How to write a technical paper for the IEEE?

Lukács Eszter

Client Services Manager Europe

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- World's largest technical membership association with more than 430,000 members in over 160 countries
- Not for profit organization "Advancing Technology For Humanity"
- Four Core areas of activity
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  - Conferences organizer
  - Standards developer
  - Publisher of journals, conferences, standards, ebooks and elearning
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  - Nearly 4 million total documents
  - Over 3 million unique users
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  - 15 year anniversary in 2015!

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- More than **2800 IEEE standards** (active, archived. redlines) + **IEEE Standard Dictionary**
- 20 **IET conferences**, 26 **IET journals & magazines**
- **Bell Labs Technical Journal** (BLTJ) back to 1922
- Backfile to 1988, select legacy data back to 1872
- Inspec index records for all articles

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Based on the 2015 study released June 2016

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- **# 1** in Telecommunications
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Based on the 2015 study released June 2016

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IEEE and Patents

IEEE research powers new patents

1790 ANALYTICS

Analysis of Patent Referencing to IEEE Papers, Conferences, and Standards 1997-2014

Report prepared for:

Institute of Electrical and Electronic Engineers
445 Hoes Lane
Piscataway, NJ 08855, USA

Report prepared by:

1790 Analytics LLC
130 Haddon Avenue
Haddonfield, NJ 08033
www.1790analytics.com

May 14, 2015

A study of the top 40 patenting organizations ranks IEEE #1 again

- Over three times more citations than any other publisher
- **Patent referencing to IEEE increased 896%** since 1997
- The importance of sci-tech literature in patents is rising
- IEEE research is increasingly valuable to innovators

1790 Analytics LLC performed an in-depth analysis of the science references from top patenting firms.

Source: 1790 Analytics LLC 2015

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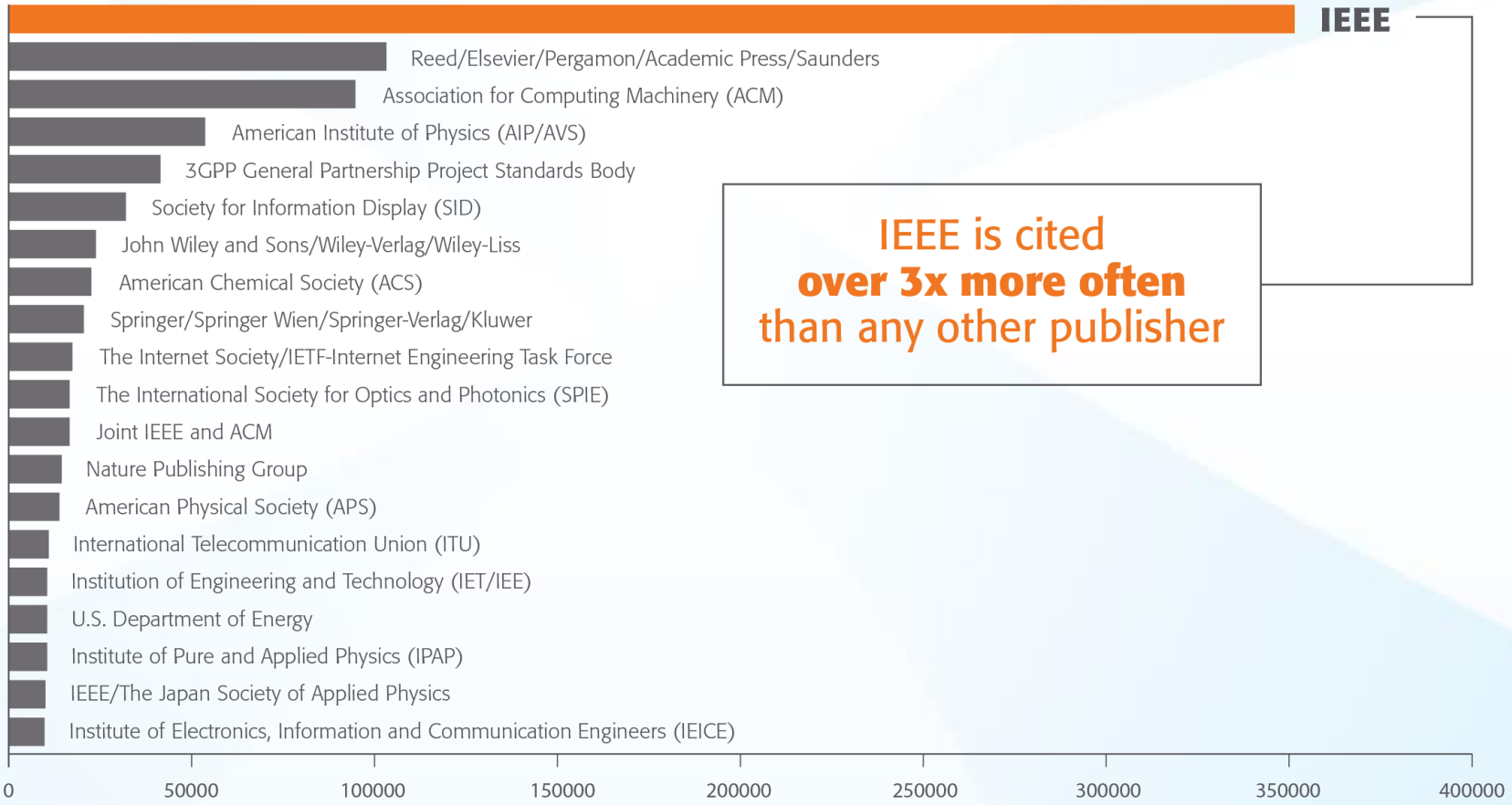
IEEE Leads US Patent Citations

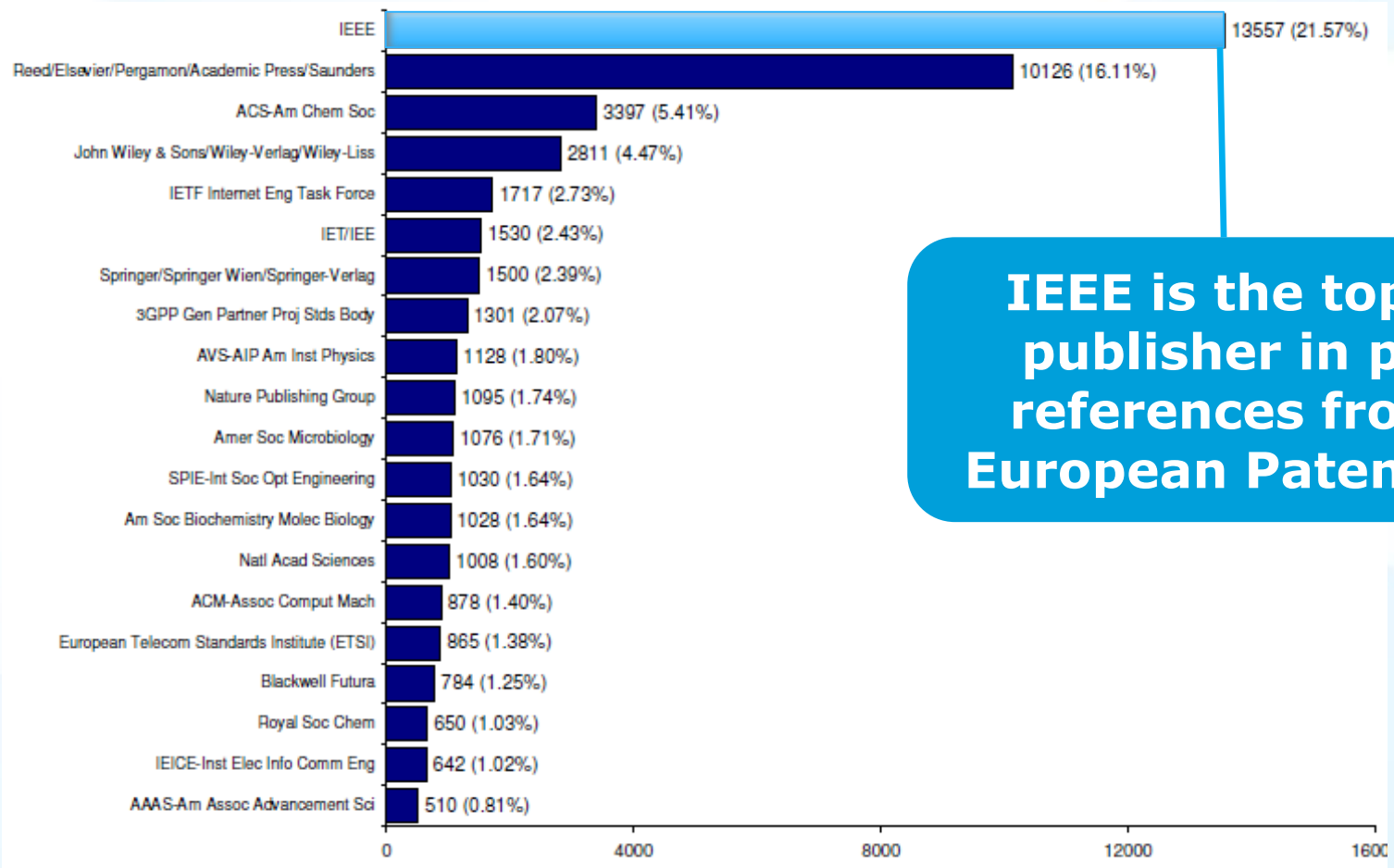
Top 20 Publishers Referenced Most Frequently by Top 40 Patenting Organizations



