

What's New @ IEEE for Libraries

Driving Innovation Forward to a Brighter Future



Michael Spada
IEEE Director of
Product Marketing



Jalyn Kelley
IEEE Client
Services Manager

A Few Quick Notes Before We Get Started

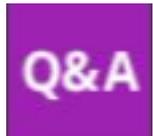
Please note – There is no dial-in number for attendees of this event; please make sure your computer speakers or headset are turned on and the volume is up so that you can hear our presenters.

▶ Technical Support



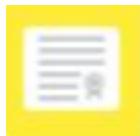
Click the yellow ? icon at the bottom of your screen to see answers to common technical issues or type your issue into the Q&A window.

▶ Questions for the Presenters



Type your questions into the **Q&A** window. Our presenters will answer as many questions as possible during our time together.

▶ Certificate of Participation



Remember to click the **Certificate Icon** at the bottom of your screen to request your Certificate of Participation.

▶ **Access to the recording of today's virtual event** will be available a few hours after the webinar is completed. A link to the on-demand version will be emailed to all registered attendees.

Resource List



Click the green icon at the bottom of your screen to download a PDF version of the presentation

Welcome and thank you for being here today!



Michael Spada
IEEE Director of
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Jalyn Kelley
IEEE Client
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Agenda:

- **What's New @ IEEE:**
 - Publishing and online learning trends in the pandemic era
 - New resources for both in-person and remote learning
 - New content and publications coming soon
 - New initiatives in Open Access & Open Science
- **IEEE *Xplore* News and Update:**
 - Remote access options available for subscribers
 - Recent enhancements and sneak preview into future plans
 - Live virtual training options available from IEEE
- **Live Q&A Session**
 - Type your questions into the Q&A window. Our presenters will answer as many questions as possible



About the IEEE

- World's largest technical membership association with more than 400,000 members in over 160 countries
- Not for profit organization “Advancing Technology For Humanity”
- Core areas of activity
 - Membership organization
 - Conference organizer
 - Standards developer
 - Publisher of journals, conferences, standards, eBooks, and eLearning
- IEEE *Xplore* by the numbers:
 - Over 5 million total documents
 - More than 15 million downloads per month
 - Over 5 million unique users



A team of IEEE volunteers from the IEEE Rio de Janeiro Section repairing broken mechanical ventilators used in public hospitals to help fight the Covid-19 outbreak



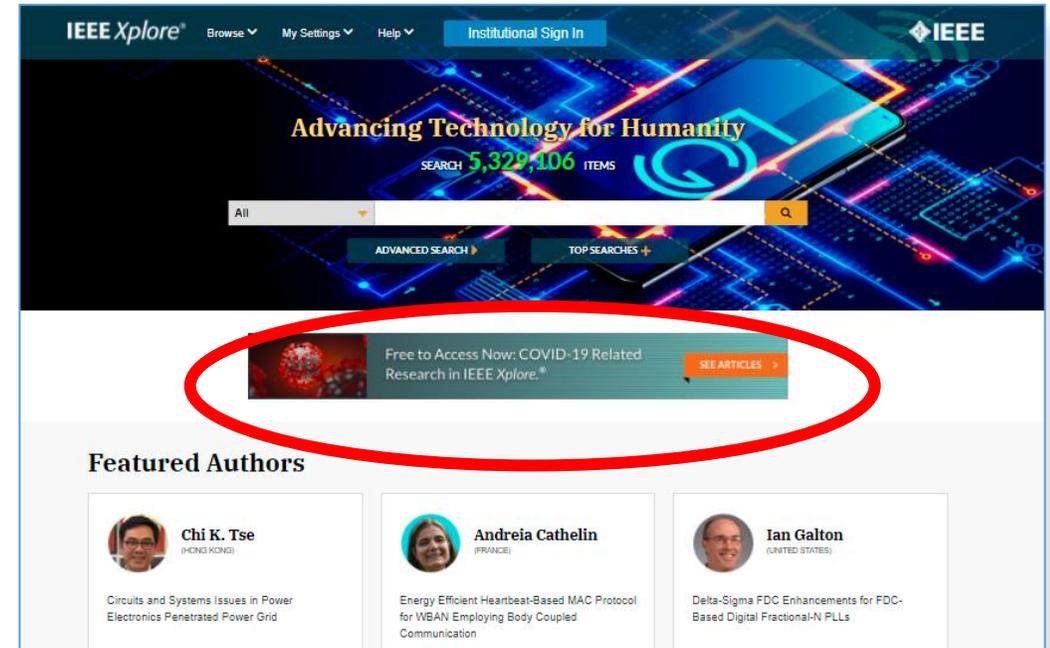
A team of 150 IEEE volunteers from Nigeria developed a robot that uses vital signals to detect, prevent and mitigate the spread of Covid-19 in hospitals.



IEEE Xplore Digital Library

The source that the top research organizations in the world rely on to fuel imagination and drive innovation

- IEEE journals, conference proceedings and standards plus select partner content dating as far back as 1884
- More than 5 million documents, 15 million downloads per month, and over 5 million unique users
- More than 1 million articles from over 200 top-cited IEEE journals, magazines, and transactions
- Over 3.6 million conference papers from as far back as 1936, with up to 200,000 added each year
- More than 4,600 approved and published IEEE standards
- eBook collections covering emerging topics in engineering, computer science, telecommunications, and more
- IEEE eLearning Library with the latest in topics such as Artificial Intelligence, 5G, Blockchain, and more!



<https://ieeexplore.ieee.org/>



RESPONDING TO TODAY'S PANDEMIC:

Covid-19 Research Now Free to Access in IEEE Xplore

- IEEE realizes that many of our IEEE Xplore users are directly or indirectly engaged in the fight against COVID-19 and its effects on global health and safety, research, infrastructure, communications, and more.
- IEEE has identified articles from the IEEE Xplore digital library that may help researchers understand and manage different aspects of the COVID-19 pandemic and technologies that can be leveraged to combat it.
- All content in this collection is now free to access for the duration of the global health crisis, with additional rights for all types of reuse, including full text and data mining, and analysis.
- Hundreds of thousands of downloads to date and growing
- IEEE has added hundreds of articles since March 2020 and continues to update the content regularly.



Our Topic Today:

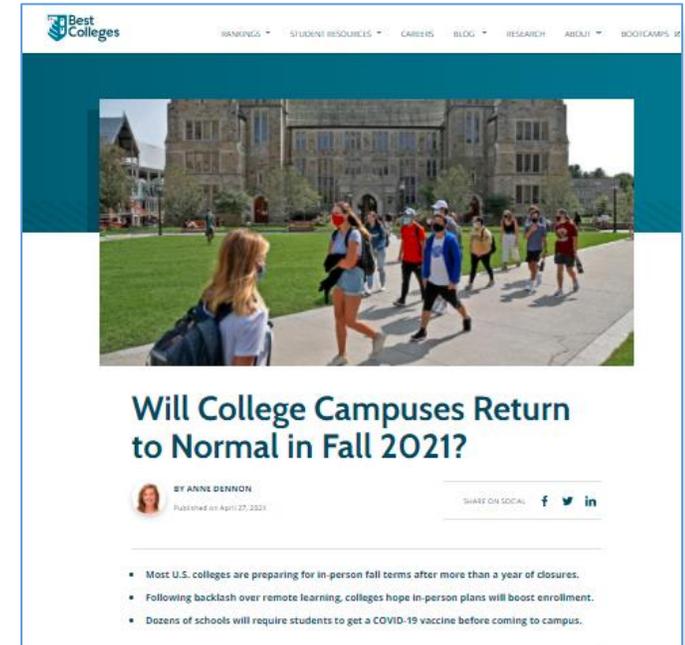


What's New @ IEEE

Helping Libraries and Educators Drive
Innovation Forward to a Brighter Future

Many Universities Projecting a "More Normal" Fall

- Most U.S. and European colleges are preparing for in-person fall terms after more than a year of closures, while many other regions are still monitoring the situation.
- “More normal” experience expected for many but with many protocols in place to protect students on campus.
- Many developing backup plans that adhere to anticipated public health guidelines in the event that community transmission rates rise with the ability to shift quickly to remote learning if needed.
- E-resources and eLearning likely to continue to play an important role going forward as institutions prepare to adapt on the fly



The Role of Online Learning Post Pandemic

Despite widely reported digital burnout issues experienced by students, students still see a role for online and hybrid courses in their post-pandemic studies.

- ▶ According to the Digital Pulse Survey by Bay View Analytics, many students and faculty members both reported that their attitudes toward online learning had improved in the past year.
 - 57% of students and 58% of faculty said they felt more positive about online learning now than before the pandemic
 - 46% of students strongly agreed that they would like to take **some** fully online courses in the future.
 - 68% indicated they would be interested in taking courses offering a **combination** of in-person and online instruction.
 - Use of digital materials and e-resources popular, with 67% indicating preference to see an increase in usage of these materials.

E-Resources (Journals, eBooks, eLearning) are likely to continue to be critical tools and supplemental resources to classroom or online instruction.

**INSIDE
HIGHER ED**

Students Want Online Learning Options Post-Pandemic

The experience of learning remotely during the pandemic left students with a positive attitude toward online and hybrid courses, a new survey suggests.

