IEEE Impact on the Development of New Technologies

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New World Makati Hotel
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IEEE
Advancing Technology for Humanity

About the IEEE

- IEEE is a leading authority and trusted voice in a wide variety of areas ranging from electrical engineering, telecom, computing, aerospace, AI, semiconductors, power and energy, sustainability and more

- Not for profit "Advancing Technology For Humanity"

- World's largest technical largest technical professional organization with over 450,000 members globally

- Core areas of activity:
  - Membership organization
  - Conferences organizer
  - Standards developer
  - Publisher of leading journals, conferences, standards, eBooks, and eLearning

- IEEE *Xplore* digital library by the numbers:
  - More than 6 million total documents
  - More than 24 million downloads per month
  - Over 8 million unique users each month

IEEE Smart Village Activities
A volunteer network empowering off-grid communities through education and the creation of sustainable, affordable, locally owned entrepreneurial energy businesses serving 70,000 people in 280 villages in Cameroon, Haiti, Nigeria, Kenya, South Sudan, Himalayas, India and more.
smartvillage.ieee.org

IEEE Action on Climate Change
IEEE is committed to helping combat the effects of climate change through pragmatic and accessible technical solutions and providing engineers and technologists with a space for discussion and action. IEEE has also developed a climate change collection of articles on IEEE *Xplore*.
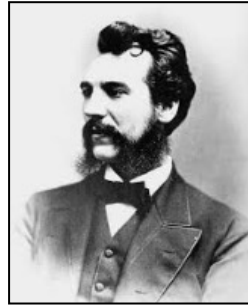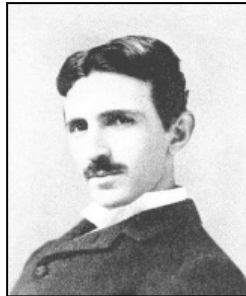**climate-change.ieee.org**

IEEE

The History of IEEE

Thomas Edison

Alexander Graham Bell

Nikola Tesla

Landmark exhibition at Franklin Inst. in Philadelphia, the American Institute of Electrical Engineers held its first conference on 7–8 Oct. 1884. This was the first formal technical conference on electrical engineering held in the U.S.

The world's most successful technology leaders and organizations rely on IEEE information

Corporations

- **24 of the top 30 Semiconductor companies**
- **8 of the top 10 IT Software and Services companies**
- **All top 10 Aerospace and Defense companies**
- **8 of the top 10 Technology Hardware and Equipment companies**
- **3 of the top 5 Consumer Durables companies (Electronics/Automotive)**
- **8 of the top 10 Telecommunications companies**

(Forbes Global 2000 Rankings, 2023)

Universities

- **All of the top 100 engineering schools in the US***
  (U.S. News and World Report, Top Engineering Graduate Schools of 2023, ranked in 2022)

- **98 of the top 100 Engineering and Technology Universities Worldwide***
  (Times Higher Education, Subject Ranking 2021-2022: Engineering & Technology)

 * As of August 2023

Government

- **Defense research and aerospace agencies**
- **Communications and energy labs**
- **Patent offices and scientific councils**
- **Government R&D centers in North America, Europe, Asia, and the Middle East**

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IEEE Publications: Stay Current with Quality, Trusted Resources

- Latest studies reinforce that the top cited publications in the world are from IEEE*

  o 15 of the top 20 journals in Electrical and Electronic Engineering

  o 10 of the top 10 journals in Telecommunications

  o 3 of the top 5 journals in Automation & Control Systems

  o 5 of the top 10 journals in Computer Science: Artificial Intelligence

  o The top 3 journals in Computer Science: Cybernetics

  o 3 of the top 5 journals in Computer Science: Hardware & Architecture

  o 3 of the top 5 journals in Computer Science: Information Systems

- Cited in patents nearly 3x more than any other publisher**

- Recent user studies demonstrate that researchers rely on
  IEEE *Xplore* to:
  o Increase productivity
  o Save time by not reinventing the wheel
  o Keep up-to-date on emerging technologies

IEEE Quality Makes an Impact

Journal Citation Reports® by Impact Factor

IEEE journals are:

- ▶ **#1** in Cybernetics
- ▶ **#1** in Imaging Science & Photographic Technology
- ▶ **#1** in Information Systems
- ▶ **#1** in Remote Sensing
- ▶ **#1** in Telecommunications
- ▶ **#2** in Automation and Control Systems
- ▶ **#2** in Computer Science, Artificial Intelligence
- ▶ **#2** in Computer Science, Hardware & Architecture
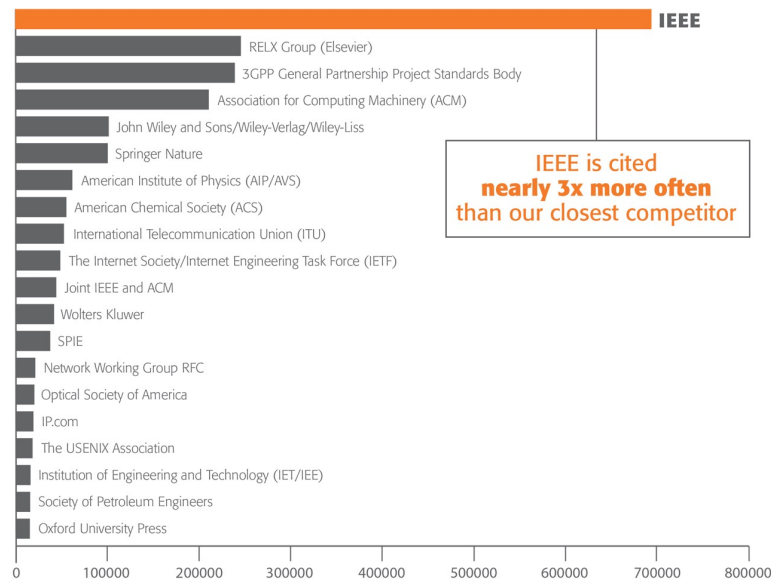- ▶ **#2** in Electrical and Electronic Engineering

The Journal Citation Report presents quantifiable statistical data that provide a systematic, objective way to evaluate the world's leading journals.

IEEE Research Powers Patents

IEEE is the most-cited publisher in new patents from top patenting organizations.

- Patent referencing to IEEE **increased over 842%** since 1997

- Inventions that build upon IEEE publications are more likely to be cited in the future

- The importance of sci-tech literature in patents is rising

- IEEE dominates in patents related to **Artificial Intelligence, Autonomous Vehicles,** and **Internet of Things**

Number of U.S. Patent References from Top 50 Companies to Top 20 Publishers

IEEE

RELX Group (Elsevier)
3GPP General Partnership Project Standards Body
Association for Computing Machinery (ACM)
John Wiley and Sons/Wiley-Verlag/Wiley-Liss
Springer Nature
American Institute of Physics (AIP/AVS)
American Chemical Society (ACS)
International Telecommunication Union (ITU)
The Internet Society/Internet Engineering Task Force (IETF)
Joint IEEE and ACM
Wolters Kluwer
SPIE
Network Working Group RFC
Optical Society of America
IP.com
The USENIX Association
Institution of Engineering and Technology (IET/IEE)
Society of Petroleum Engineers
Oxford University Press

IEEE is cited **nearly 3x more often** than our closest competitor

0   100000   200000   300000   400000   500000   600000   700000   800000

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More information available at: www.ieee.org/patentcitations

IEEE

New IEEE Journal Titles for 2023 and 2024

These new journal titles* will soon be available and accessible via subscription:

2023:

- *IEEE Transactions on **AgriFood Electronics***
- *IEEE **Electron Devices** Magazine*
- *IEEE Transactions on **Energy Markets**, Policy, and Regulation*
- *IEEE Transactions on **Industrial Cyber-Physical Systems***
- *IEEE Transactions on **Radar Systems***

2024:

- *IEEE Transactions on **Circuits and Systems for Artificial Intelligence***
- *IEEE Transactions on Materials for **Electron Devices***
- *IEEE Transactions on **Field Robotics***
- *IEEE **Reliability** Magazine*
- *IEEE **Robotics and Automation** Practice*

*Please note this is a tentative list and is subject to change.
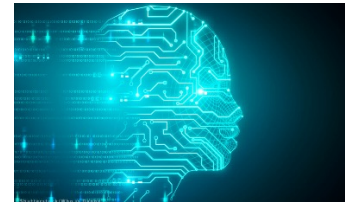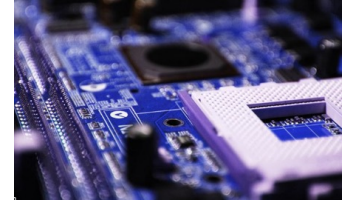
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IEEE Conferences Continue to Address Growing Areas of Research in New and Emerging Technologies