Source: 1790 Analytics LLC 2015. Based on number of references to papers/standards/conferences from 1997-2014

IEEE Leads European Patent Citations

Top 20 Publishers Referenced Most Frequently by Top 25 Patenting Organizations



IEEE is the top cited publisher in patent references from the European Patent Office

Source: 1790 Analytics LLC 2012, , Science References from 1997-2011

IEEE

Technology areas where patents cite IEEE most

Battery	Computer hardware	Computer software
Information storage	Measuring, testing, and control	Medical devices
Nuclear and X-ray	Optics	Power systems
Robotics	Semiconductors	Smart Grid
Solar/Photovoltaic	Telecommunications	Wind Energy

Source: 1790 Analytics LLC 2015

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- IEEE Signal Processing Society
- IEEE Society on Social Implications of Technology
- IEEE Solid-State Circuits Society
- IEEE Systems, Man, and Cybernetics Society
- IEEE Technology and Engineering Management Society NEW in 2015
- IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society
- IEEE Vehicular Technology Society

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IEEE covers all areas of technology

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- Examples of IEEE publications:
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  - **IEEE Trans. on Neural Systems and Rehabilitation Engineering**
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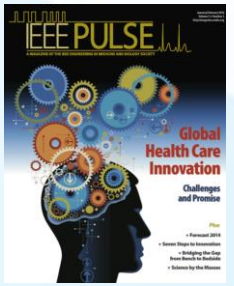

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- Examples of IEEE publications:
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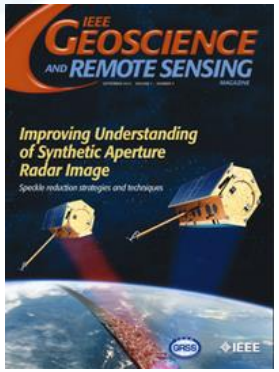
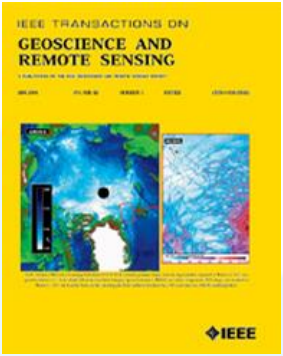
  - **IEEE Geoscience & Remote Sensing Magazine**
  - **IEEE Geoscience & Remote Sensing Letters**
  - **IEEE International Symposium Geoscience and Remote Sensing (IGARSS)**
  - **IEEE Petroleum and Chemical Industry Technical Conference (PCIC)**





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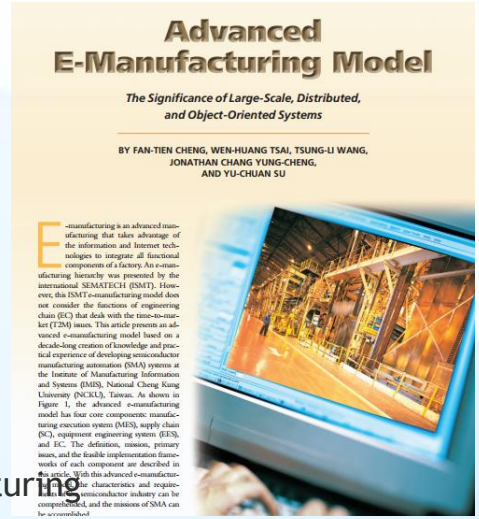
  - IEEE Transactions on Components, Packaging and Manufacturing Technology
  - IEEE Transactions on Semiconductor Manufacturing
  - IEEE Transactions on Automation Science and Engineering
  - IEEE Robotics & Automation Magazine
  - IEEE International Symposium on Assembly and Manufacturing
  - International Conference on Digital Manufacturing and Automation
  - e-Manufacturing & Design Collaboration Symposium Electronics Manufacturing Technology Symposium
  - International Conference on System Science, Engineering Design and Manufacturing Informatization


Advanced
E-Manufacturing Model

The Significance of Large-Scale, Distributed, and Object-Oriented Systems

BY FAN-TIEN CHENG, WEN-HUANG TSAI, TSUNG-LI WANG, JONATHAN CHANG YUNG-CHENG, AND YU-CHUAN SU

E-manufacturing is an advanced manufacturing that takes advantage of the information and Internet technologies to integrate all functional components of a factory. An e-manufacturing hierarchy was presented by the international SEMATECH (ISMT). However, this ISMT e-manufacturing model does not consider the functions of engineering chain (EC) that deals with the time-to-market (T2M) issues. This article presents an advanced e-manufacturing model based on a decade-long creation of knowledge and practical experience of developing semiconductor manufacturing automation (SMA) systems at the Institute of Manufacturing Information and Systems (IMIS), National Cheng Kung University (NCKU), Taiwan. As shown in Figure 1, the advanced e-manufacturing model has four core components: manufacturing execution system (MES), supply chain (SC), equipment engineering system (EES), and EC. The definition, mission, primary issues, and the feasible implementation frameworks of each component are described in this article. With this advanced e-manufacturing model, the characteristics and requirements of the semiconductor industry can be comprehended, and the missions of SMA can be accomplished.

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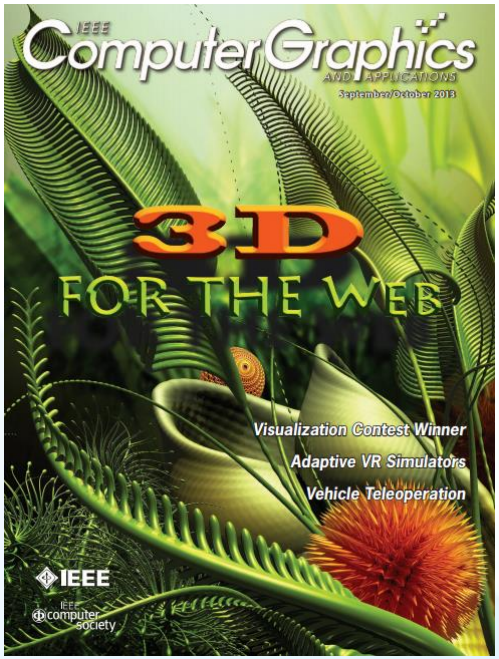
  - IEEE Trans. On Visualization & Computer Graphics
  - International Conference on Computer-Aided Design & Computer Graphics
  - International Conference on Computer Graphics, Imaging & Visualization
  - International Conference on Image & Graphics



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Game Design

- IEEE *Xplore* covers the design of **video games, mathematical games, human-computer interactions in games, and games involving physical objects.**

- Topics include **game production, computational intelligence, artificial intelligence, simulations**, and more

- Examples of IEEE *Xplore* publications:
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  - Symposium on Computational Intelligence in Games
  - International Conference on Computer Games
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  - International Symposium on Haptic, Audio, Visual Environments and Games

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- Related IEEE Journals & Conferences:
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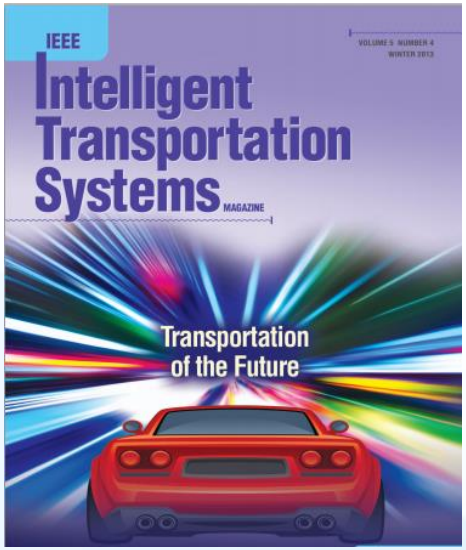
  - IEEE Intelligent Transportation Systems Magazine
  - IEEE Trans. on Automation Science and Engineering
  - IEEE International Conference on Automation and Logistics