By Lindsay McKenzie // April 27, 2021



<https://www.insidehighered.com/news/2021/04/27/survey-reveals-positive-outlook-online-instruction-post-pandemic>



2020 was a year of prolific writing

E-resources were abundant in 2020 as publishing output in most research areas grew significantly new across many scientific disciplines

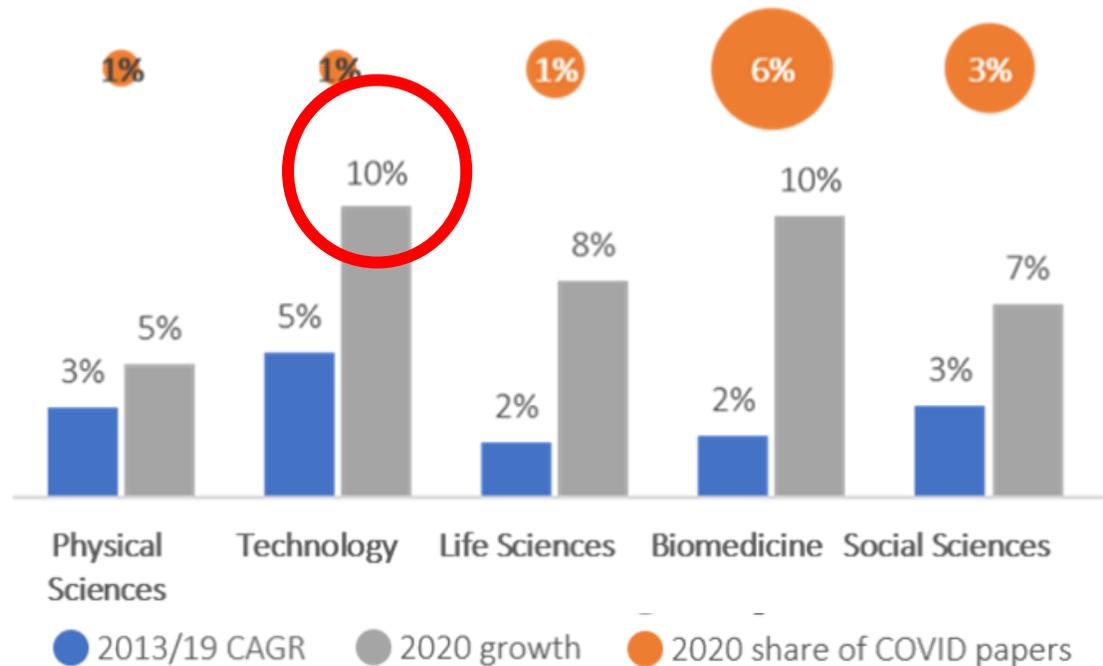


"The impact of Covid-19

This year Covid-19 has completely shifted the way research can operate, with seismic change happening almost overnight. In many parts of the world research facilities have been forced to close at least temporarily or to divert their focus to Covid-19 work, hampering progress for researchers typically based in labs, libraries or large research faculties, such as telescopes or particle accelerators.

With the possibility of conducting new research temporarily restricted, many researchers have used the opportunity to write up completed work for publication in peer-reviewed journals."

- Research Information, October 2020
<https://www.researchinformation.info/analysis-opinion/catalyst-change-virus-could-impact-research>

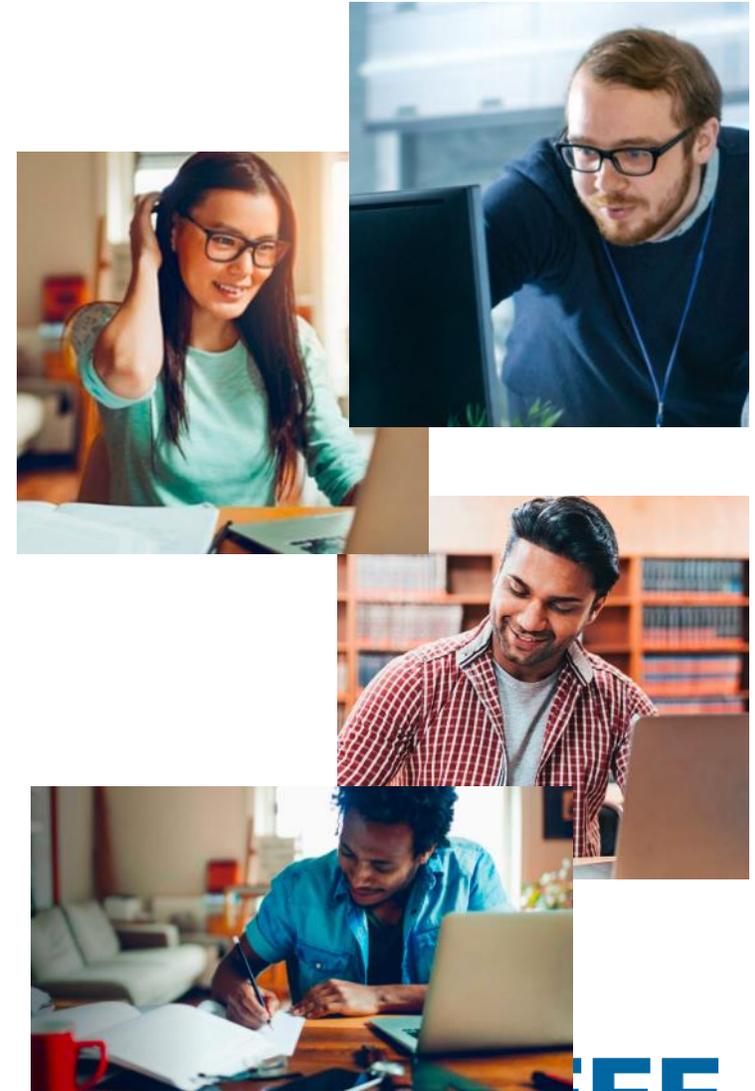


Source: Scholarly Kitchen guest post by Christos Petrou, Chief Analyst at Scholarly Intelligence
<https://scholarlykitchen.sspnet.org/2021/02/23/guest-post-scientific-output-in-the-year-of-covid-an-update/>

IEEE remains committed to fostering technology and disseminating new research

- Persisting in driving innovation forward during the pandemic, IEEE continued to help authors disseminate their research and publish new papers as submissions greatly increased.
- As a result, IEEE posted significantly more new subscription-based articles and papers to IEEE *Xplore* in 2020 than the prior year – growing by as much as 15% overall*
- Submissions continue to be strong in 2021
- IEEE on track to introduce 5 new subscription journals in 2020 and 2021 and now has more than 20 fully OA journals
- IEEE conferences continue to publish new research

* Source: Data from IEEE Meeting, Conferences and Events content reports and IEEE *Xplore* journal data queries Jan 2021, includes early access articles.



IEEE's Shift to Virtual Conferences Keeps the Research Community Connected and Publishing

The majority of IEEE conferences continued on in a new virtual format with many seeing record attendance levels and attracting papers from a global audience.

IEEE Computer Vision and Pattern Recognition

- With keynotes, sessions, workshops, and tutorials of virtual learning and discussion, the event served as a powerful forum to further the understanding, application, and advancement of computer vision, AI and machine learning on a global scale.
 - The CVPR conference was held in June 2020
 - **7,600** registrants from all over the world
 - Over **1,470** scientific papers – a 13% increase!
 - All papers presented at this conference are available in the IEEE *Xplore* digital library



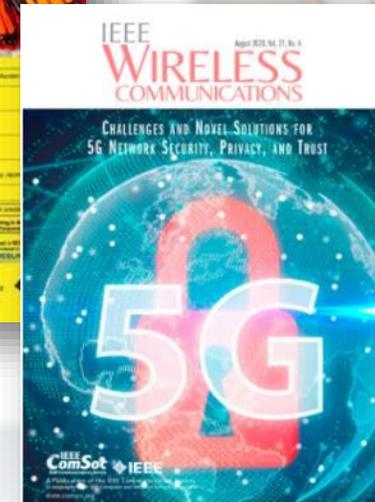
[Keynote](#): Satya Nadella, Microsoft CEO, demos the HoloLens technology used to safely treat Covid-19 patients in UK



New IEEE Content and Publications Coming Soon to IEEE *Xplore*

IEEE Publications: Stay Current with Quality, Trusted Resources

- Latest studies reinforce that the top cited publications in the world are from IEEE*
 - 27 of the top 30 journals in EE
 - 21 of the top 25 journals in Telecommunications
 - 7 of the top 10 journals in Artificial Intelligence
 - 8 of the top 10 journals in Automation and Control
 - 7 of the top 10 journals in Computer Science, Hardware and Architecture
- Cited in patents 3x more than any other publisher**
- Recent user studies demonstrate that users rely on IEEE *Xplore* to:
 - Increase productivity
 - Save time by not reinventing the wheel
 - Keep up-to-date on emerging technologies



* Based on the 2019 Clarivate Analytics Journal Citation Report study released June 2020

** Source: 1790 Analytics. More info: www.ieee.org/citations and www.ieee.org/patentcitations

Stay current with IEEE

The technology landscape is constantly evolving and so are IEEE publications.

IEEE introduces new publications to address growing areas of research that transform our lives such as IoT, Blockchain, Big Data, Machine Learning, Renewable Energy, 5G, Autonomous Vehicles, Secure Computing, Robotics, and more.

Coverage of all of these technologies can be found in current and forthcoming publications from IEEE.



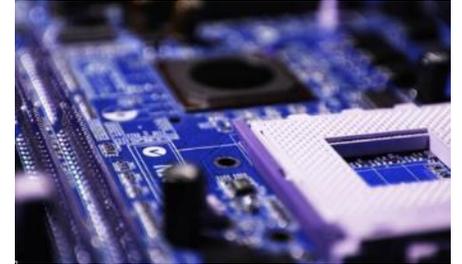
New IEEE Journal Titles for 2020 and 2021

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

- IEEE Jnl of Emerging and Selected Topics in **Industrial Electronics**
- IEEE Journal on Selected Areas in **Information Theory**
- IEEE Transactions on **Technology and Society**
- IEEE Transactions on **Artificial Intelligence**
- IEEE BITS the **Information Theory Magazine**

Coming in 2022: IEEE Transactions on **Signal and Power Integrity**

Coming in 2022: IEEE Journal on **Flexible Electronics**



*Please note this is a tentative list and is subject to change.

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 2020 covering these innovative technologies:

- IEEE Int'l Conf on Blockchain and Cryptocurrency (ICBC)
- 2020 Conf on Data Science and Machine Learning Applications
- World Symposium on Artificial Intelligence (WSAI)
- Int'l Conf on Artificial Intelligence and Big Data (ICAIBD)
- Int'l Conf on Connected and Autonomous Driving
- 2020 Global Internet of Things Summit (GloTS)
- IEEE Int'l Conf on Cyber Security and Cloud Computing
- IEEE Int'l Conf on Power Electronics, Smart Grid, and Renewable Energy
- Int'l Conf on Renewable Energies for Developing Countries
- Conf on Innovation in Clouds, Internet and Networks, and Workshops (ICIN)
- 2020 Int'l Conf on Ubiquitous Robots (UR)
- 2020 3rd Int'l Conf on Engineering: Machine Learning and Internet of Things



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

A Growing eBook Collection in IEEE *Xplore*

eBooks and distance learning

Several studies indicate that eBooks provide the following benefits for distance learners:

- Enhanced access to teaching and learning materials
- Helpful to supplement class instruction with reading lists
- Additional resource to help a student understand a concept they are struggling with
- Greater remote access capability
- Optimize reading time for students
- Portability of materials



“The potential for e-books to support distance learning has also been investigated. Shiratuddin et al. (2003) found that the use of e-books could improve access to teaching and learning materials for distance learners. A more recent study investigating the usability and usefulness of e-books in an m-learning environment indicated the following advantages for student learning: increasing access (e.g. more readings, multimedia and portable resources), enabling remote access, and optimising reading time (Lam, Lam, and McNaught 2010).”