IEEE conferences continue to address growing areas of research that transform our lives. Below are some examples of conferences published in 2023 covering these innovative technologies:

- 2023 IEEE International Conference on **Acoustics, Speech and Signal Processing** (ICASSP)
- 2023 IEEE/SEMI Conf on **Advanced Semiconductor Manufacturing**
- 2023 IEEE 2nd International Conference on **AI in Cybersecurity**
- 2023 IEEE 21st Symposium on **Applied Machine Intelligence and Informatics** (SAMI)
- 2023 3rd International Conference on **Artificial Intelligence and Smart Energy** (ICAIS)
- 2023 IEEE 8th International Conference on **Big Data Analytics** (ICBDA)
- 2023 6th Conference on **Cloud and Internet of Things** (CIoT)
- 2023 IEEE 20th Consumer **Communications & Networking** Conference (CCNC)
- 2023 **Optical Fiber Communications** Conference (OFC)
- 2023 7th International Conference on **Green Energy and Applications** (ICGEA)
- 2023 IEEE Innovative **Smart Grid Technologies** Conference (ISGT)
- 2023 IEEE Conference **on Power Electronics and Renewable Energy** (CPERE)
- 2023 IEEE IAS Global Conference on **Renewable Energy and Hydrogen Technologies**
- 2023 International Conference on **Robotics and Automation in Industry** (ICRAI)

Note: this is a partial listing of new conferences and is not all-inclusive or final. Information is subject to change.

Select IEEE AI-related Papers, Early Days in IEEE Xplore

- A. Uttley, **"Discussion on Dr. A.M. Uttley's paper "Information, Machines, and Brains**", in Transactions of the IRE Professional Group on Information Theory, vol. 1, no. 1, pp. 193-197, Feb. 1953, doi: 10.1109/TIT.1953.1188576.

- C. E. Shannon, "**Computers and Automata,**" in Proceedings of the IRE, vol. 41, no. 10, pp. 1234-1241, Oct. 1953, doi: 10.1109/JRPROC.1953.274273.

- A. Newell and H. Simon, "**The logic theory machine--A complex information processing system,**" in IRE Transactions on Information Theory, vol. 2, no. 3, pp. 61-79, September 1956, doi: 10.1109/TIT.1956.1056797.

- V. H. Yngve, "**The technical feasibility of translating languages by machine,**" in Transactions of the American Institute of Electrical Engineers, Part I: Communication and Electronics, vol. 75, no. 6, pp. 792-797, Jan. 1957, doi: 10.1109/TCE.1957.6372595.

- R. M. Friedberg, "**A Learning Machine: Part I,**" in IBM Journal of Research and Development, vol. 2, no. 1, pp. 2-13, Jan. 1958, doi: 10.1147/rd.21.0002.

- E. E. David, **"Artificial Auditory Recognition in Telephony,"** in IBM Journal of Research and Development, vol. 2, no. 4, pp. 294-309, Oct. 1958, doi: 10.1147/rd.24.0294.

AI in IEEE Xplore

Showing **1-25** of **205,405** results for machine learning ×

Showing **1-25** of **153,781** results for deep learning ×

☐ Conferences (109,869)　　　☐ Journals (38,262)　　　☐ Early Access Articles (3,528)　　　☐ Magazines (1,386)

☐ Books (717)　　　☐ Standards (16)　　　☐ Courses (3)

Showing **1-25** of **107** results for generative pre-trained transformer ×

☐ Conferences (82)　　　☐ Journals (18)　　　☐ Early Access Articles (4)

Showing **1-25** of **334,164** results for neural network ×

☐ Conferences (260,286)　　　☐ Journals (66,072)　　　☐ Early Access Articles (4,698)

Showing **1-25** of **52,725** results for natural language processing ×

☐ Conferences (45,883)　　　☐ Journals (5,845)　　　☐ Magazines (567)　　　☐ Early Access Articles (240)

☐ Books (177)　　　☐ Standards (12)　　　☐ Courses (1)

☐ Conferences (109,869)　　　☐ Journals (38,262)　　　☐ Early Access Articles (3,528)　　　☐ Magazines (1,386)

☐ Books (717)　　　☐ Standards (16)　　　☐ Courses (3)

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IEEE Journals covering Artificial Intelligence Topics