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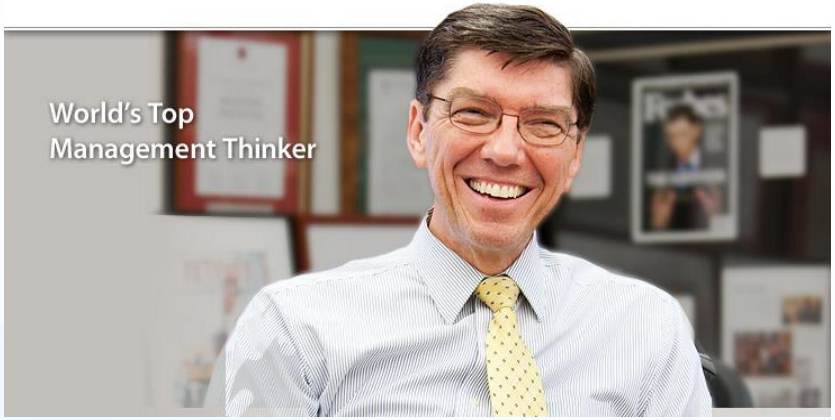
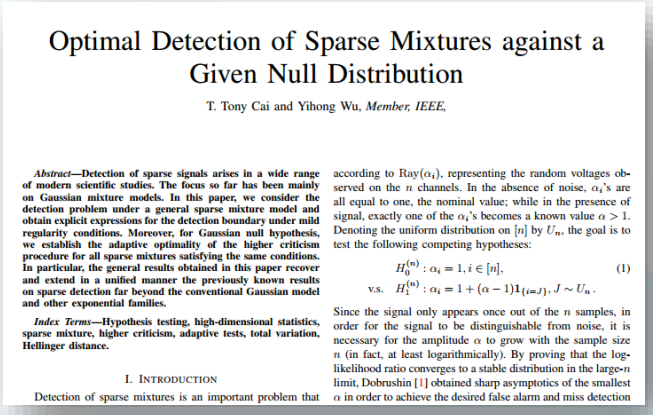


Prof. Clayton Christensen

Harvard Business School

"Innovator's Dilemma"

http://www.claytonchristensen.com/



Optimal Detection of Sparse Mixtures against a Given Null Distribution

T. Tony Cai and Yihong Wu, *Member, IEEE,*

***Abstract*—Detection of sparse signals arises in a wide range of modern scientific studies. The focus so far has been mainly on Gaussian mixture models. In this paper, we consider the detection problem under a general sparse mixture model and obtain explicit expressions for the detection boundary under mild regularity conditions. Moreover, for Gaussian null hypothesis, we establish the adaptive optimality of the higher criticism procedure for all sparse mixtures satisfying the same conditions. In particular, the general results obtained in this paper recover and extend in a unified manner the previously known results on sparse detection far beyond the conventional Gaussian model and other exponential families.**

***Index Terms*—Hypothesis testing, high-dimensional statistics, sparse mixture, higher criticism, adaptive tests, total variation, Hellinger distance.**

I. Introduction

Detection of sparse mixtures is an important problem that

according to $\mathrm{Ray}(\alpha_i)$, representing the random voltages observed on the n channels. In the absence of noise, α_i's are all equal to one, the nominal value; while in the presence of signal, exactly one of the α_i's becomes a known value $\alpha > 1$. Denoting the uniform distribution on $[n]$ by U_n, the goal is to test the following competing hypotheses:

$$H_0^{(n)} : \alpha_i = 1, i \in [n], \quad (1)$$
$$\text{v.s.} \quad H_1^{(n)} : \alpha_i = 1 + (\alpha - 1)\mathbf{1}_{\{i=J\}}, J \sim U_n .$$

Since the signal only appears once out of the n samples, in order for the signal to be distinguishable from noise, it is necessary for the amplitude α to grow with the sample size n (in fact, at least logarithmically). By proving that the log-likelihood ratio converges to a stable distribution in the large-n limit, Dobrushin [1] obtained sharp asymptotics of the smallest α in order to achieve the desired false alarm and miss detection

Prof. Tony Cai

The Wharton School of the University of Pennsylvania

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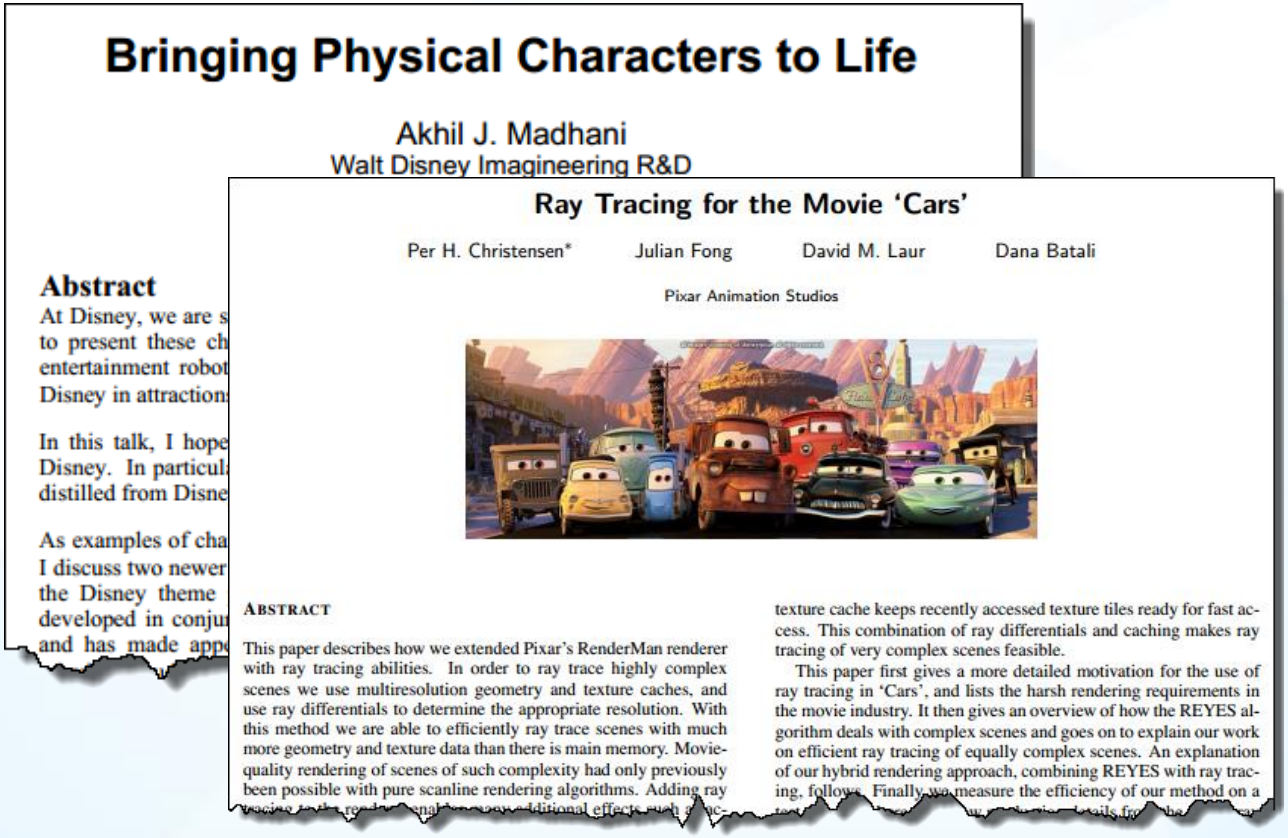

Bringing Physical Characters to Life

Akhil J. Madhani
Walt Disney Imagineering R&D

Abstract

At Disney, we are s
to present these ch
entertainment robot
Disney in attraction

In this talk, I hope
Disney. In particul
distilled from Disne

As examples of cha
I discuss two newer
the Disney theme
developed in conju
and has made appe

Ray Tracing for the Movie 'Cars'

Per H. Christensen* Julian Fong David M. Laur Dana Batali

Pixar Animation Studios

ABSTRACT

This paper describes how we extended Pixar's RenderMan renderer with ray tracing abilities. In order to ray trace highly complex scenes we use multiresolution geometry and texture caches, and use ray differentials to determine the appropriate resolution. With this method we are able to efficiently ray trace scenes with much more geometry and texture data than there is main memory. Movie-quality rendering of scenes of such complexity had only previously been possible with pure scanline rendering algorithms. Adding ray

texture cache keeps recently accessed texture tiles ready for fast access. This combination of ray differentials and caching makes ray tracing of very complex scenes feasible.

