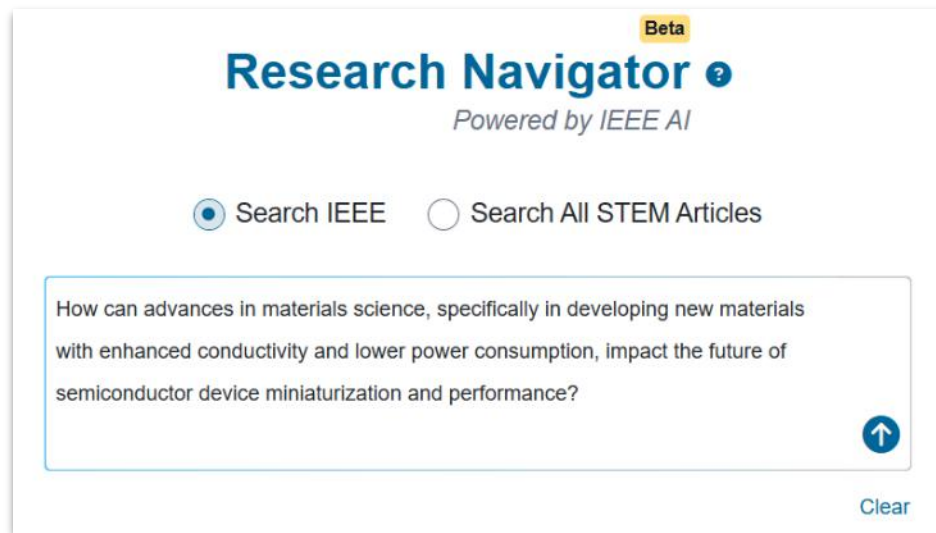
With these powerful tools integrated into the engineering and development workflow, the IEEE *Xplore* AI Research Suite transforms the research experience to help researchers deepen understanding, quickly assimilate new ideas, and accelerate research efforts

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 is 'Research Navigator' in blue, followed by a question mark icon and the text 'Powered by IEEE AI'. Below the title 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 an upward-pointing arrow. At the bottom right of 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

- 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

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

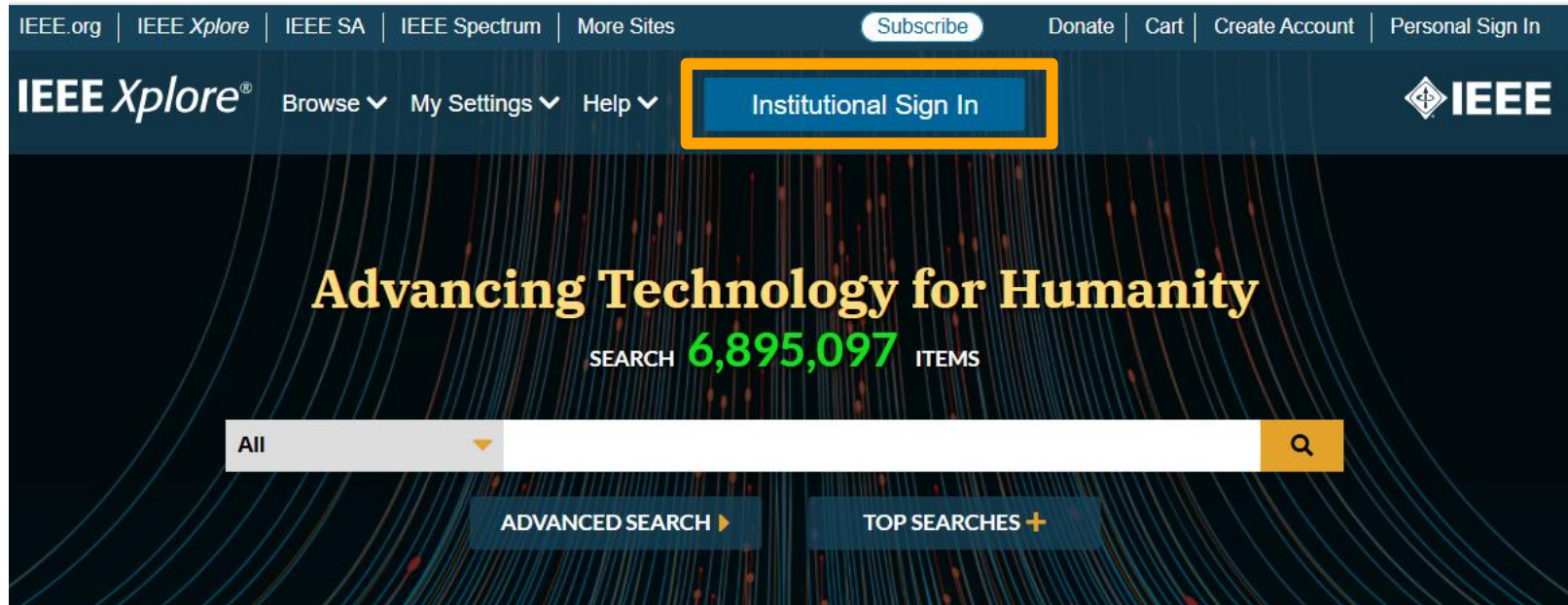
Advances in materials science, particularly in developing new materials with enhanced conductivity and lower power consumption, have the potential to significantly impact the future of semiconductor device miniaturization and performance. The development of new materials such as 2D and 1D materials, 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](#)