- IEEE Transactions on Pattern Analysis and Machine Intelligence

- IEEE Transactions on Neural Networks

- IEEE Transactions on Neural Networks and Learning Systems

- IEEE Transactions on Systems, Man, and Cybernetics

- IEEE Transactions on Knowledge and Data Engineering

- IEEE Transactions on Cybernetics

- IEEE Transactions on Fuzzy Systems

- IEEE Transactions on Image Processing

- IEEE Internet of Things Journal

- IEEE Sensors Journal

- IEEE Systems Journal

- IEEE Transactions on Intelligent Transportation Systems

- IEEE Transactions on Evolutionary Computation

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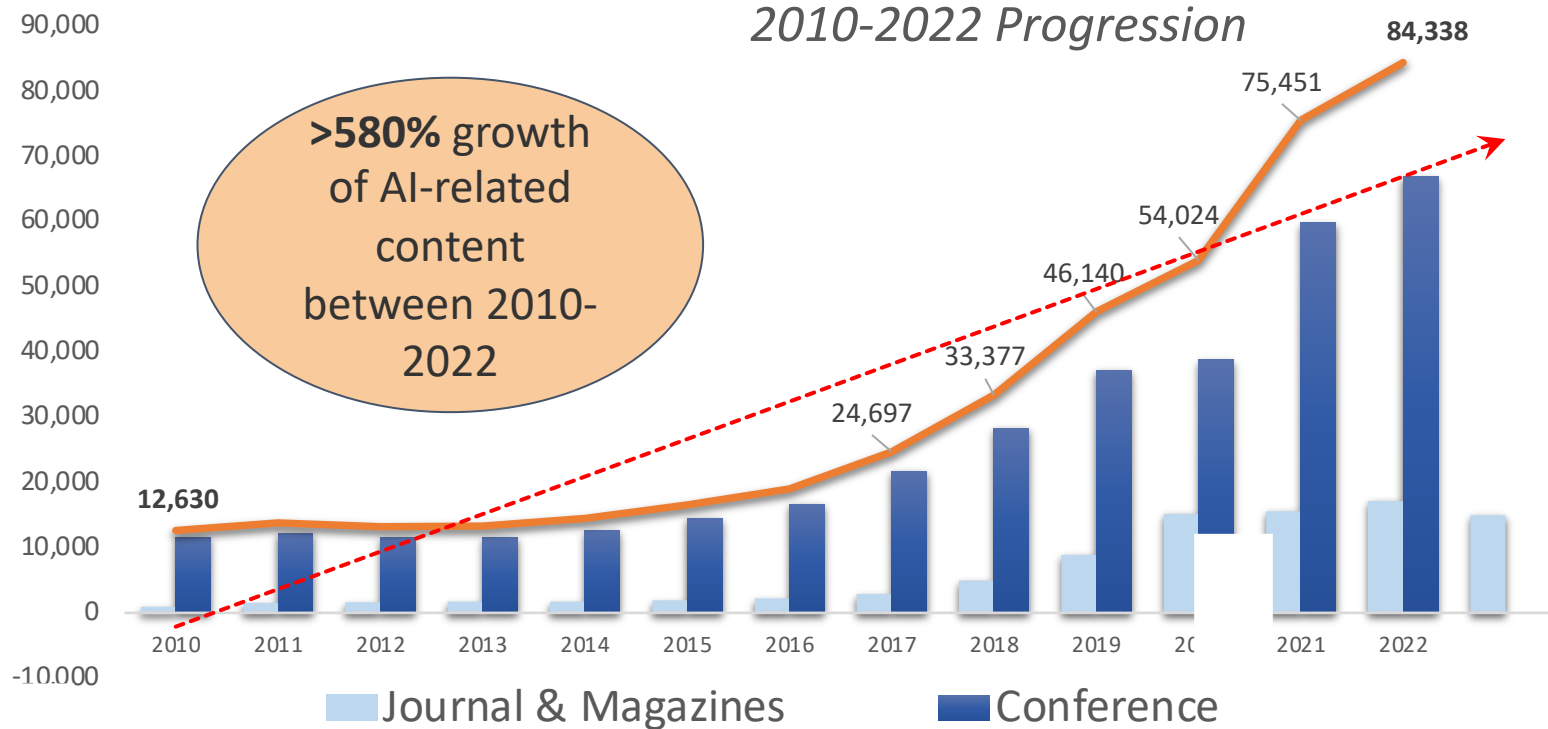# IEEE Conferences covering Artificial Intelligence Topics