This paper first gives a more detailed motivation for the use of ray tracing in 'Cars', and lists the harsh rendering requirements in the movie industry. It then gives an overview of how the REYES algorithm deals with complex scenes and goes on to explain our work on efficient ray tracing of equally complex scenes. An explanation of our hybrid rendering approach, combining REYES with ray tracing, follows. Finally, we measure the efficiency of our method on a

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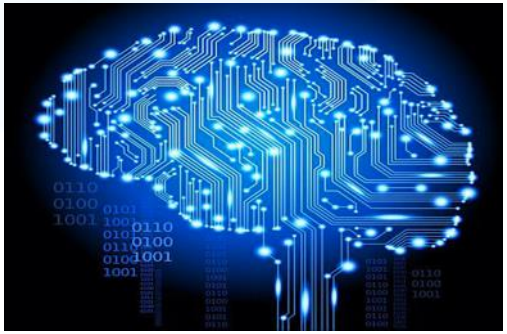

- *IEEE **Communications Standards** Magazine*
- *IEEE Journal of **Electromagnetics, RF and Microwaves in Medicine and Biology***
- *IEEE Transactions on **Emerging Topics in Computational Intelligence***
- *IEEE Transactions on **Green Communications and Networking***
- *IEEE Transactions on **Radiation and Plasma Medical Sciences***
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- *IEEE* ***Robotics and Automation Letters***
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- *IEEE Trans. on* ***Big Data***
- *IEEE Trans. on* ***Transportation Electrification***
- *IEEE Trans. on* ***Cognitive Communications and Networking***
- *IEEE Trans. on* ***Computational Imaging***
- *IEEE Trans. on* ***Molecular, Biological, and Multi-Scale Communications***
- *IEEE Trans.* ***on Multi-Scale Computing Systems***
- *IEEE Trans. on* ***Signal and Information Processing over Networks***
- *IEEE* ***Systems, Man, and Cybernetics*** *Magazine*

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A sampling of some of the new conferences added in 2015

- **Big Data Software Engineering** (BIGDSE), 2015 IEEE/ACM 1st International Workshop on
- **Computational Electromagnetics** (ICCEM), 2015 IEEE International Conference on
- **DC Microgrids** (ICDCM), 2015 IEEE First International Conference on
- **Electromagnetic Compatibility and Signal Integrity**, 2015 IEEE Symposium on
- **Identity, Security and Behavior Analysis (ISBA)**, 2015 IEEE International Conference on
- **Industrial Engineering and Operations Management** (IEOM), 2015 International Conference on
- **Microwaves for Intelligent Mobility** (ICMIM), 2015 IEEE MTT-S International Conference on
- **Multimedia Big Data** (BigMM), 2015 IEEE International Conference on
- **Networking Systems and Security** (NSysS), 2015 International Conference on
- **Sampling Theory and Applications** (SampTA), 2015 International Conference on
- **Signal Processing, Informatics, Communication and Energy Systems** (SPICES), 2015 IEEE International Conference on
- **Smart Cities Conference** (ISC2), 2015 IEEE First International

Examples of New IEEE Conferences in 2014

- **Internet of Things** (WF-IoT), 2014 IEEE World Forum on
- **Humanitarian Technology** Conference, (IHTC), 2014 IEEE Canada International
- **Aerospace Electronics and Remote Sensing Technology** (ICARES), 2014 IEEE International Conference on
- **Antenna Measurements & Applications** (CAMA), 2014 IEEE Conference on
- **Consumer Electronics**, Taiwan (ICCE-TW), 2014 IEEE International Conference on
- **Energy Conversion** (CENCON), 2014 IEEE Conference on
- **Ethics in Science**, Technology and Engineering, 2014 IEEE International Symposium on
- **Transportation Electrification** Asia-Pacific (ITEC Asia-Pacific), 2014 IEEE Conference and Expo
- **Intelligent Energy** and Power Systems (IEPS), 2014 IEEE International Conference on
- **Quantum Optics Workshop** (QOW), 2014
- **Sensor Systems for a Changing Ocean** (SSCO), 2014 IEEE
- **Wireless and Mobile**, 2014 IEEE Asia Pacific Conference on
- **Industrial Engineering and Information Technology** (IEIT), 2014 International Conference on
- **Guidance, Navigation and Control Conference** (CGNCC), 2014 IEEE Chinese

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Popular IEEE Standards

IEEE 802 Series—IEEE Standard for Ethernet

IEEE 3000 Standards Collection™—Formerly the IEEE Color Books®, this collection will reorganize the 13 Color Books into approximately 70 "dot" standards covering specific technical topics on all facets of industrial and commercial power systems.

IEEE 81-2012™—IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System

2012 National Electrical Safety Code® (NESC®)—Sets the ground rules for practical safeguarding of persons during the installation, operation, or maintenance of electric supply and communications lines and associated equipment.

IEEE 43™—IEEE Recommended Practice for Testing Insulation Resistance of Electric Machinery

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Increasing Scholarly Output

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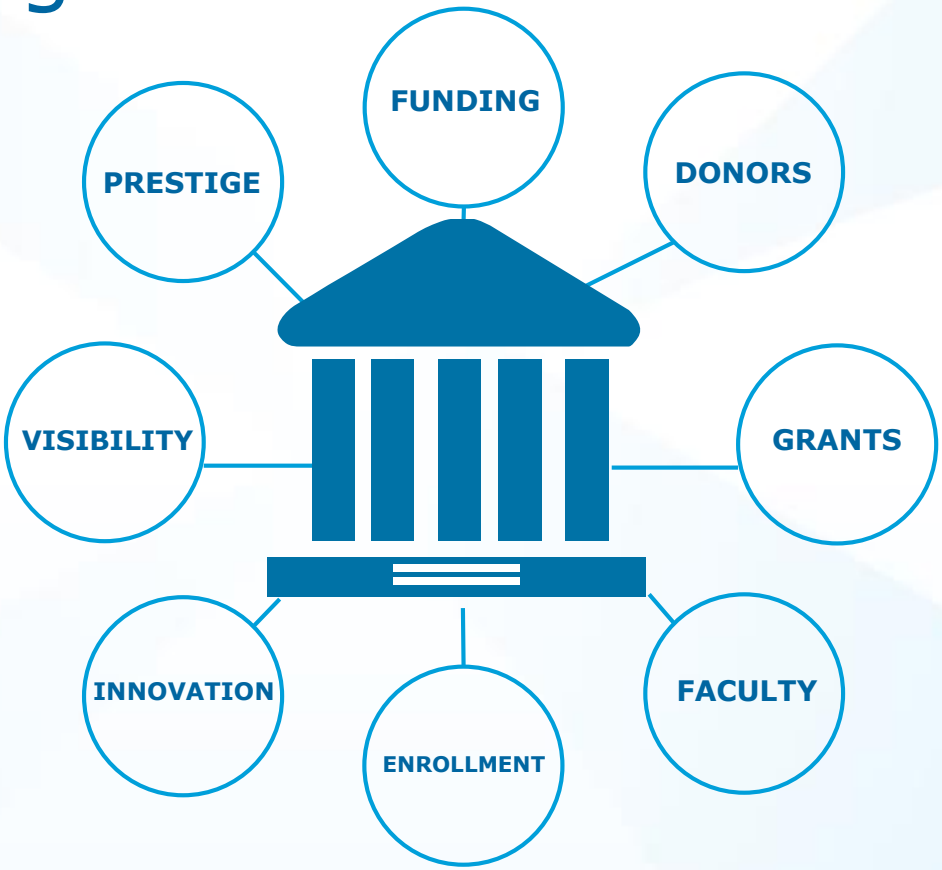

Enabling researchers to publish drives all of these essentials and helps an institution thrive

IEEE

Published faculty is the key

- Benefit to Institution: Having a highly-published faculty has many benefits. It brings **attention & prestige to the institution** as cutting-edge research advancements are associated with the university. All of this can facilitate **continued funding and higher enrollments**.

- Benefit to Faculty: A sustainable, **tenured career in academia** as well as a **higher profile** in the field can be huge motivators for faculty to publish.

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- for your institution
- for your faculty
- for your investors and donors
- for science & technology
- for students

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What else increases an IEEE author's visibility?

IEEE's relationships with indexing and abstracting providers

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IEEE journal or IEEE conference?

- A **journal article** is a fully developed presentation of your work and its final findings
  - Original research results presented
  - Clear conclusions are made and supported by the data
- A **conference article** can be written while research is ongoing
  - Can present preliminary results or highlight recent work
  - Gain informal feedback to use in your research
- Conference articles are typically shorter than journal articles, with less detail and fewer references

Publish

IEEE journal or IEEE conference?

	IEEE Journals	IEEE Conferences
PRO	• IEEE journals are cited 3 times more often in patent applications than other leading publisher's journals	• IEEE Conference proceedings are recognized worldwide as the most vital collection of consolidated published articles in EE, computer science, related fields
CON	• A high percentage of articles submitted to any professional publication are rejected	• Per IEEE Policy, if you do not present your article at a conference, it may be suppressed in IEEE *Xplore* and not indexed in other databases

Duplicate Publication

- IEEE's policy on duplicate publication states
  - *"authors should only submit original work that has neither appeared elsewhere for publication, nor which is under review for another refereed publication. If authors have used their own previously published work(s) as a basis for a new submission, they are required to cite the previous work(s) and very briefly indicate how the new submission offers substantively novel contributions beyond those of the previously published work(s)."*

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Content Announcements

- Innovative phased array antennas based on non-regnlar lattices and overlapped subarrays [call for papers]

- Special Issue on Manipulation, Manufacturing and Measurement on the Nanoscale

2.718	0.04492	1.538
Impact Factor	Eigenfactor	Article Influence Score

Aims & Scope

The theory, design and application of Control Systems. It shall encompass components, and the integration of these components, as are necessary for the construction of such systems. The word `systems' as used herein shall be interpreted to include physical, biological, organizational and other entities and combinations thereof, which can be represented through a mathematical symbolism. The Field of Interest: shall include scientific, technical, industrial or other activities that contribute to this field,or utilize the techniques or products of this field, subject, as the art develops, to additions, subtractions, or other modifications directed or approved by the IEEE Technical Activities Board.