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 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 this 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. A blue button labeled "Institutional Sign In" is highlighted with a yellow border. To the right of this button is the IEEE logo. The main content area features the tagline "Advancing Technology for Humanity" in large yellow text, 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 two buttons: "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, the IEEE Xplore logo is on the left, and the IEEE logo is on the right. A white box in the center of the navigation bar shows "Access provided by: IELTest" and a "Sign Out" link. The main content area features the slogan "Advancing Technology for Humanity" in yellow, with "SEARCH 6,902,771 ITEMS" below it. A search bar is present with a dropdown menu set to "All" and a search icon. Below the search bar, three buttons are visible: "AI SEARCH Beta" (highlighted with a yellow box), "ADVANCED SEARCH", and "TOP SEARCHES +".

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

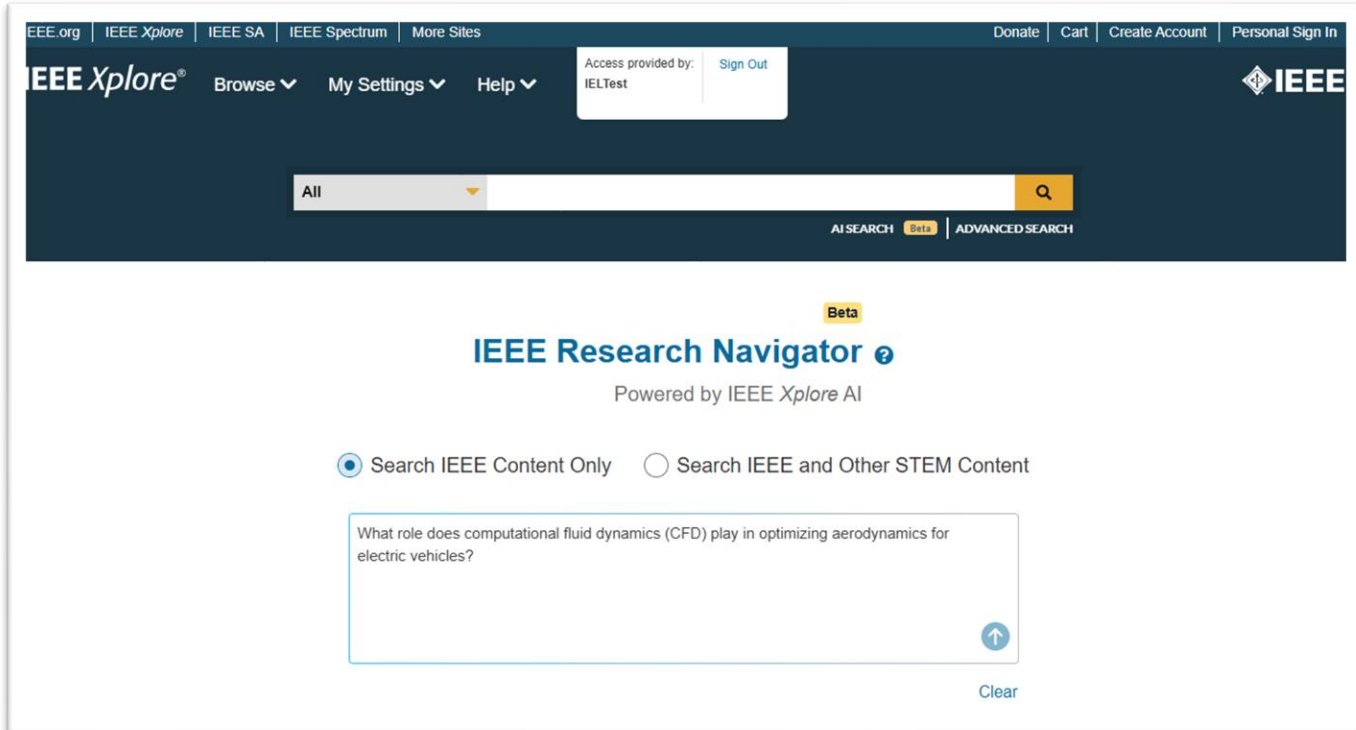
Accessing IEEE Research Navigator from IEEE *Xplore*