- International Conference on Artificial Intelligence and Computational Intelligence

- International Conference on Artificial Intelligence, Management Science and Electronic Commerce

- World Congress on Intelligent Control and Automation

- International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing

- International Conference on Automatic Control and Artificial Intelligence

- International Conference on Machine Learning and Cybernetics

- IEEE/CVF Conference on Computer Vision and Pattern Recognition

- International Joint Conference on Neural Networks (IJCNN)

- International Conference on Artificial Intelligence and Data Processing

- IEEE International Conference on Big Data

- IEEE International Conference on Fuzzy Systems

Reference: The Value of IEEE Research for Artificial Intelligence Companies

A Sample of IEEE Standards Covering Artificial Intelligence

- **IEEE 1232.3** IEEE Guide for the Use of Artificial Intelligence Exchange and Service Tie to All Test Environments (AI-ESTATE)

- **IEEE 1855** IEEE Standard for Fuzzy Markup Language

- **IEEE 610.4** IEEE Standard Glossary of Image Processing and Pattern Recognition Terminology

- **IEEE 1872** IEEE Standard Ontologies for Robotics and Automation

- **IEEE 2755** IEEE Guide for Terms and Concepts in Intelligent Process Automation

- **IEEE P3301/D2** Adoption of Moving Picture, Audio and Data Coding by Artificial Intelligence (MPAI) Technical Specification Artificial Intelligence Framework (AIF)

- **IEEE 2801-2022** IEEE Recommended Practice for the Quality Management of Datasets for Medical Artificial Intelligence

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Artificial Intelligence Related Publications in Xplore

2010-2022 Progression

>**580%** growth of AI-related content between 2010-2022

Legend: Journal & Magazines, Conference

Data points: 12,630 (2010), 24,697 (2017), 33,377 (2018), 46,140 (2019), 54,024 (2020), 75,451 (2021), 84,338 (2022)

IEEE Publications Strategy and Goals

- IEEE is dedicated to continuing to be the destination of choice for authors and to serve the author and research community.

- **IEEE strives to support all authors and readers globally.** That means being able to offer any author a publication venue that is compliant with their circumstances, regardless of their funding status, the publishing mandates they may have in place, or where in the world they may work.

- **IEEE provides authors with a choice to publish in a traditional journal or in a fully open access journal.**

- **IEEE continues to provide more options** and choices to support the work and needs of all authors and researchers.
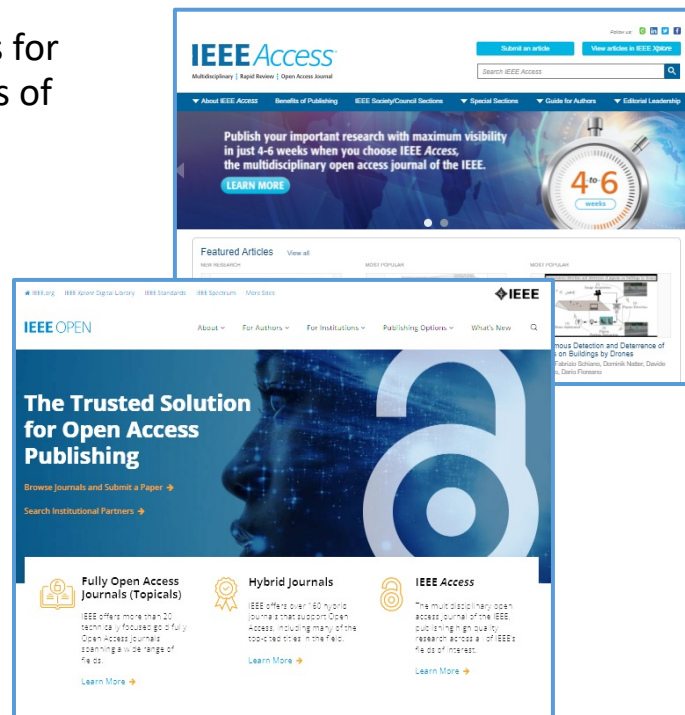

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IEEE's Evolving Open Access Program

To help authors gain maximum exposure for their groundbreaking research and application-oriented articles, IEEE offers three options for open access (OA) publishing, all designed to meet the varying needs of our authors throughout their careers.