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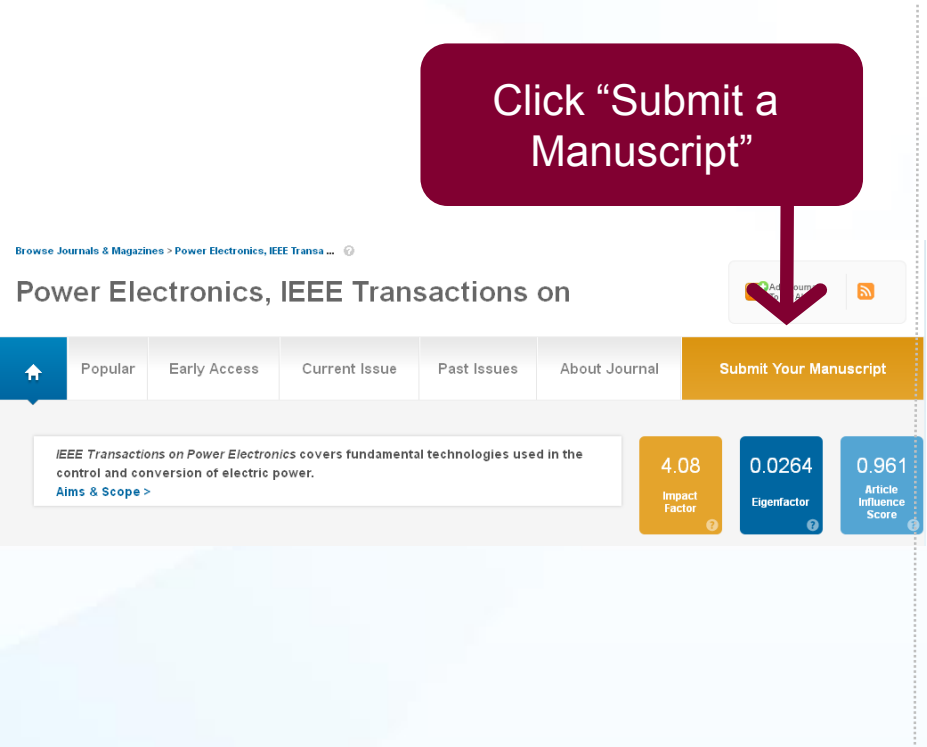

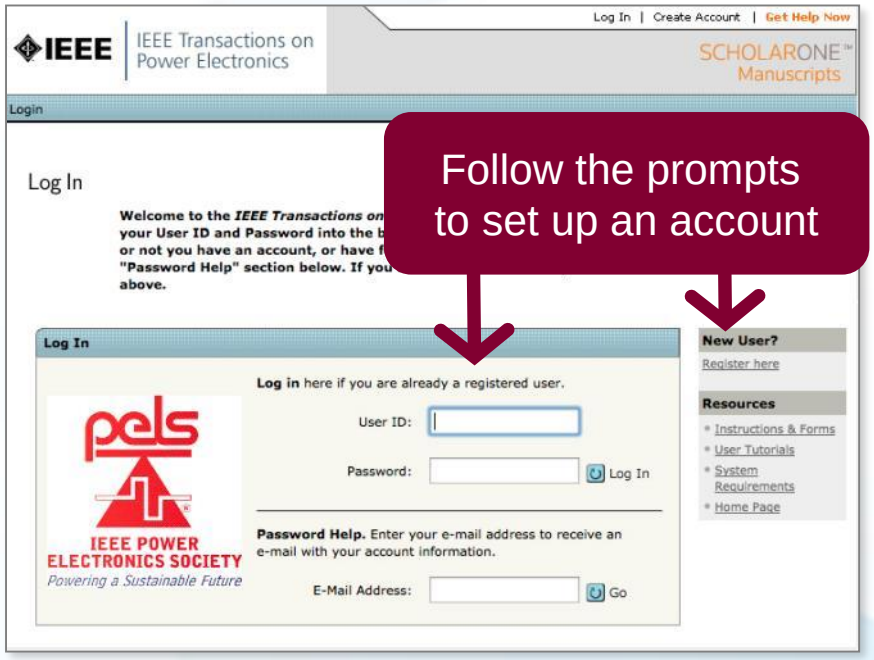

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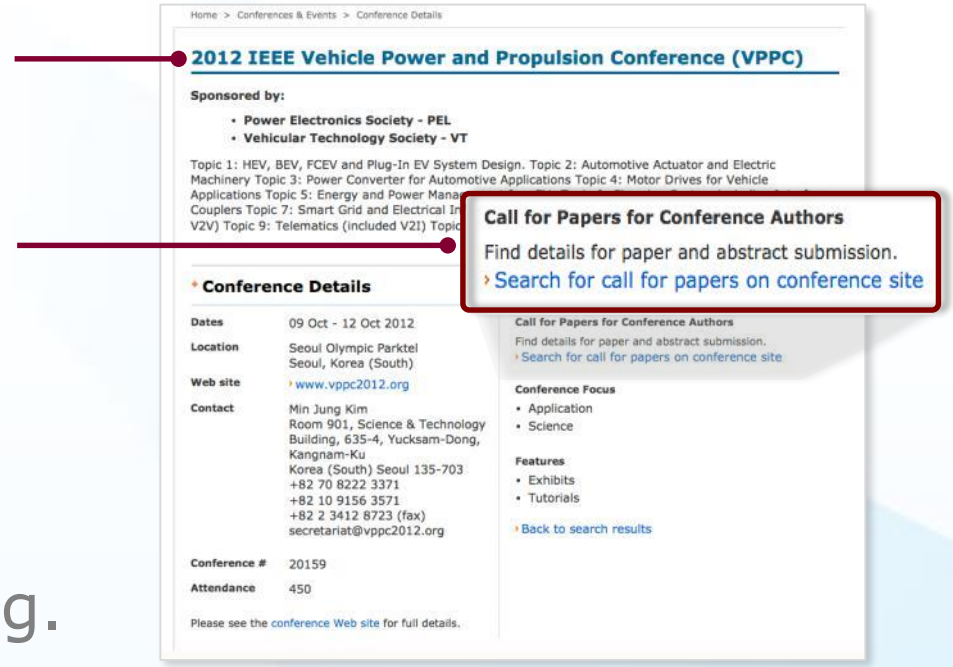

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IEEE conferences and events

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Conference Name	Conference Date	Location
2019 IEEE Symposium on Security and Privacy (SP) Full Paper Submission deadline: 16 Nov 2018 Final submission deadline: 31 Mar 2019 Notification of acceptance date: 10 Feb 2019	19 May - 23 May 2019	Hyatt Regency San Francisco 5 Embarcadero Center San Francisco, CA, USA
2018 IEEE Frontiers in Education Conference (FIE) Abstract submission deadline: 05 Feb 2018 Full Paper Submission deadline: 23 Apr 2018 Final submission deadline: 09 Jul 2018 Notification of acceptance date: 21 May 2018	03 Oct - 06 Oct 2018	TBD TBD San Jose, CA, USA
2018 IEEE World Congress on Computational Intelligence (WCCI) Full Paper Submission deadline: 01 Feb 2018 Final submission deadline: 01 May 2018 Notification of acceptance date: 01 Apr 2018	08 Jul - 13 Jul 2018	Windsor Barra Convention Centre Rua Martinho de Mesquita Barra da Tijuca Rio de Janeiro, Brazil
2018 IEEE International Symposium on Information Theory (ISIT) Abstract submission deadline: 07 Jan 2018 Full Paper Submission deadline: 07 Jan 2018 Final submission deadline: 22 Apr 2018 Notification of acceptance date: 01 Apr 2018	17 Jun - 22 Jun 2018	Vail Cascade 1300 Westhaven Drive Vail, CO, USA
2018 IEEE Symposium on Security and Privacy (SP) Full Paper Submission deadline: 16 Nov 2017 Final submission deadline: 31 Mar 2018 Notification of acceptance date: 11 Feb 2018	20 May - 24 May 2018	Hyatt Regency San Francisco 5 Embarcadero Center San Francisco, CA, USA

IEEE Electron Devices Society

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Technical Conferences Calendars