<https://www.tandfonline.com/doi/full/10.1080/09687769.2010.548506>

eBooks in the IEEE *Xplore* Digital Library

Over 5,000 eBook titles in these premiere collections

- Top titles from leading publishers that align with the ongoing IEEE goal to provide high-quality, leading-edge content that helps empower engineers to advance technology
- Covers topics and technologies relevant for today's engineers and researchers
- Quality peer reviewed content that is approved by IEEE review board prior to being added to IEEE *Xplore*
- Premiere titles authored by experts in the field—celebrated scientists, award-winning authors, and renowned researchers, many who have strong IEEE affiliations (IEEE fellows and editors)
- DRM-free: users can print, copy and paste, and download PDFs
- Subscription and perpetual access options

IEEE-WILEY
eBOOKS LIBRARY

WILEY
TELECOM



ARTECH HOUSE
BOSTON | LONDON



River Publishers

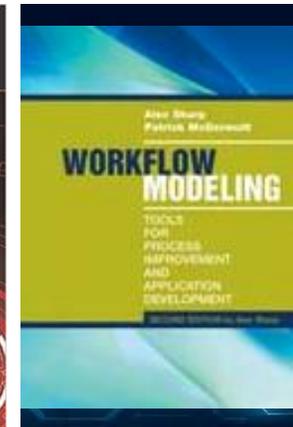
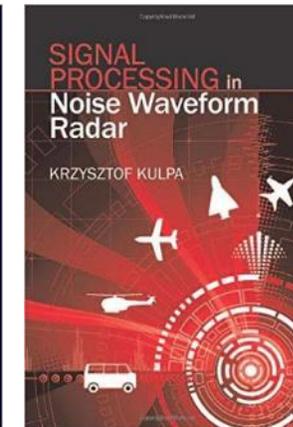
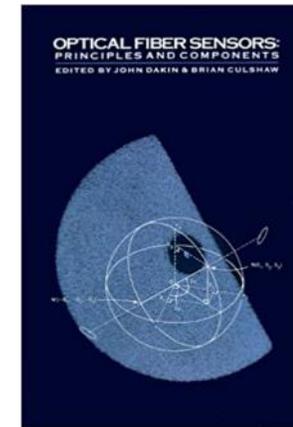
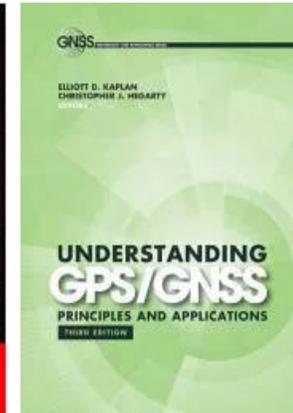
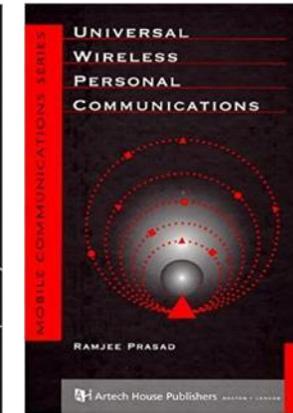
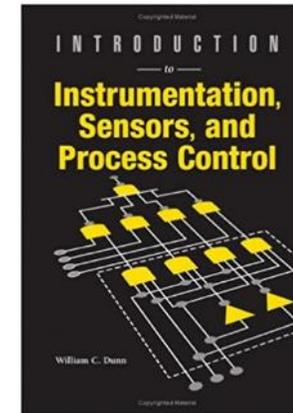


NEW

Artech House eBooks



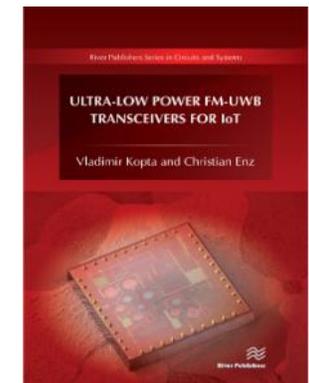
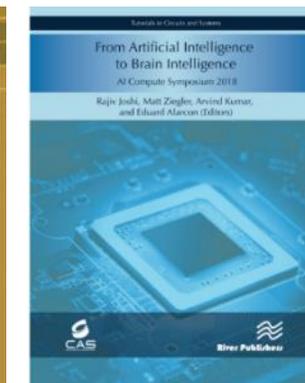
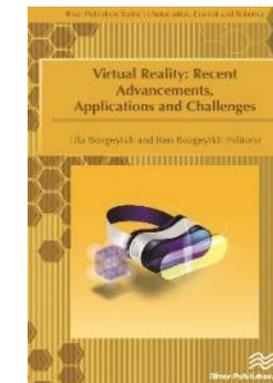
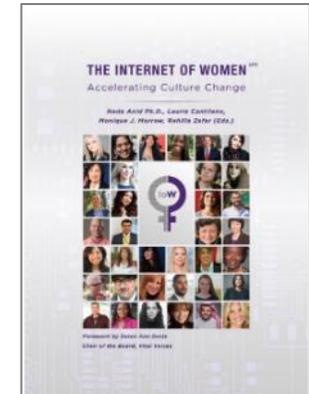
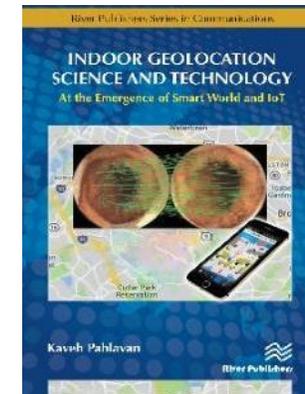
- A leading technical book publisher, subsidiary of Horizon House Publications
- Collection: Almost 700 eBooks with approximately 30-40 new titles a year
- eBook collection with practical content covers topics that are relevant to IEEE users with large concentration in Microwaves, Communication and Networking, Power Engineering, Electromagnetics, Photonics, Antennas, Information Security and more
- Focus on Titles dating back to 1999
- Average page length: 360 pages
- Approximately 85% of Artech authors have an IEEE affiliation (IEEE Fellows, Volunteers, Members, Authors)
- Examples of popular titles:
 - Understanding GPS/GNSS: Principles and Applications, Third Edition
 - Workflow Modeling: Tools for Process Improvement and Application Development, Second Edition



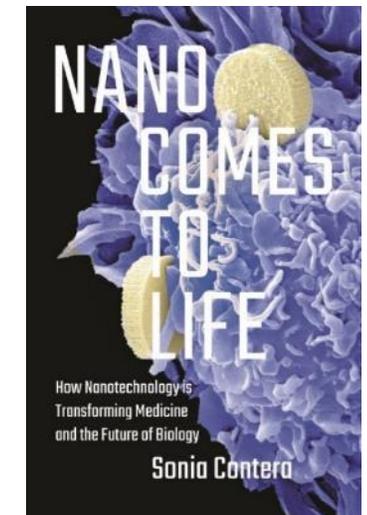
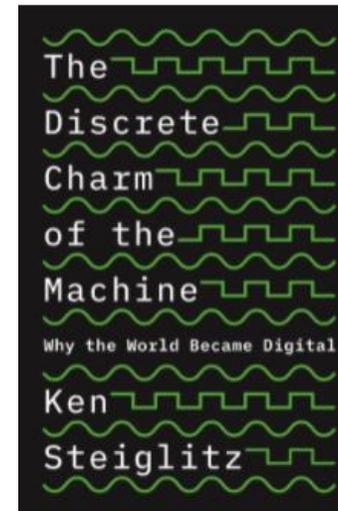
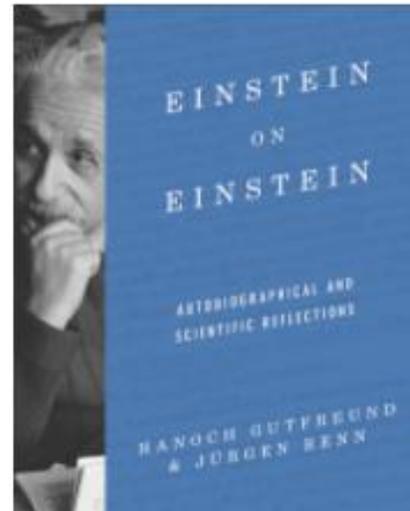
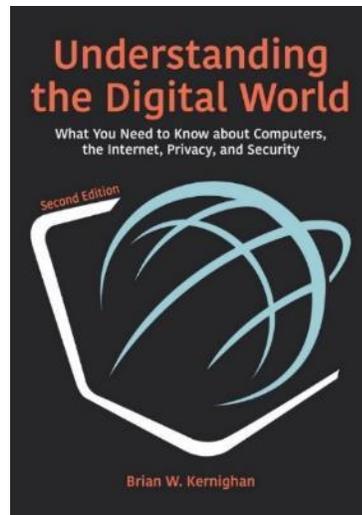
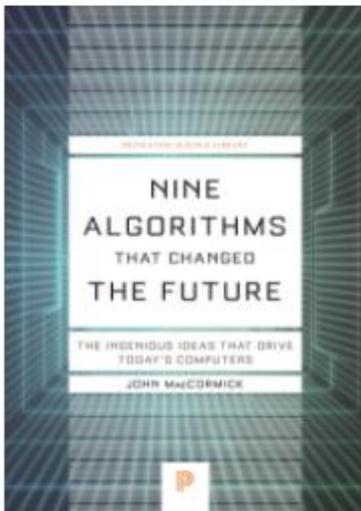
NEW

River Publishers

- River publishes research monographs and professional books with a focus on key research areas within the fields of Science and Technology
- From highly-cited researchers and Fellows of the IEEE, River Publishers' authors are respected experts
- Collection includes approximately 200 titles in all, with 160 titles from 2015–2020, plus an additional 40-50 forthcoming titles in 2021
- Offers quality content in a wide range of engineering areas such as automation, control and robotics, biomedical engineering, circuits and systems, energy management, optics and photonics, information science, security and digital forensics, and transport technology
- Books have strong theoretical and practical overview, intended for graduate level students, researchers, engineers and professionals
- Examples of some: popular titles:
 - The Internet of Women: Accelerating Culture Change
 - Ultra-Low Power FM-UWB Transceivers for IoT