OA Publishing Options

1. **Hybrid Journals** – **180+** journals and magazines spanning an array of technology fields. These titles have Transformative Status under Plan S.

2. **Fully Open Access Topical Journals** – **30+ titles** and more coming soon

3. **Multidisciplinary OA journal** – **IEEE *Access***
   - o IEEE's largest open access journal, nearly 80,000 articles since 2013
   - o Highly cited journal in a range of fields
   - o Rapid yet rigorous peer review process of 4 to 6 weeks.

With the above options for authors, IEEE has published nearly 120,000 open access articles in IEEE *Xplore*.

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IEEE Commits its Entire Hybrid Journal Portfolio to Transformative Journal Status Aligned with Plan S

- In November 2022, IEEE announced that it has committed its full portfolio of more than 160 hybrid journals to become Transformative Journals under Plan S.

- This means that any authors receiving research grants from Coalition S are compliant with Plan S requirements when publishing their research articles in any IEEE fully open access or hybrid journals.

- In addition to the existing direct open access agreements with hundreds of institutions, all of IEEE's hybrid journals now qualify as 'Transformative Journals' under Plan S.

- This represents a major step in IEEE's continued support and commitment to open science and ensures that more authors can continue to publish in the publication of their choice.
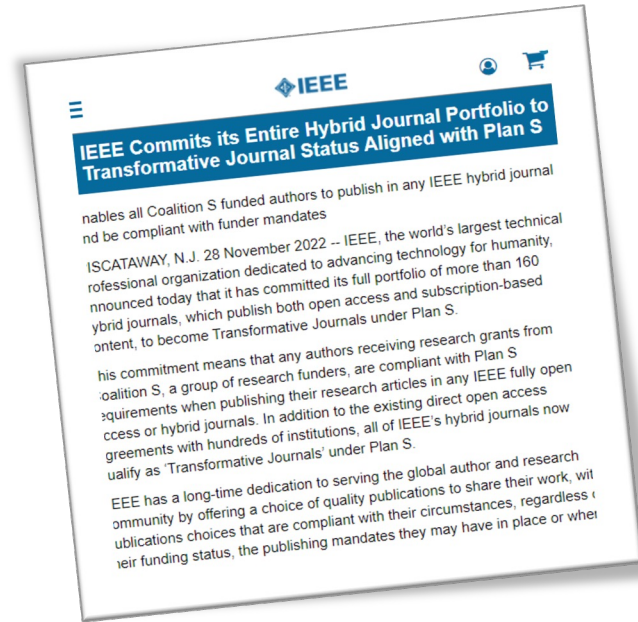
IEEE Publishes More Than 30 Fully Open Access Journals

All hosted on the IEEE Xplore® Digital Library and are fully compliant with funder mandates, including Plan S.

- IEEE Access
- IEEE Data Descriptions **New for 2024**
- IEEE Journal of the Electron Devices Society
- IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
- IEEE Journal on Exploratory Solid-State Computational Devices and Circuits
- IEEE Journal of Indoor and Seamless Positioning and Navigation
- IEEE Journal of Selected Areas in Sensors **New for 2024**
- IEEE Journal of Microwaves
- IEEE Journal of Translational Engineering in Health and Medicine
- IEEE Open Journal of Antennas and Propagation
- IEEE Open Journal of Circuits and Systems
- IEEE Open Journal of the Communications Society
- IEEE Open Journal of the Computer Society
- IEEE Open Journal of Control Systems
- IEEE Open Journal on Immersive Displays **New for 2024**
- IEEE Open Journal of Engineering in Medicine and Biology
- IEEE Open Journal of the Industrial Electronics Society
- IEEE Open Journal of Industry Applications

- IEEE Open Journal of Instrumentation and Measurement
- IEEE Open Journal of Intelligent Transportation Systems
- IEEE Open Journal of Nanotechnology
- IEEE Open Access Journal of Power and Energy
- IEEE Open Journal of Power Electronics
- IEEE Open Journal of Signal Processing
- IEEE Open Journal of the Solid-State Circuits Society
- IEEE Open Journal of Systems Engineering
- IEEE Open Journal of Ultrasonics, Ferroelectrics, and Frequency Control
- IEEE Open Journal of Vehicular Technology
- IEEE Photonics Journal
- IEEE Sensors Reviews **New for 2024**
- IEEE Systems, Man, and Cybernetics Letters **New for 2024**
- IEEE Transactions On Machine Learning in Communications and Networking
- IEEE Transactions on Neural Systems and Rehabilitation Engineering
- IEEE Transactions on Privacy **New for 2024**
- IEEE Transactions on Quantum Engineering