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

The screenshot displays the IEEE Xplore website interface. At the top, the navigation bar includes 'IEEE Xplore®', 'Browse', 'My Settings', and 'Help'. A user login box shows 'Access provided by: IELTest' and a 'Sign Out' link. The IEEE logo is in the top right. 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 in the search bar area. 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 search area prompts the user to 'Enter keywords and select fields.' and contains three search input fields, each with a dropdown menu set to 'All Metadata'. A yellow box highlights a blue notification box on the right side of the search area. The notification box has a 'Beta' label and the text: 'New! IEEE Xplore AI Research Suite', '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 displays 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, the IEEE Xplore logo is visible on the left, and a user access box on the right shows "Access provided by: IELTest" and a "Sign Out" button. In the center, there are navigation links for "Browse", "My Settings", and "Help". A large search box is prominently featured, with a dropdown menu set to "All" and a search button. Below the search box, there are links for "AI SEARCH Beta" and "ADVANCED SEARCH". The main content area features a "Beta" badge, the title "IEEE Research Navigator" with a help icon, and the text "Powered by IEEE Xplore AI". Two radio buttons are present: "Search IEEE Content Only" (which is selected) and "Search IEEE and Other STEM Content". A search input field contains the text "What role does computational fluid dynamics (CFD) play in optimizing aerodynamics for electric vehicles?". A search button with an upward arrow is located at the bottom right of the input field, and a "Clear" button is positioned below it.

IEEE Research Navigator

IEEE AI Overview

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 heading is 'Research Navigator Powered by IEEE AI'. Below this, there are search options: 'Search IEEE' (selected) and 'Search All STEM Publishers'. A search input field contains the text 'computational fluid dynamics'. Below the input field are 'Save Search' and 'Clear' buttons. A blue arrow points from the search input field to the 'IEEE AI Overview' panel below. The panel has a title 'IEEE AI Overview' and contains two paragraphs of text. The first paragraph defines Computational Fluid Dynamics (CFD). The second paragraph discusses material selection for a microstrip patch antenna design. A 'Show More' link is at the bottom of the panel.

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' dropdowns. A 'DIGITAL PULP' badge 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'. Below the input field are 'Save Search' and 'Clear' buttons. A 'Save Search' dialog box is open in the foreground, titled 'Save Search' with a close button (X). It 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 shows a sidebar with 'IEEE AI Overview' and a main content area 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

The screenshot displays the IEEE Reading Lens interface for the article "Advanced Impacts of Nanotechnology and Intelligence". At the top, the publisher is identified as IEEE, with options to "Cite This" or download a "PDF". The authors listed are Chao-Sung LAI, Ishita Chakraborty, Han-Hsiang Tai, Dharmendra Verma, Kai-Ping Chang, and Jer-Chyi Wang. The article has 378 full-text views and 3 citations in papers. A sidebar on the left lists document sections, including Introduction, Ecofriendly Energy Harvester and Self-Powered Photodetection, Two Dimensional (2D) Module, and Quantum Era. The main content area shows the abstract, which discusses the interdisciplinary nature of nanotechnology and its applications. A pop-up window titled "IEEE AI Overview" provides a definition of nanotechnology. On the right, the "IEEE Reading Lens" sidebar offers AI-powered key terms and categories, with a list of selected categories including Material Structure, Device Hardware, Technology, Wave Signal, Energy System, and Algorithm Method. The "INTRODUCTION" section is partially visible at the bottom.

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 R ← ↻ 📁 🔔

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 neurorobotics.

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, 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

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 Navier 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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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; Haixia 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

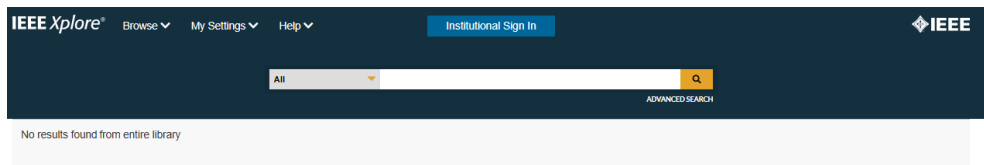
   

AI Search

- 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 of 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.



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

Iliia Polian; 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	✓	✗
Wildcard Characters	✓	✗
Fuzzy Matching	✗	✓
Search Paragraphs	✗	✓
Search Full-Text*	✓	✗
Search Legacy Content*	✓	✗

*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.

Alerts ⓘ

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](#).

Journals & Magazines Conferences Standards Books Citation **Saved Searches** Authors

Keyword Searches **AI Searches (Beta)** ⓘ

Extremely high frequency

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](#) ⓘ

Wireless

You Searched For wireless ⓘ

BioTech

You Searched For cloud ⓘ

Image Processing

You Searched For image processing ⓘ



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*