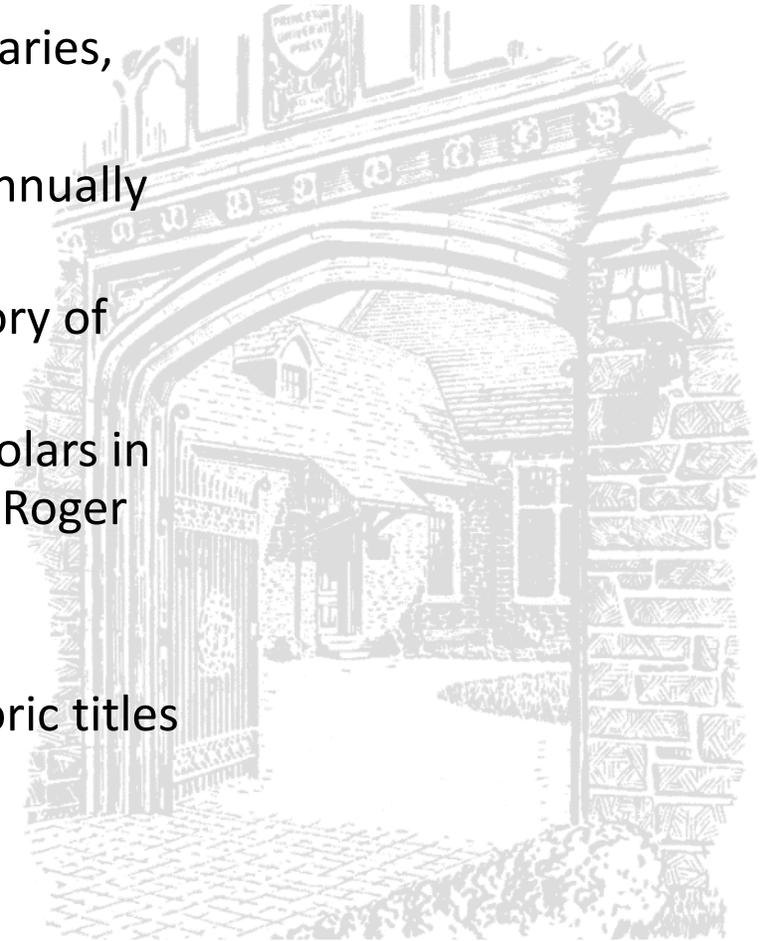
In July 2021, a new eBooks collection is coming to IEEE *Xplore*: Princeton University Press



About Princeton University Press eBooks Library



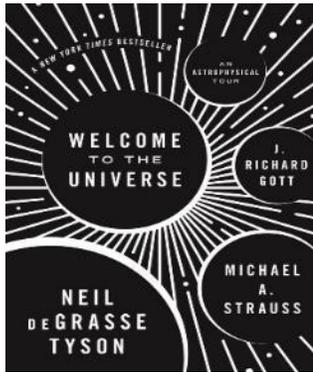
- Collection brings together PUP's scientific and technical content for libraries, drawing from some of the world's leading scholars.
- Includes approximately 300 titles in all, with as many as 30 new titles annually
- Specially curated list of eBooks covering computer science, electrical engineering, mathematics, physics and astronomy, education, and history of science and knowledge
- Princeton University Press authors are some of the most influential scholars in their fields including many prestigious authors such as: Albert Einstein, Roger Penrose, Neil deGrasse Tyson, and John Nash
- Includes several Nobel Prize Winning Authors
- Also includes titles from the Princeton Legacy Library – important, historic titles that remain popular today
- Titles date back to 1945
- Collection will be added to IEEE *Xplore* in July 2021



Popular Titles in the Princeton University Press Collection

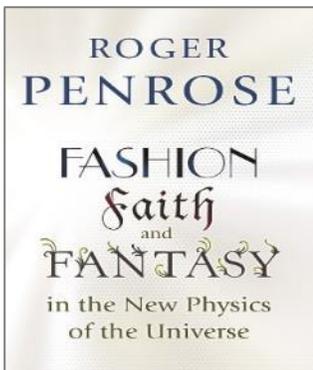


PRINCETON
UNIVERSITY
PRESS



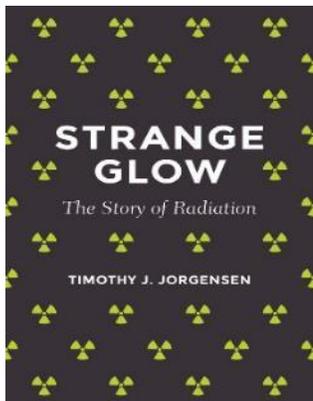
Welcome to the Universe

- Authored by Neil deGrasse Tyson, awarded the U.S. National Academy of Sciences' Public Welfare Medal in 2015
- A New York Times Bestseller
- One of Forbes' 10 Best Popular Science Books of 2016



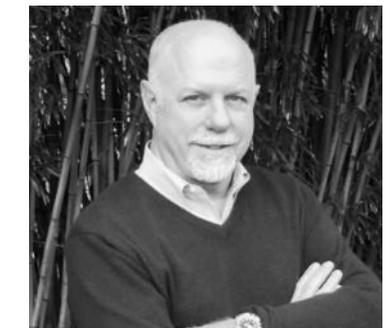
Fashion, Faith, and Fantasy in the New Physics of the Universe

- Authored by Roger Penrose, 2020 Nobel Prize–winning physicist, Emeritus Rouse Ball Professor of Mathematics at the University of Oxford
- Questions some of the most fashionable ideas in physics today
- Winner of the 2017 PROSE Award in Chemistry & Physics



Strange Glow

- Authored by Timothy Jorgensen, Director of the Health Physics and Radiation Protection Program at Georgetown University
- 2017 PROSE Award Winner in History of Science, Medicine & Technology
- Winner of the 2017 AIP Science Writing Award for Books



Leveraging eLearning to Support Distance Learning

IEEE eLearning Library: Peer-Reviewed Online Library Resource

- Hundreds of courses developed by leading experts from around the world
- Entire library of online courses are peer reviewed
- Helps meet ABET accreditation requirements
- Online courses can be accessed from anywhere in the world via following options:
 - IEEE *Xplore* Digital Library
 - IEEE Learning Network (ILN)
 - Load files into your organization's LMS
- Content that can support and supplement an engineering and career development curriculum

The screenshot displays the IEEE Xplore Digital Library website. At the top, there is a navigation bar with the IEEE logo and a sign-in option. Below this is a search bar and a 'Browse' dropdown menu. The main content area features a banner for 'IEEE Courses' with the text 'Take your skills to the next level.' and a button for 'All Subscribed Courses'. Below the banner, there is a section for 'Course Programs' with a grid of course tiles. Each tile includes a title and a 'New!' badge. The tiles are: 'Artificial Intelligence and Ethics in Design', 'Artificial Intelligence and Ethics in Design: Responsible Innovation', 'IEEE Introduction to Edge Computing', 'Grid Modernization in the 21st Century', 'IEEE Fundamentals of Autonomous Vehicle Technology', 'EMPT (Society of Motion Picture & Television Engineers)', 'Introduction to Blockchain Technology', 'Cyber Security Tools for Today's Environment', 'Internet of Things', and 'National Electrical Safety Code'. Below the course programs, there is a 'Categories' section with a grid of category tiles. Each tile includes an icon and a category name: 'Aerospace', 'Bioengineering', 'Communication, Networking & Broadcasting', 'Components, Circuits, Devices & Systems', 'Computing & Processing', 'Engineering Profession', 'English for Engineering', 'Fields, Waves & Electromagnetics', 'Free Tutorials', 'General Topics for Engineers', 'Photonics & Electro-Optics', and 'Power, Energy, & Industry Applications'.

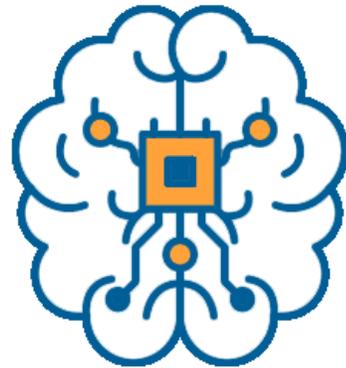
Newest Course Programs Available Today



Machine Learning:
Predictive Analysis for
Business Decisions

Partner:
*IEEE Computational
Intelligence Society*

Released Q1 2021



AI Standards:
Roadmap for Ethical
and Responsible Digital
Environments

Partner:
IEEE Standards Association

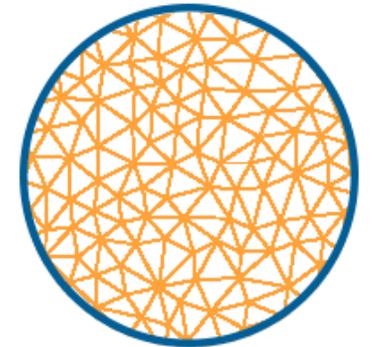
Released Q4 2020



Automotive Cyber
Security: Protecting the
Vehicular Network

Partner:
IEEE Computer Society

Released Q2 2020



Finite Element
Method for Photonics

Partner:
IEEE Photonics Society

Released Q1 2020

2021 eLearning Front List



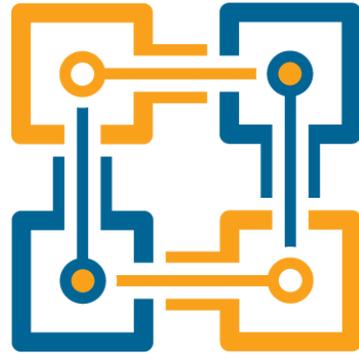
5G Deployment

Partner:

IEEE Future Networks Initiative

Live Sessions:

Q1, Q2, Q3 2021



Designing Blockchain Solutions

Partner:

IEEE Blockchain Initiative

Planned Release:

Q2 2021



Practical Applications of AR/VR Technology

Partner:

IEEE Digital Reality Initiative

Planned Release:

Q3 2021



IEEE Standards for Aerospace and Defense

Partner:

IEEE Standards Association

Planned Release:

Q4 2021

ISACA Cybersecurity Nexus Platform (CSX)

▶ Cyber Security Risk Affects Organizations Worldwide

- Shortage of available, trained cybersecurity experts for hire
- Companies need in-house experience handling real-life security breaches

▶ ISACA CSX helps companies develop in-house talent

- On-demand, cloud-based, hands-on cyber security training and assessment platform
- 200+ hours of integrated learning organized by job function
- Learners tackle complex cyber security scenarios based on recent, real-world scenarios and are given live incidents to detect and mitigate
- Self-paced learning environment with administrative dashboard for monitoring
- Updated regularly with the latest threats
- Successful completion helps prepare learners for the ISACA CSX Practitioner cyber security certification exam



About ISACA

ISACA is an independent, not-for-profit global association of 140,000 professionals. ISACA is an advocate for professionals involved in information security, assurance, risk management and governance.