More information: open.ieee.org

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IEEE and CRUE (Conferencia de Rectores de las Universidades Españolas) Sign 3-Year Transformative Agreement to Accelerate Open Access Publishing in Spain

IEEE and CRUI Sign Three-Year Transformative Agreement to Accelerate Open Access Publishing in Italy

IEEE Reaches a Transformative Open Access Read and Publish Agreement with Finnish Consortium FinELib

IEEE and IReL Expand Access To Irish Technology Research with New Transformative Open Access Agreement

**IEEE and CERN Agree to Transformative Open Access 'Read and Publish' Deal**

Piscataway, N.J. – 27 May 2021 – IEEE, the world's largest technical professional organization dedicated to advancing technology for humanity, announced today that it has entered an open access read and publish agreement with CERN, the European Organization for Nuclear Research, the world's largest particle physics research center located in Geneva, Switzerland.

The transformative read and publish agreement enables CERN-corresponding authors to publish open access articles in all IEEE journals and combines reading access to over five million documents from the IEEE *Xplore* Digital Library, including scientific journals, conference proceedings, and IEEE standards. The agreement also makes it more convenient for authors to publish open access articles with IEEE as article processing charges (APCs) are prepaid by CERN's centrally funded IEEE open access APC account. CERN's authors are now able to publish open access articles in 160 leading hybrid journals and all fully open journals published by IEEE, making articles instantly available and free to read by the general public.

For More Information on IEEE Open Access Options

IEEE Open open.ieee.org

- More information on OA options for authors and institutions, as well as a list of participating institutions (also links from ScholarOne to this list)

- Learn more about specific journals and calls for papers

- Latest news on new and forthcoming titles

- FAQs for authors
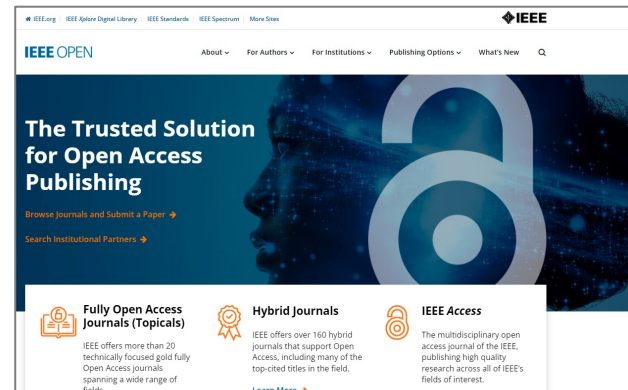
IEEE *Access* ieeeaccess.ieee.org

- Call for papers and announcements

- Submission guidelines

- FAQs

- Featured articles

IEEE Open Access Milestones

IEEE OPEN Celebrates 100,000 Open Access Articles

- **2012**: IEEE transitions the *IEEE Photonics Journal* to fully open access

- **2013**: IEEE launches *IEEE Access*, the world's largest multidisciplinary open access journal in the tech sector

- **2013**: IEEE provides an **open access hybrid** option for all peer-reviewed journals

- **2016**: IEEE *Access* receives its first Journal Impact Factor™

- **2016**: IEEE launches initial pilot of **IEEE *DataPort***, an easily accessible repository of datasets with an OA option

- **2019**: IEEE launches 14 new **fully open access journals** in a range of technologies (now 29 fully OA journals)

- **2019**: IEEE launches the CCC RightsLink® OA **administrative tool** for institutional customers

- **2020**: IEEE Introduces **TechRxiv**™, a new preprint server for unpublished research in the technology sector

- **2022**: IEEE commits its full portfolio of more than 160 hybrid journals to **transformative status**, enabling any Plan S funded author to publish OA in any hybrid title

- **2020-2023**: IEEE enters Open Access **Read and Publish agreements** with a number of institutions in Finland, Germany, Greece, Ireland, Italy, Spain, USA, and more

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Asia Pacific: 2023 IEEE Journal Publishing