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2016 International Symposium on VLSI Design, Automation and Test (VLSI-DAT) Taiwan Number of Attendees: 300	Apr 25, 2016 - Apr 27, 2016
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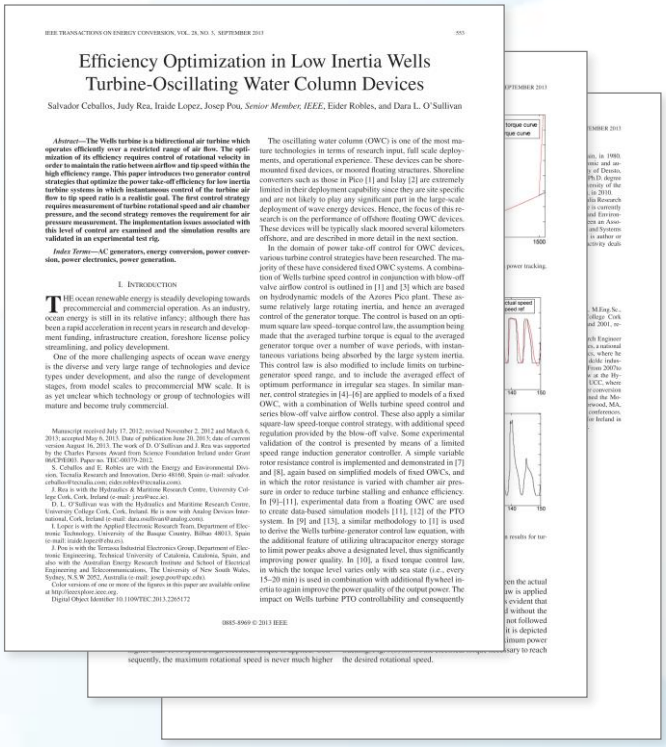
2016 5th International Symposium on Next-Generation Electronics (ISNE) Hsinchu, Taiwan Number of Attendees: 300	May 4, 2016 - May 6, 2016
2016 16th International Workshop on Junction Technology (IWJT) Shanghai, China Number of Attendees: 100	May 9, 2016 - May 10, 2016

Structure

Paper Structure

Elements of a manuscript

- Title
- Abstract
- Keywords
- Introduction
- Methodology
- Results/Discussions/Findings
- Conclusion
- References



IEEE TRANSACTIONS ON ENERGY CONVERSION, VOL. 28, NO. 3, SEPTEMBER 2013

Efficiency Optimization in Low Inertia Wells Turbine-Oscillating Water Column Devices

Salvador Ceballos, Judy Rea, Iraide Lopez, Josep Pou, *Senior Member, IEEE*, Eider Robles, and Dara L. O'Sullivan

Abstract—**The Wells turbine is a bidirectional air turbine which operates efficiently over a restricted range of air flow. The optimization of its efficiency requires control of rotational velocity in order to maintain the ratio between airflow and tip-speed within the high efficiency range. This paper introduces two generator control strategies that optimize the power take-off efficiency for low inertia turbine systems in which instantaneous control of the turbine air flow to tip speed ratio is a realistic goal. The first control strategy requires measurement of turbine rotational speed and air chamber pressure, and the second strategy removes the requirement for air pressure measurement. The implementation issues associated with this level of control are examined and the simulation results are validated in an experimental test rig.**

Index Terms—**AC generators, energy conversion, power conversion, power electronics, power generation.**

I. Introduction

THE ocean renewable energy is steadily developing towards precommercial and commercial operation. As an industry, ocean energy is still in its relative infancy; although there has been a rapid acceleration in recent years in research and development funding, infrastructure creation, foreshore license policy streamlining, and policy development.

One of the more challenging aspects of ocean wave energy is the diverse and very large range of technologies and device types under development, and also the range of development stages, from model scales to precommercial MW scale. It is as yet unclear which technology or group of technologies will mature and become truly commercial.

The oscillating water column (OWC) is one of the most mature technologies in terms of research input, full scale deployments, and operational experience. These devices can be shore-mounted fixed devices, or moored floating structures. Shoreline converters such as those in Pico [1] and Islay [2] are extremely limited in their deployment capability since they are site specific and are not likely to play any significant part in the large-scale deployment of wave energy devices. Hence, the focus of this research is on the performance of offshore floating OWC devices. These devices will be typically slack moored several kilometers offshore, and are described in more detail in the next section.

In the domain of power take-off control for OWC devices, various turbine control strategies have been researched. The majority of these have considered fixed OWC systems. A combination of Wells-turbine speed control in conjunction with blow-off valve airflow control is outlined in [1] and [3] which are based on hydrodynamic models of the Azores Pico plant. These assume relatively large rotating inertia, and hence an averaged control of the generator torque. The control is based on an optimum square law speed–torque control law, the assumption being made that the averaged turbine torque is equal to the averaged generator torque over a number of wave periods, with instantaneous variations being absorbed by the large system inertia. This control law is also modified to include limits on turbine-generator speed range, and to include the averaged effect of optimum performance in irregular sea stages. In similar manner, control strategies in [4]–[6] are applied to models of a fixed OWC, with a combination of Wells turbine speed control and series blow-off valve airflow control. These also apply a similar square-law speed-torque control strategy, with additional speed regulation provided by the blow-off valve. Some experimental validation of the control is presented by means of a limited speed range induction generator controller. A simple variable rotor resistance control is implemented and demonstrated in [7] and [8], again based on simplified models of fixed OWCs, and in which the rotor resistance is varied with chamber air pressure in order to reduce turbine stalling and enhance efficiency. In [9]–[11], experimental data from a floating OWC are used to create data-based simulation models [11], [12] of the PTO system. In [9] and [13], a similar methodology to [1] is used to derive the Wells turbine–generator control law equation, with the additional feature of utilizing ultracapacitor energy storage to limit power peaks above a designated level, thus significantly improving power quality. In [10], a fixed torque control law, in which the torque level varies only with sea state (i.e., every 15–20 min) is used in combination with additional flywheel inertia to again improve the power quality of the output power. The impact on Wells turbine PTO controllability and consequently

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Digital Object Identifier 10.1109/TEC.2013.2265172

sequently, the maximum rotational speed is never much higher than the desired rotational speed.

Paper Structure

Title

An effective title should…

- Answer the reader's question: *"Is this article relevant to me?"*
- Grab the reader's attention
- Describe the content of a paper using the fewest possible words
  - Is crisp, concise
  - Uses keywords
  - Avoids jargon

Paper Structure

Good vs. Bad Title

A Human Expert-based Approach to Electrical Peak Demand Management

vs

A better approach of managing environmental and energy sustainability via a study of different methods of electric load forecasting

Paper Structure

Good vs. Better Title

An Investigation into the Effects of Residential Air-Conditioning Maintenance in Reducing the Demand for Electrical Energy

vs

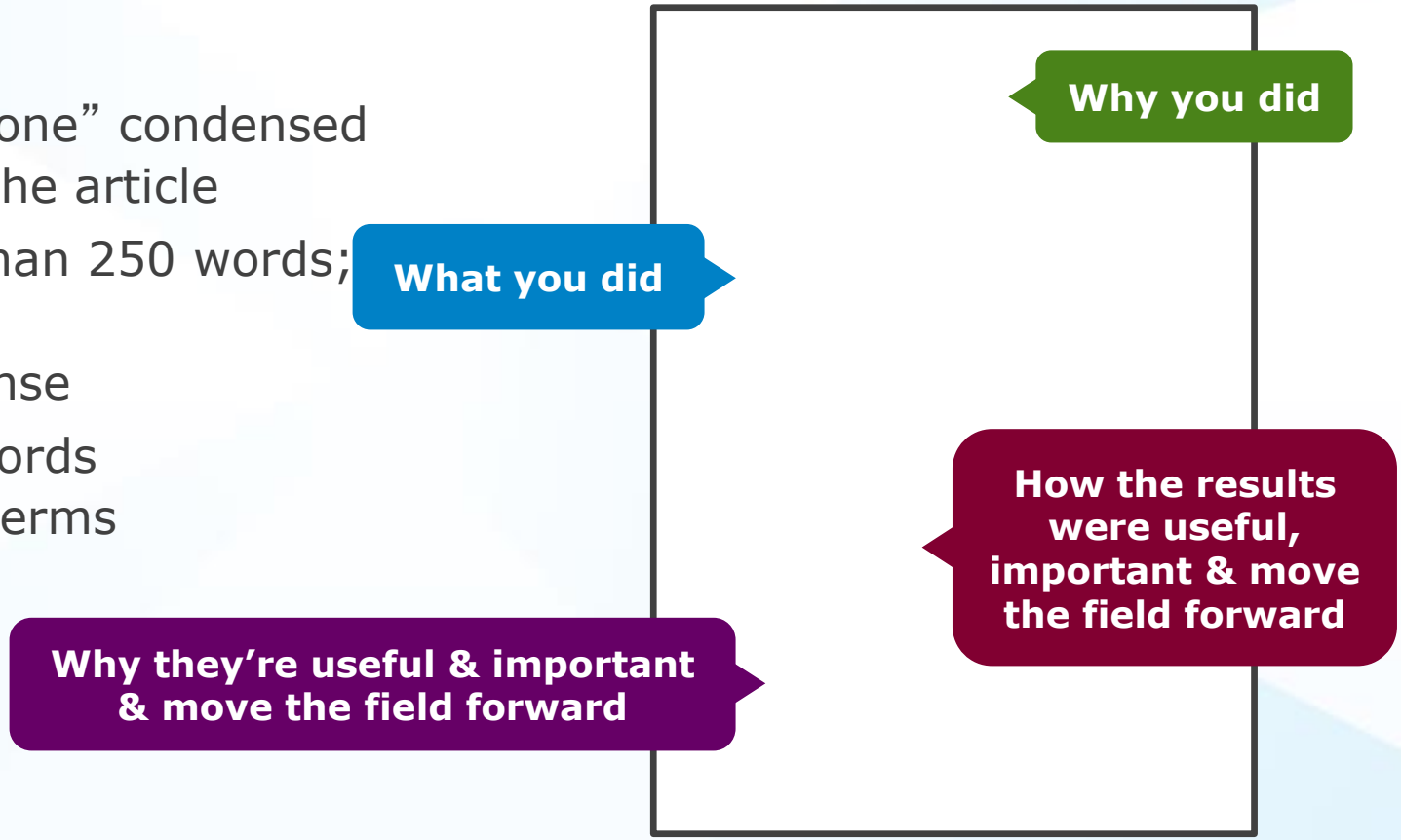
"Role of Air-Conditioning Maintenance on Electric Power Demand"