IEEE | IAPP Data Privacy Engineering Collection

- ▶ **Organizations Need to Approach Data Protection in New Ways**
 - New regulations are rolling out in many parts of the world
 - Data breaches and violations impact customer trust; can result in fines
- ▶ **IEEE | IAPP Data Privacy Engineering Collection prepares professionals who protect organizational data**
 - Portfolio of training and draft standards for technology professionals tasked with understanding, maintaining, and protecting data privacy
 - Users that complete the training can take the Certified Information Privacy Technologist (CIPT) certification exam

About IAPP: The International Association of Privacy Professionals (IAPP) is a not-for-profit association with a mission to define, support and improve the privacy profession globally. It is the world's largest and most comprehensive global information privacy community.

Collection Includes:
7 IAPP courses
15 IEEE courses
25 IEEE draft standards
Voucher for
CIPT certification exam

For Groups of 10+

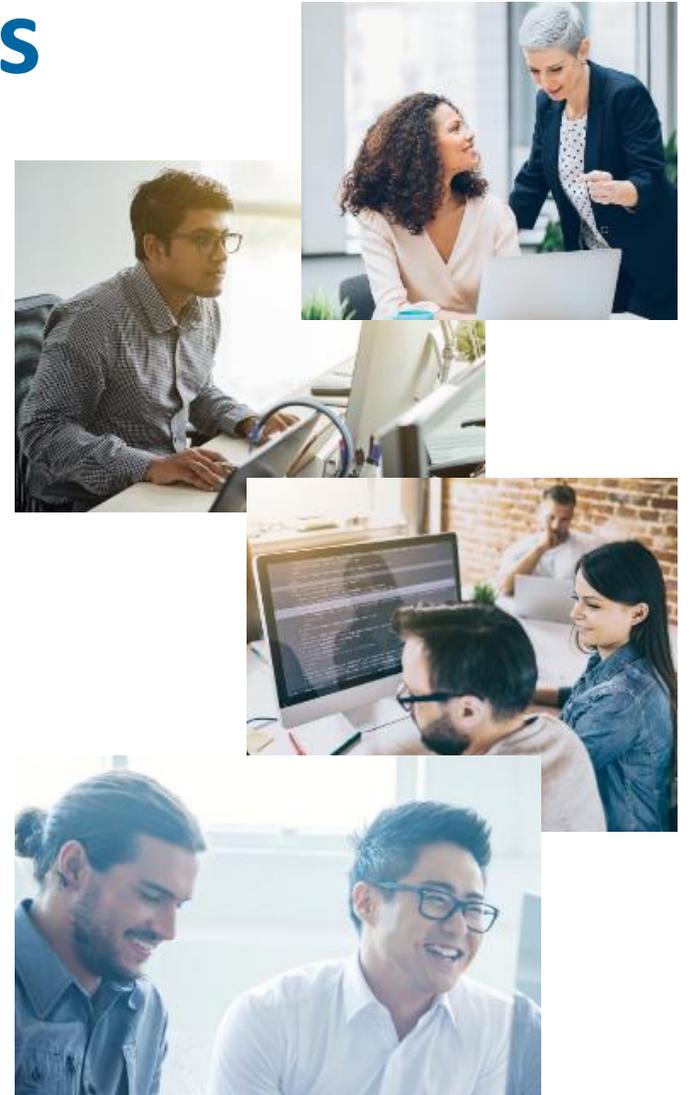
Hosted on



IEEE's Evolving Open Access Program

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.
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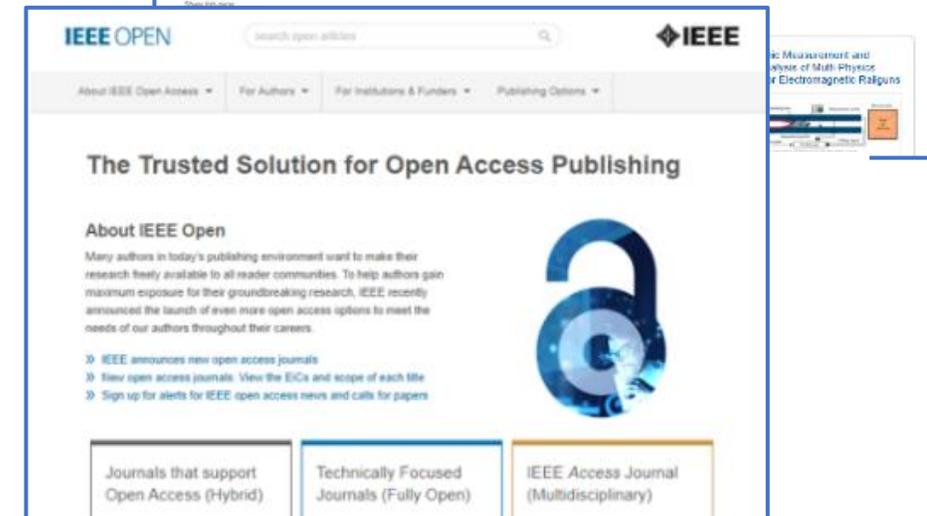
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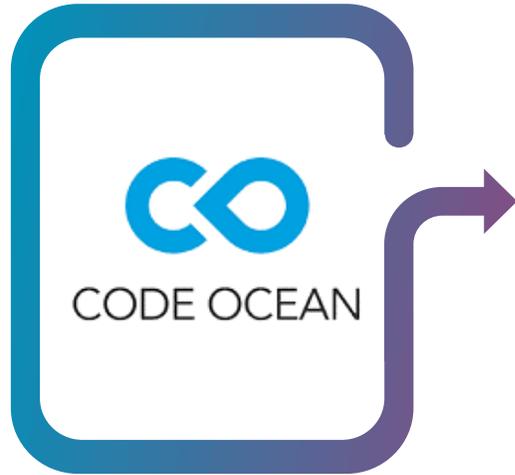
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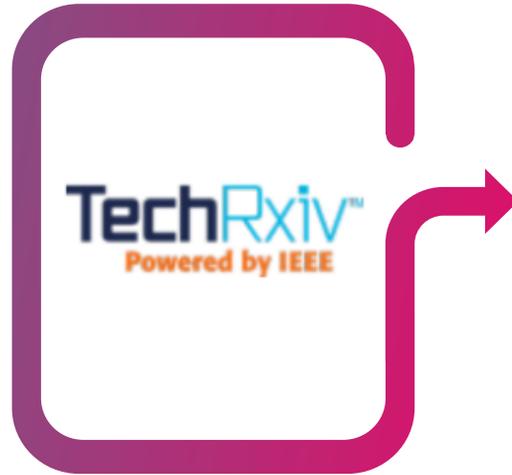
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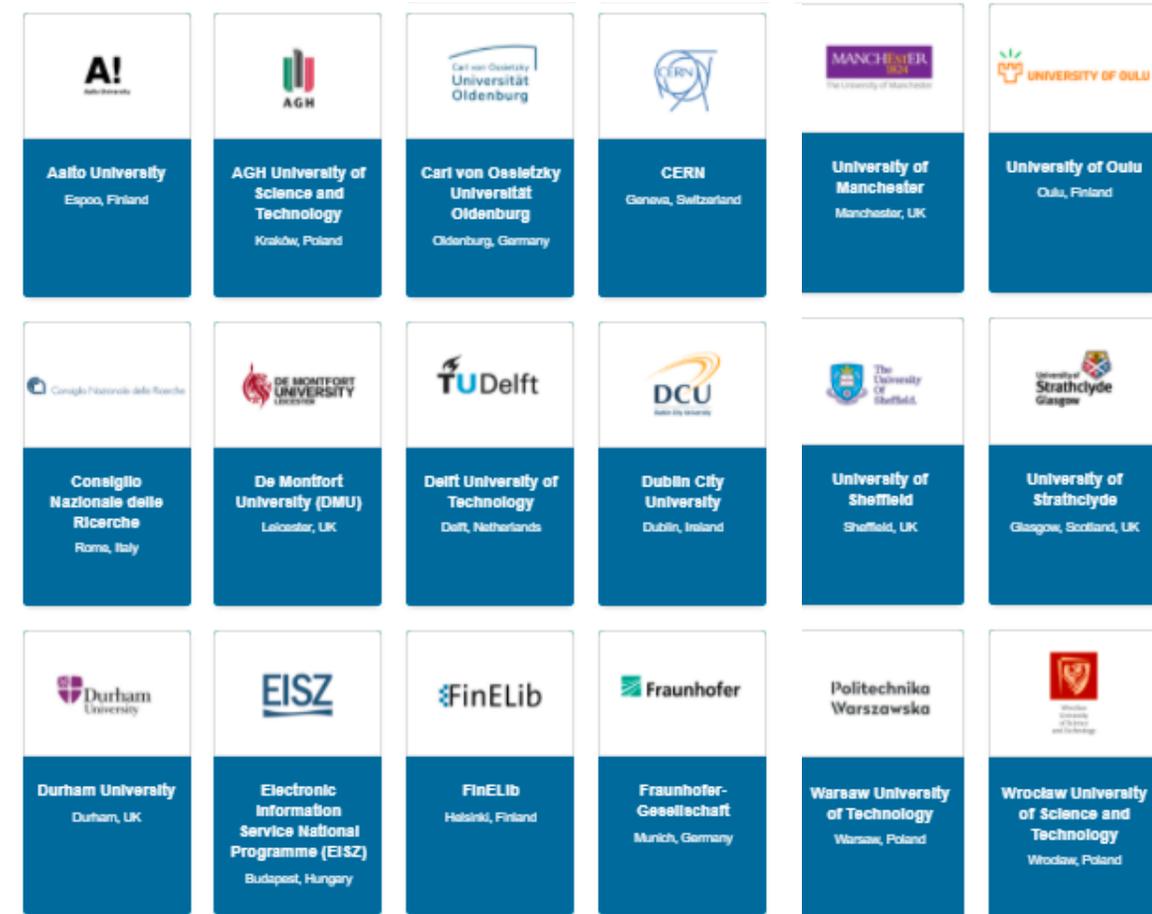
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William Mischo, Head of Grainger Eng.. Library Information Ctr