Corresponding Author Data - Open Access v. Traditional Publishing

★ Indicates OA Agreement
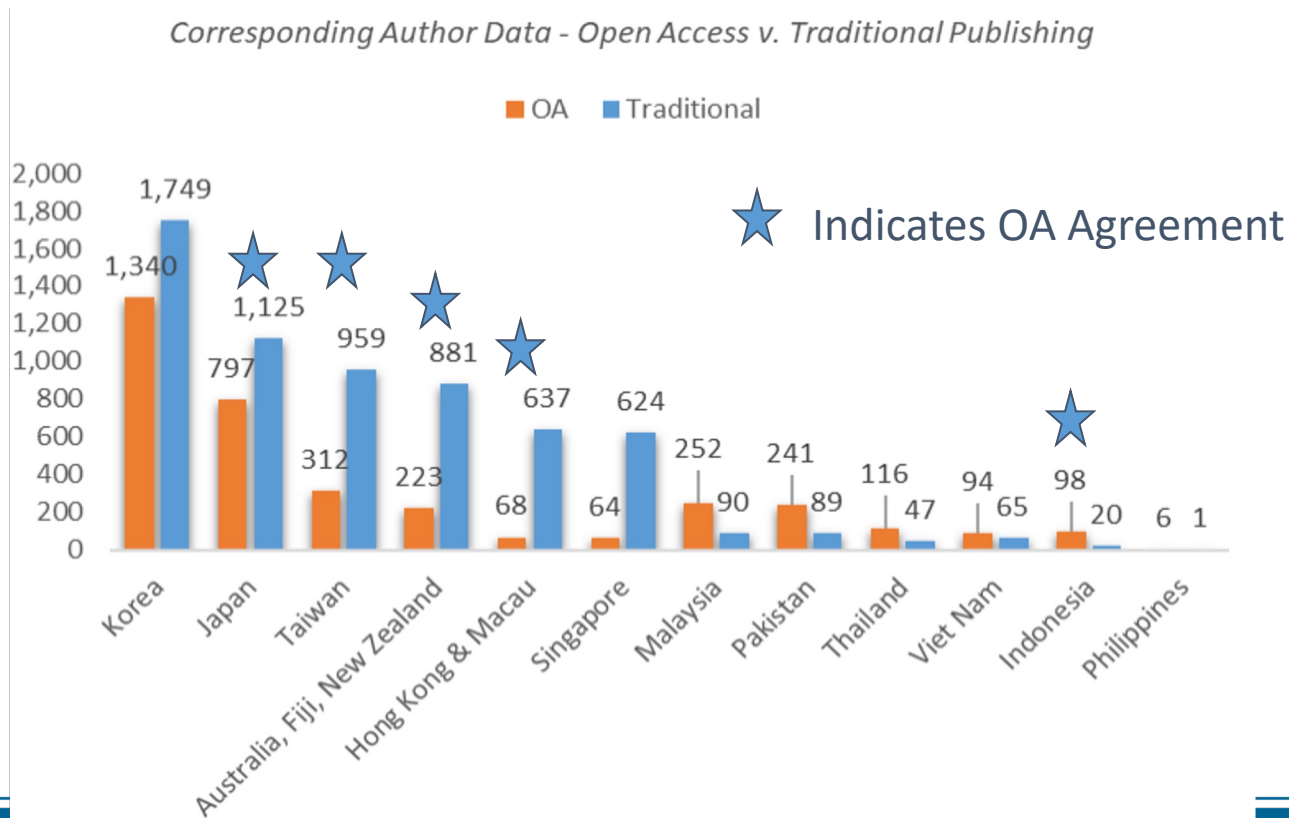
Subscribed Content Continues to Grow in IEEE *Xplore*

Total IEEE subscribed content posted grew by an average of **5%** over the past 4 years*

	New IEEE Subscribed Documents Per Year	Growth in IEEE Subscribed Documents Per Year
2023	286,014	↑ 4.2%
2022	274,435	↑ 2.7%
2021	267,343	↑ 3.4%
2020	258,591	↑ 9.9% *Conf. posting delay due to system upgrade*
2019	235,345	NA

Subscribed content included in IEL (figures do not include OA content)

* IEEE content included in IEL includes journal, magazine, conference and standards documents exclusively available to subscribers.
Source: IEEE *Xplore* journal data queries Jan 2024, includes ephemera content, excludes early access content and OA content.
Conference paper information based on acquisition and posting data provided by the IEEE Meetings Conf. and Events (MCE) Team

IEEE

Many thanks for your warm welcome here in Manila!

Paul Canning

Director International Sales

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