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Tullio Basaglia, CERN Library section leader

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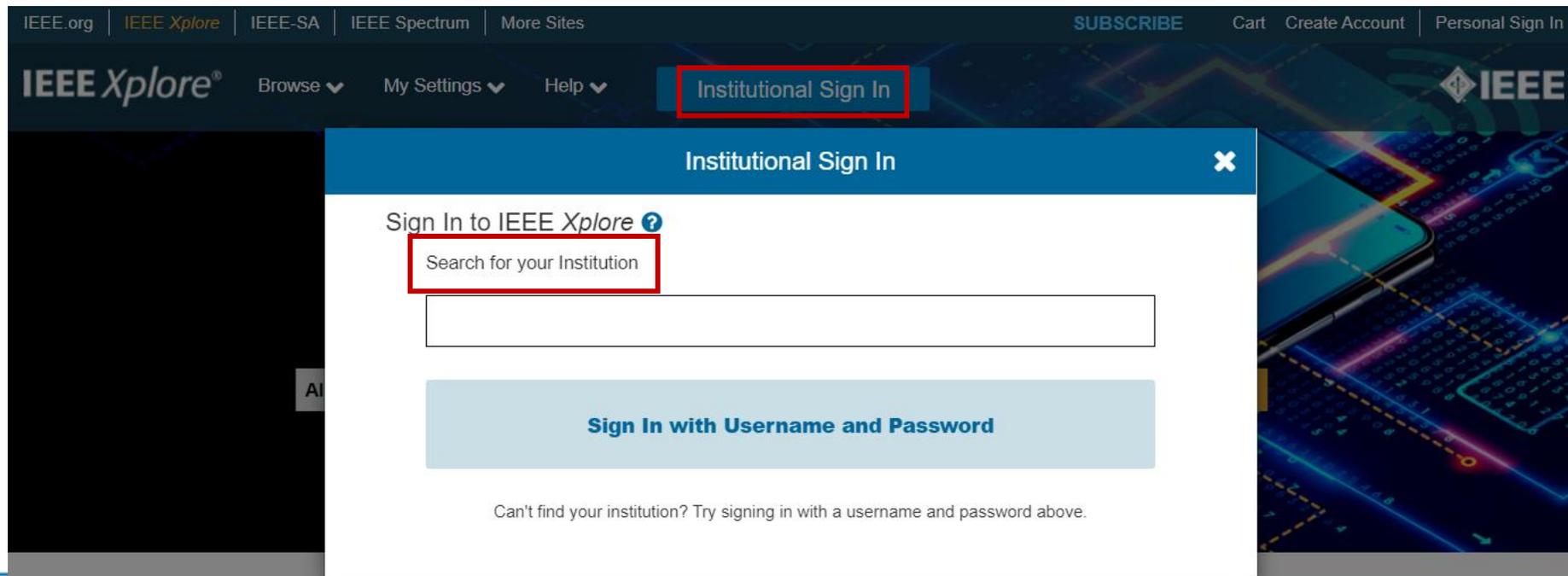
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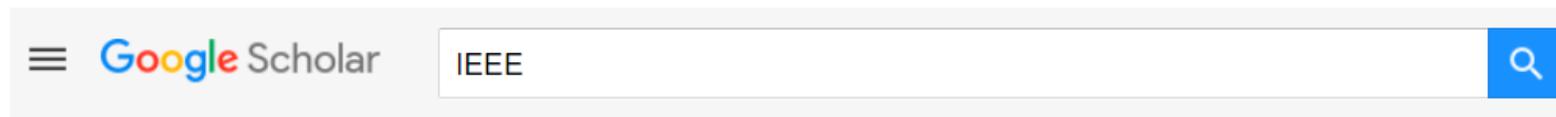
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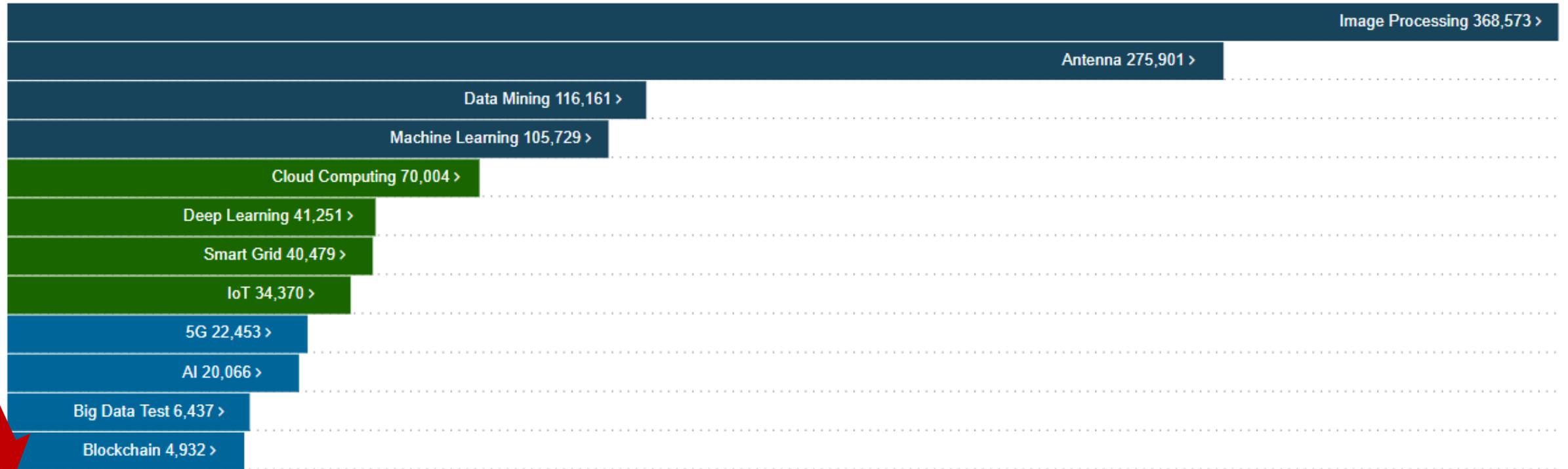
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4. Internet of Things

5. Antenna

6. Cloud Computing

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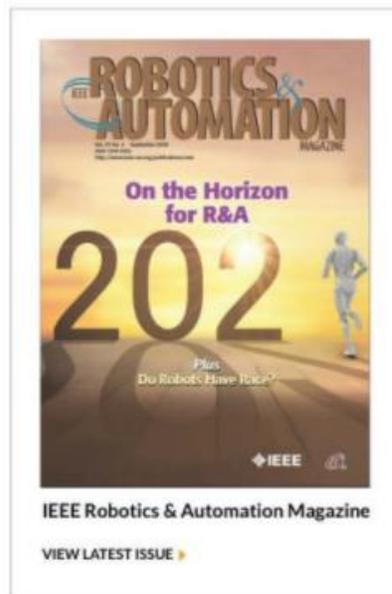
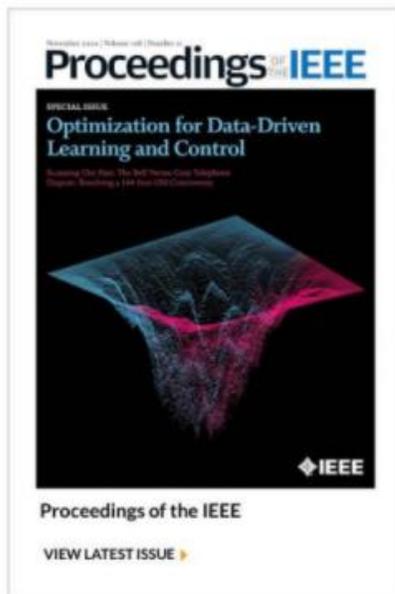


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<input type="checkbox"/> 95	("fault detect*" OR "fault diagnos*") AND bearing AND "wind turbine**"	129	May 27, 2021, 1:38:35 PM		✕
<input type="checkbox"/> 94	("All Metadata":AI OR "All Metadata":artificial intelligence") AND ("All Metadata":ethic*)	697	May 21, 2021, 10:20:03 AM		✕
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II. Flight Controller Design

III. Onboard State Estimation

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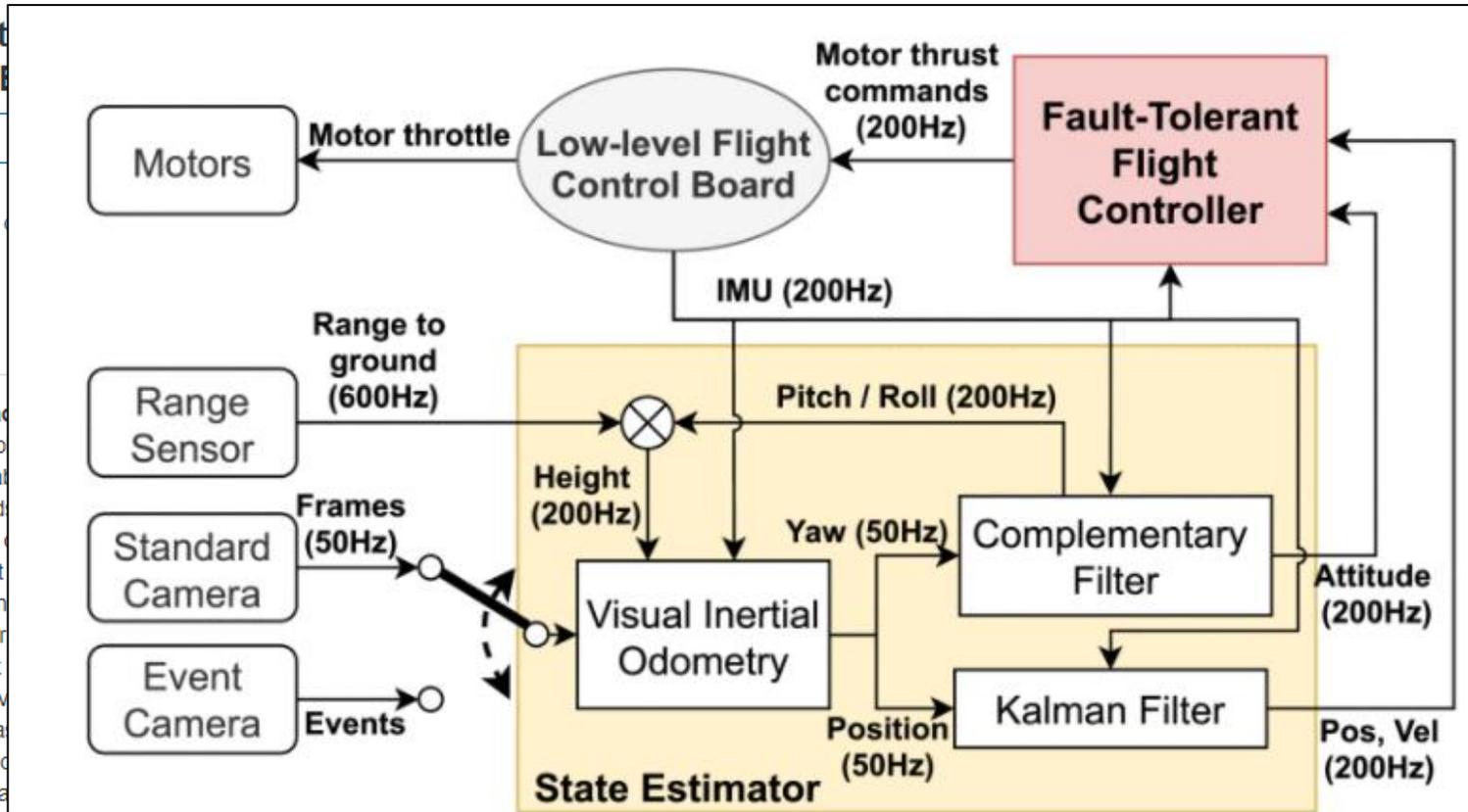
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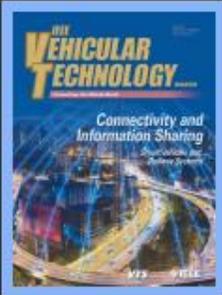
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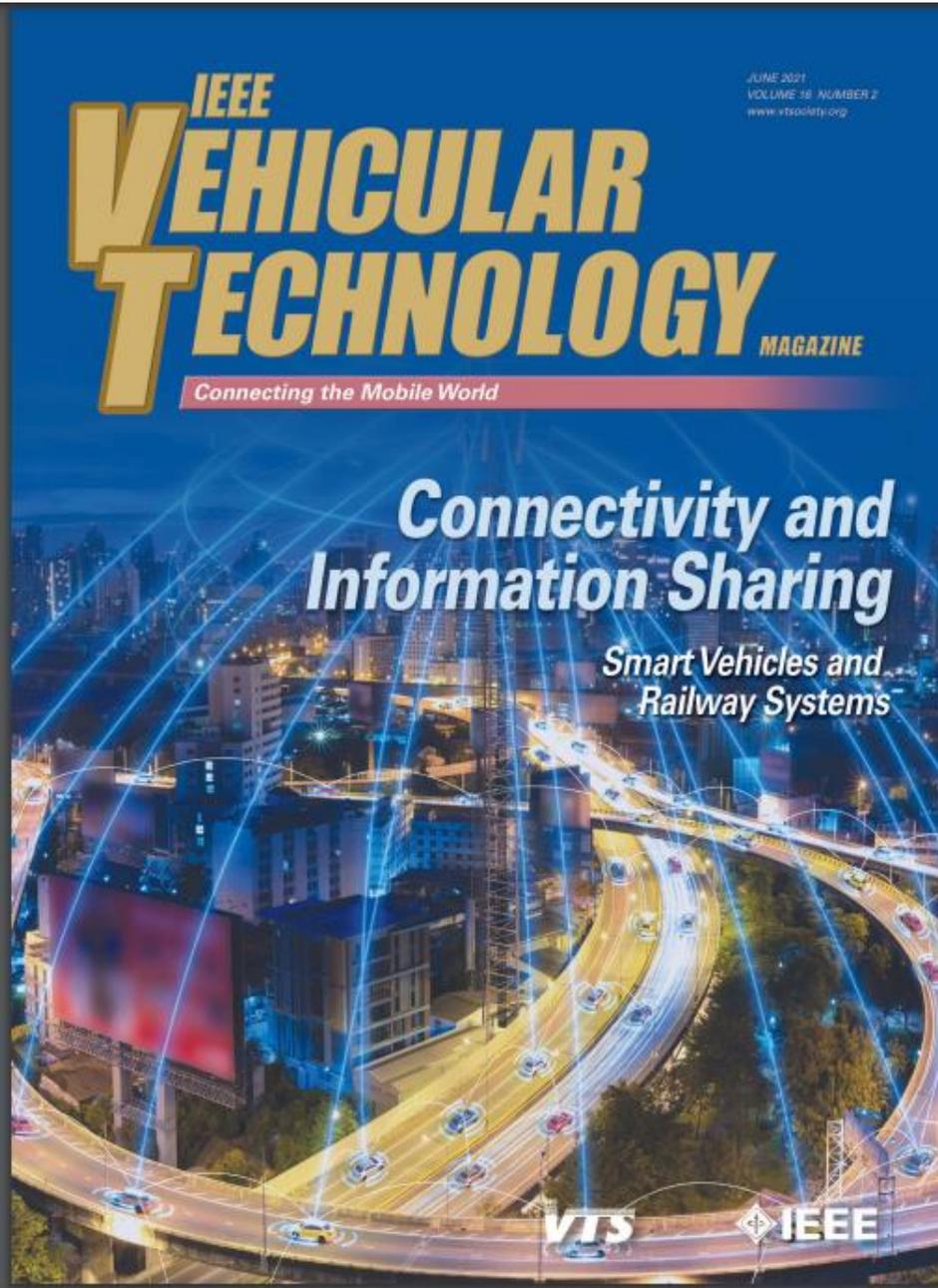
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  title={Deepdive: Using AI, Machine Learning, and Virtual Reality to Explore Ancient Submerged Civilizations},
  year={2020},
  volume={},
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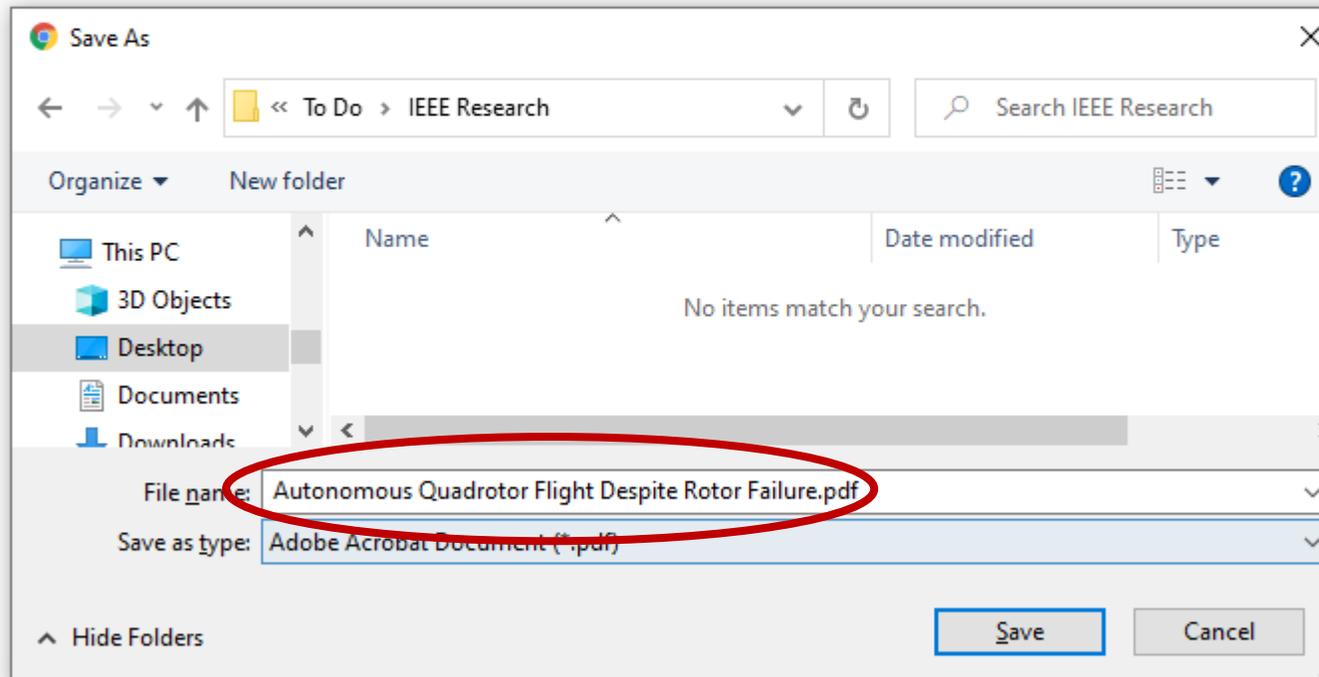
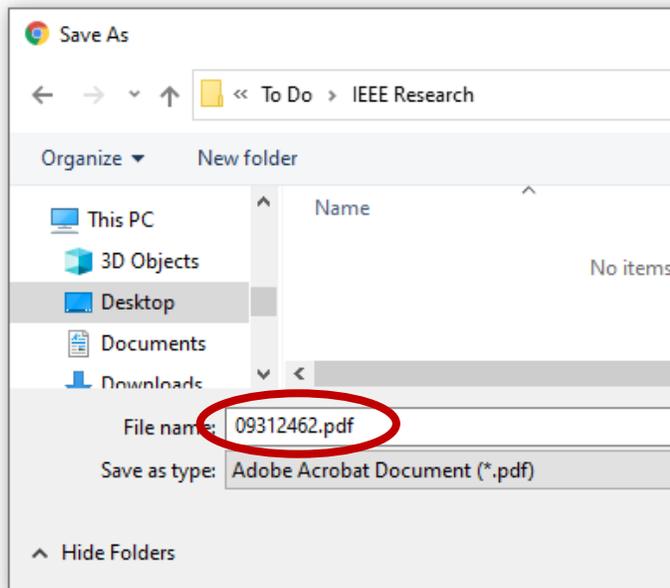
IEEE ROBOTICS AND AUTOMATION LETTERS, VOL. 6, NO. 2, APRIL 2021

Autonomous Quadrotor Flight With Onboard Vision Sensors

Sihao Sun¹, Giovanni Cioffi, Coen de Visser

Autonomous Quadrotor Flight Despite Rotor Failure With Onboard Vision Sensors: Frames vs. Events

Sihao Sun¹, Giovanni Cioffi, Coen de Visser, and Davide Scaramuzza¹



experiments is available at: <https://youtu.be/Ww8u0KH7Ugs>.

Index Terms—Aerial systems; perception and autonomy, robot safety, sensor-based control, event camera.

rotation,
events c
motion |
events).
detected

experiments is available at: <https://youtu.be/Ww8u0KH7Ugs>.

Index Terms—Aerial systems; perception and autonomy, robot safety, sensor-based control, event camera.

rotation, over 20 rd/s (top figure). Bottom figures show a standard frame and events captured by an onboard event camera. **Bottom Left:** standard frame with motion blur. **Bottom Center:** Events only (blue: positive events, red: negative events). **Bottom Right:** Event frame generated from events. Blue circles are detected features, green dots indicate tracked features.

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AND	Search Term illness OR disease	in	All Metadata	↑	×	
AND	Search Term biosensors	in	All Metadata	↑	×	+

Showing 1-25 of 912 for
("All Metadata":detect* OR "All Metadata":diagnos*) AND ("All Metadata":illness OR "All Metadata":disease) AND ("All Metadata":biosensors) x

Advanced Search Enhancements

2020-2021

Increased maximum number of wildcards per search to 7 (with more to come!)

Increased maximum number of search terms to 20 per search clause (consecutive search terms not separated by a Boolean operator)

Advanced Search ?

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Use the drop down lists to choose Data Fields and Operators. [Learn how to use Boolean expressions in Command Search.](#)

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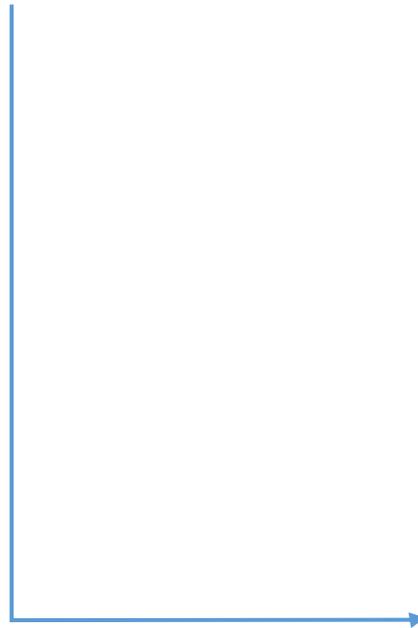
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2015 Symposium on VLSI Circuits (VLSI Circuits)
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▶ Abstract  (366 Kb) 

Wearable System Design using Intrinsically Stretchable Temperature Sensor 
Chenxin Zhu; Elizabeth Schell; Min-gu Kim; Zhenan Bao; Boris Murmann
2020 IEEE International Symposium on Circuits and Systems (ISCAS)
Year: 2020 | Conference Paper | Publisher: IEEE

▶ Abstract   (738 Kb)  

Circuits evening panel discussion 1: Is university circuit design research and education keeping up with industry needs? 
P. Yue; B. Sheu; A. Matsuzawa; K. Asada; L. Loh; K. Makinwa; S. Borkar; V. Stojanovic
2015 Symposium on VLSI Circuits (VLSI Circuits)
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Abstract

Abstract:

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This paper explores system integration aspects for stretchable electronics. We consider a prototypical wearable device that combines (1) a conformal and stretchable transducer patch, (2) high-fidelity readout electronics based on rigid CMOS integrated circuits (ICs), and (3) flexible and stretchable interconnects. The temperature sensing element is based on organic thin-film transistors operating in the sub-microampere regime. We show how to integrate the sensing element with the readout electronics. Furthermore, we present an interconnect solution that can be used to aid the development of similar devices.

The screenshot shows a video player interface. The main content is a presentation slide with the following text:

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- ¹Department of Electrical Engineering, Stanford University,
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Stretchable Temperature Sensor



ing Intrinsically
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Image Search

Exploration Stage

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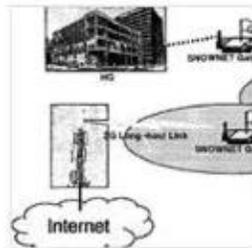
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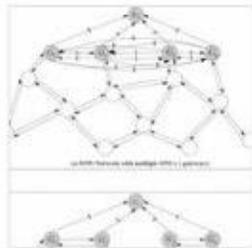
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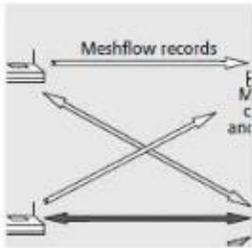
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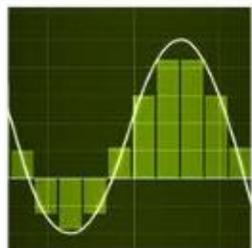
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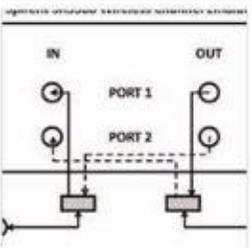
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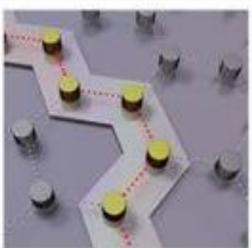
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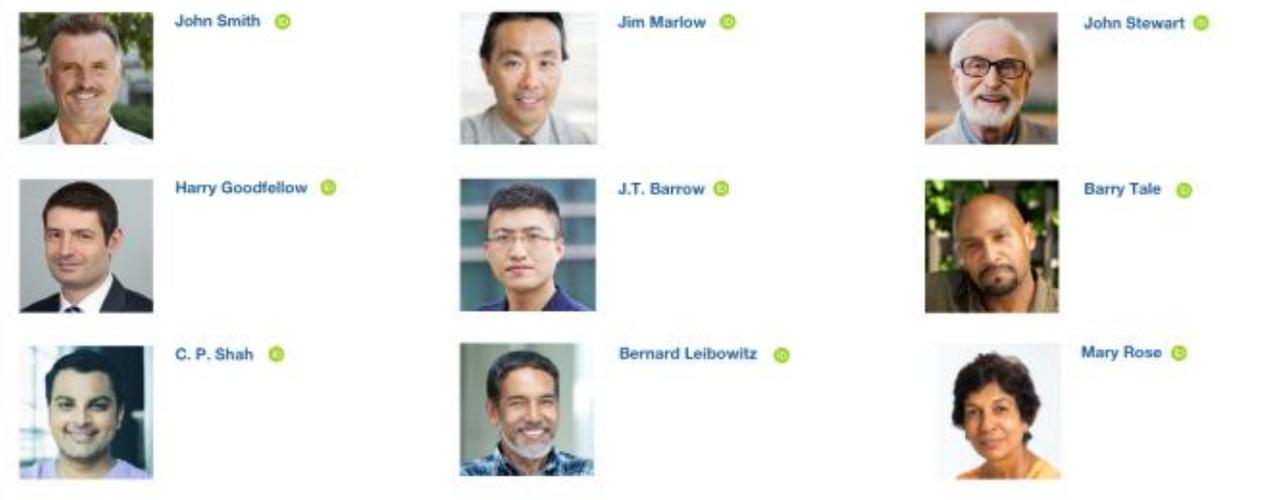


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Authors



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IEEE Transactions on Dependable and Secure Computing
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Data Visualization – Document Detail Pages

Design Stage

I. Introduction

Several milestones in the achievable data throughput in single mode optical fibres (SMF) [1]–[10] have been reported over the past few years. Fig. 1 shows these record results demonstrated using a range of different amplification techniques. These include distributed Raman amplification, erbium doped fibre amplifiers (EDFA), semiconductor optical amplifiers (SOA), and combinations thereof. Aside from [7], where a capacity of 74 Tbit/s over 6300 km was achieved using a hybrid distributed Raman/EDFA (HRE) amplification scheme, all trans-Atlantic (>6000 km) and trans-Pacific (>9000 km) record data rates to date have been reached by using C+L band EDFAs [10]. Despite HRE schemes having a lower noise figure compared with EDFAs, this amplification technology is not as power efficient as EDFA systems, which makes it less attractive for long-haul submarine systems that are electrical power feed constrained. In these long-distance transmission systems, advanced coded modulation schemes and nonlinearity compensation algorithms were used to increase both the throughput and reach. In contrast, record capacities over 100 Tbit/s have mainly used amplification technologies that extend beyond C+L bands EDFAs. In [2], an SOA with a 100 nm gain bandwidth demonstrated the potential for an SMF capacity of 115.9 Tbit/s over a 100 km transmission distance. The relatively high noise figure of SOAs versus, for example, EDFAs means they are generally considered unsuitable for repeated transmission systems. Nevertheless, by combining an SOA with distributed backward Raman amplification, 107 Tbit/s transmission over 300 km (3×100 km) was reported in [4]. A yet greater data rate of 120 Tbit/s over 630 km (9×70 km) was shown by using hybrid distributed Raman-EDFA amplifiers with a continuous 91 nm gain bandwidth [5].

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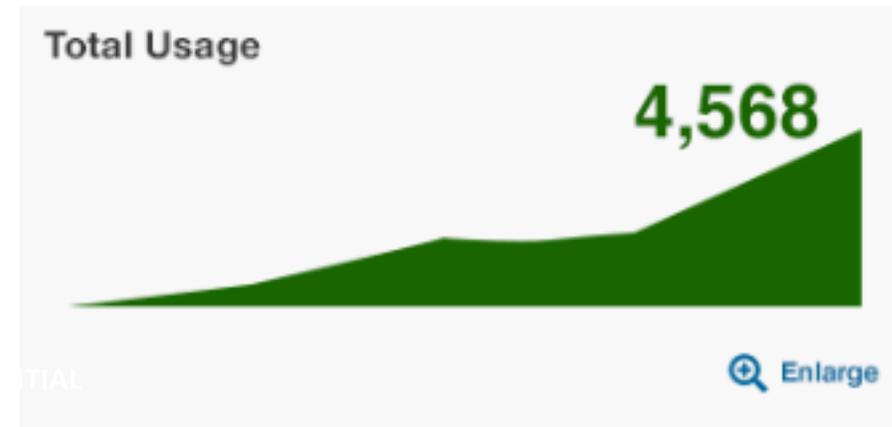
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