Paper Structure

Abstract

A “stand alone” condensed version of the article

- No more than 250 words; written in the past tense
- Uses keywords and index terms



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The abstract must be a **concise yet comprehensive reflection of what is in your article**. In particular, the abstract must be as follows.

1) Self-contained, without abbreviations, footnotes, or references; it should be a **microcosm of the full article**

2) Between **150-250 words**. Be sure that you adhere to these limits; otherwise, you will need to edit your abstract accordingly.

3) Written as **one paragraph**, and should **not contain** displayed **mathematical equations or tabular material**.

4) Should include **three or four different keywords or phrases**, as this will help readers to find it. It is important to avoid over-repetition of such phrases as this can result in a page being rejected by search engines.

5) Ensure that your abstract **reads well and is grammatically correct**.

Paper Structure

Good vs. Bad Abstract

The objective of this paper was to propose a human expert-based approach to electrical peak demand management. The proposed approach helped to allocate demand curtailments (MW) among distribution substations (DS) or feeders in an electric utility service area based on requirements of the central load dispatch center. Demand curtailment allocation was quantified taking into account demand response (DR) potential and load curtailment priority of each DS, which can be determined using DS loading level, capacity of each DS, customer types (residential/commercial) and load categories (deployable, interruptible or critical). Analytic Hierarchy Process (AHP) was used to model a complex decision-making process according to both expert inputs and objective parameters. Simulation case studies were conducted to demonstrate how the proposed approach can be implemented to perform DR using real-world data from an electric utility. Simulation results demonstrated that the proposed approach is capable of achieving realistic demand curtailment allocations among different DSs to meet the peak load reduction requirements at the utility level.

Vs

This paper presents and assesses a framework for an engineering capstone design program. **We explain** how student preparation, project selection, and instructor mentorship are the three key elements that must be addressed before the capstone experience is ready for the students. **Next, we describe** a way to administer and execute the capstone design experience including design workshops and lead engineers. **We describe the importance** in assessing the capstone design experience and report recent assessment results of our framework. **We comment** specifically on what students thought were the most important aspects of their experience in engineering capstone design and provide quantitative insight into what parts of the framework are most important.

First person, present tense
No actual results, only describes the organization of the paper

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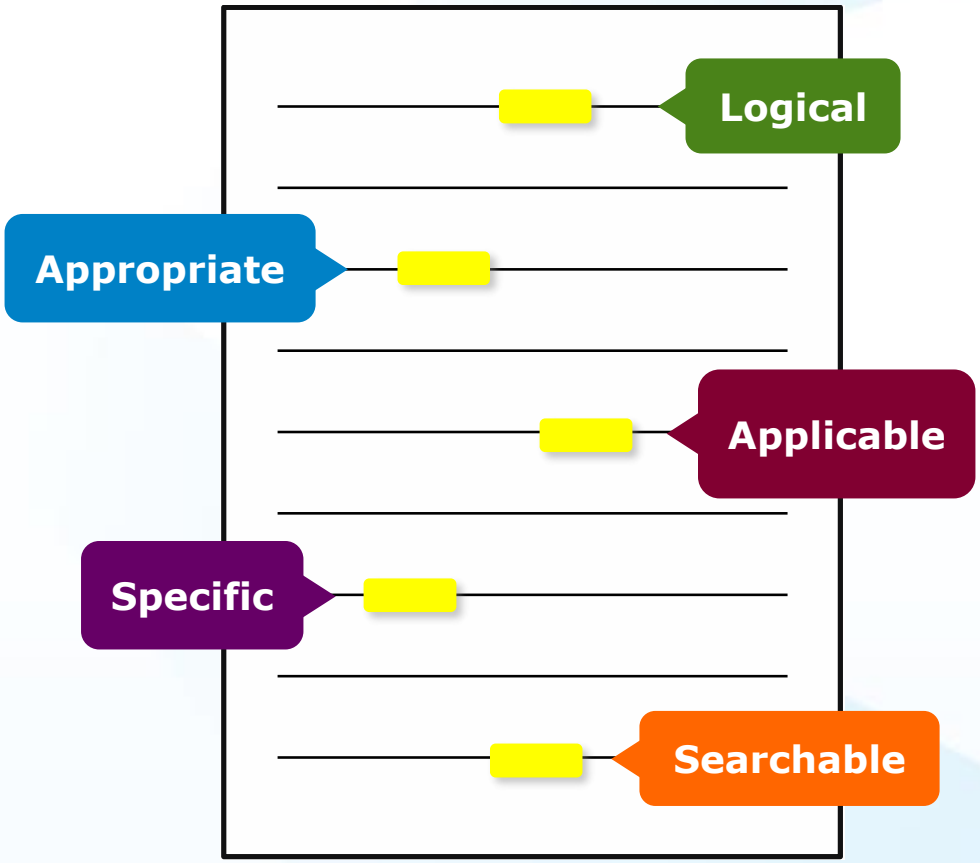
Paper Structure

Keywords

Use in the Title and Abstract for enhanced Search Engine Optimization



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IEEE Keywords

Bit rate, Decoding, Encoding, Parallel processing, Video coding

Authors Keywords

High Efficiency Video Coding (HEVC), parallel programming, video coding

INSPEC: Controlled Indexing

parallel processing, video coding

INSPEC: Non-Controlled Indexing

12-core system, H.264-advanced video coding, HEVC parallelization approaches, OWF, WPP, frequency 3.33 GHz, high efficiency video coding, overlapped wavefront, parallel efficiency, parallel friendliness, parallel scalability, parallelization proposals, tiles, wavefront parallel processing

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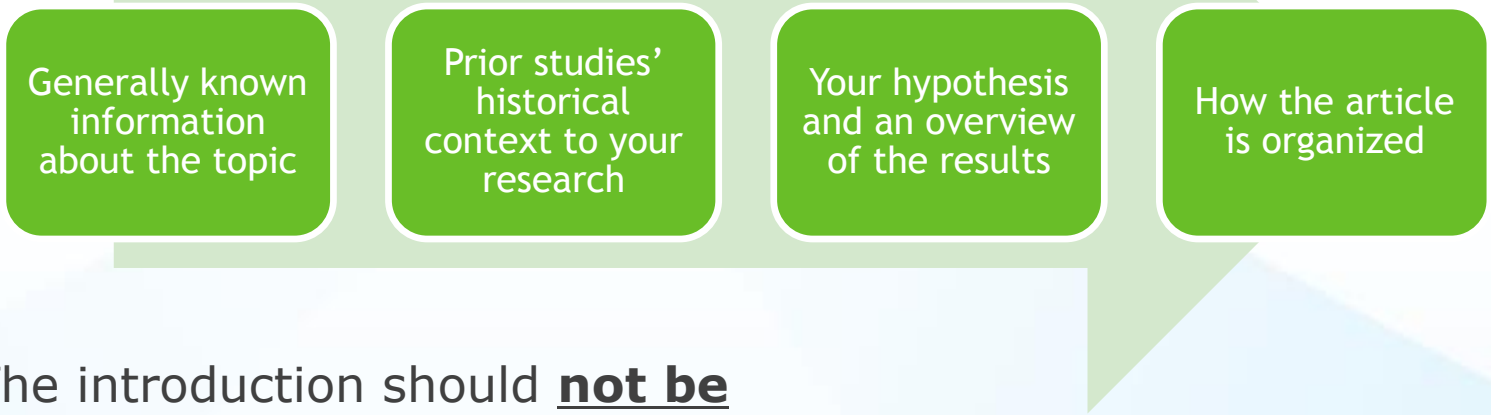
Paper Structure

Introduction

- A description of the problem you researched
- It should move step by step through, should be written in present tense:



- The introduction should **not be**
  - Too broad or vague
  - More then 2 pages

Paper Structure

Methodology

- Problem formulation and the processes used to solve the problem, prove or disprove the hypothesis
- Use illustrations to clarify ideas, support conclusions:

Tables
Present representative data or when exact values are important to show

Figures
Quickly show ideas/conclusions that would require detailed explanations

Fig. A

Graphs
Show relationships between data points or trends in data

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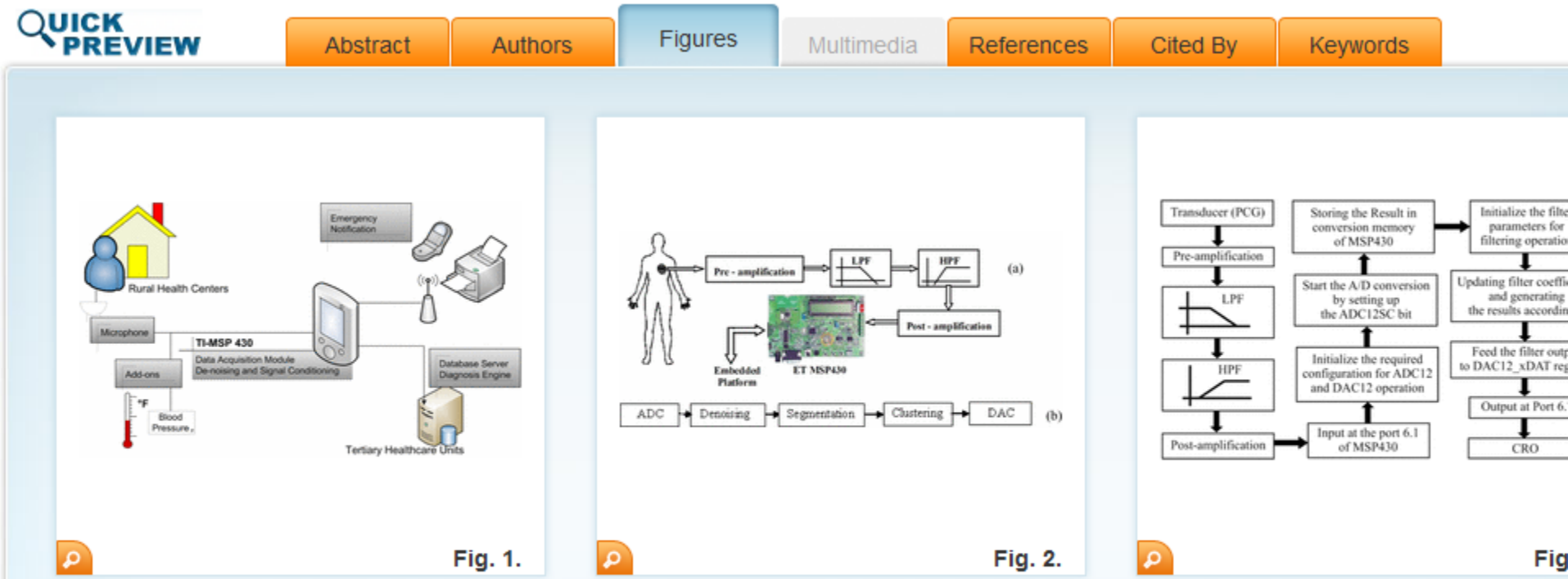

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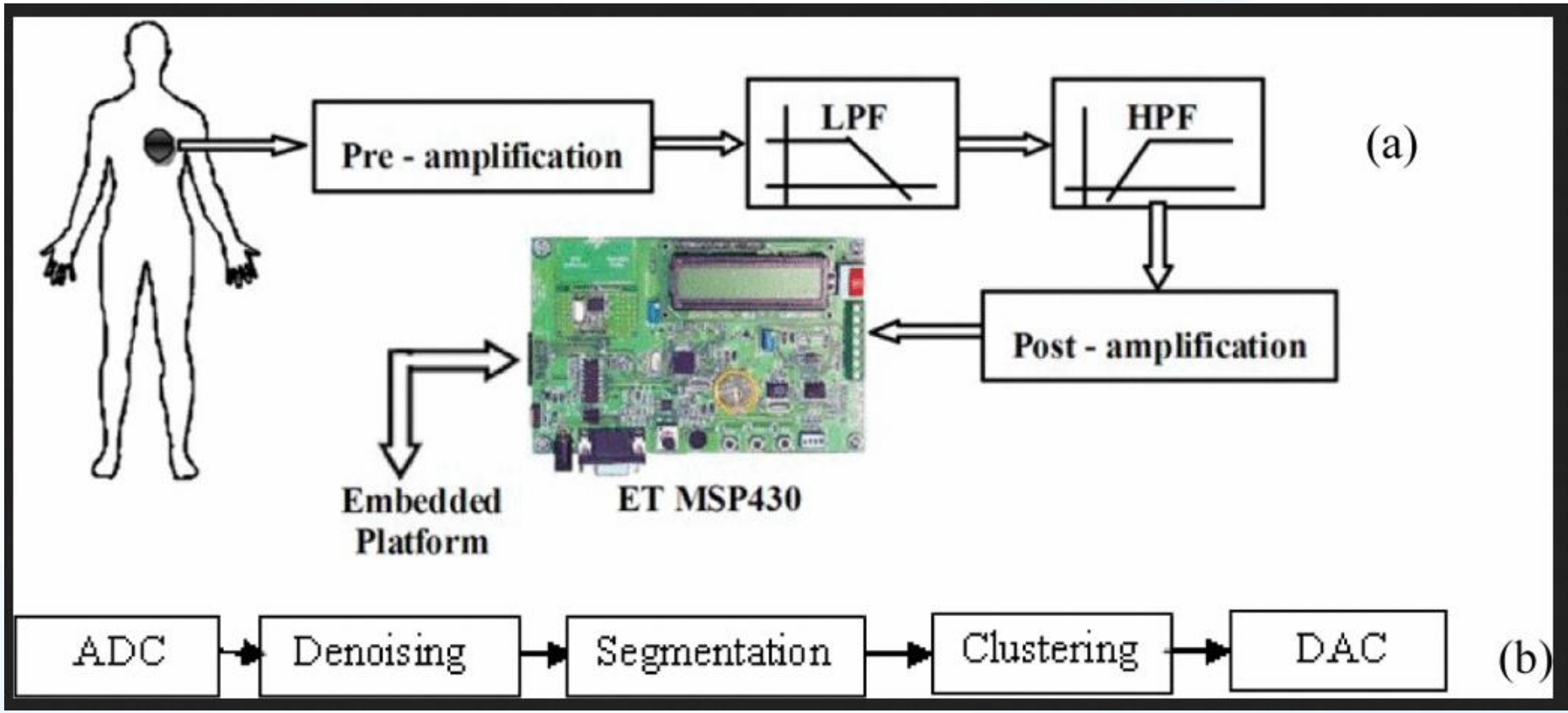

Equations in TeX Source in HTML version

▾ TeX Source

```
$$\eqalignno{{\rm HS}_{{\rm recover}} & \!=\! \left({1 - {{E\left\{{x_{{\rm
HS}}^2 \left(n \right)} \right\} - E\left\{{y^2 \left(n \right)} \right
\}}}\over{{E\left\{{x_{{\rm HS}}^2 \left(n \right)} \right\}}}} \right)
\!\times\! 100\%\cr &&{\hbox{(1)}}\cr {\rm NOISE}_{{\rm reduction}} &\!=\!
\left({{{E\left\{{x_{{\rm hs\_noi}}^2 \left(n \right)} \right\} - E\left\{{y^2
\left(n \right)} \right\}}}\over{{E\left\{{x_{{\rm hs\_noi}}^2 \left(n \right)}
\right\}}}} \right)\! \times\! 100\%\cr &&\hbox{(2)} }$$
```

and $\mathrm{NOISE}_{\mathrm{reduction}}$ are computed in terms of percentages (see Table 1)

$$\mathrm{HS}_{\mathrm{recover}} = \left(\frac{1 - E\left\{x_{\mathrm{HS}}^2(n)\right\} - E\left\{y^2(n)\right\}}{E\left\{x_{\mathrm{HS}}^2(n)\right\}} \right) \times 100\% \tag{1}$$

$$\mathrm{NOISE}_{\mathrm{reduction}} = \left(\frac{E\left\{x_{\mathrm{hs\_noi}}^2(n)\right\} - E\left\{y^2(n)\right\}}{E\left\{x_{\mathrm{hs\_noi}}^2(n)\right\}} \right) \times 100\% \tag{2}$$

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Paper Structure
Results/discussion

Demonstrate that you solved the problem or made significant advances

Results: Summarized Data

- Should be clear and concise
- Use figures or tables with narrative to illustrate findings

Discussion: Interprets the Results

- Why your research offers a new solution
- Acknowledge any limitations

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Paper Structure

Conclusion

- Explain what the research has achieved
  - As it relates to the problem stated in the Introduction
  - Revisit the key points in each section
  - Include a summary of the main findings, important conclusions and implications for the field
- Provide benefits and shortcomings of:
  - The solution presented
  - Your research and methodology
- Suggest future areas for research

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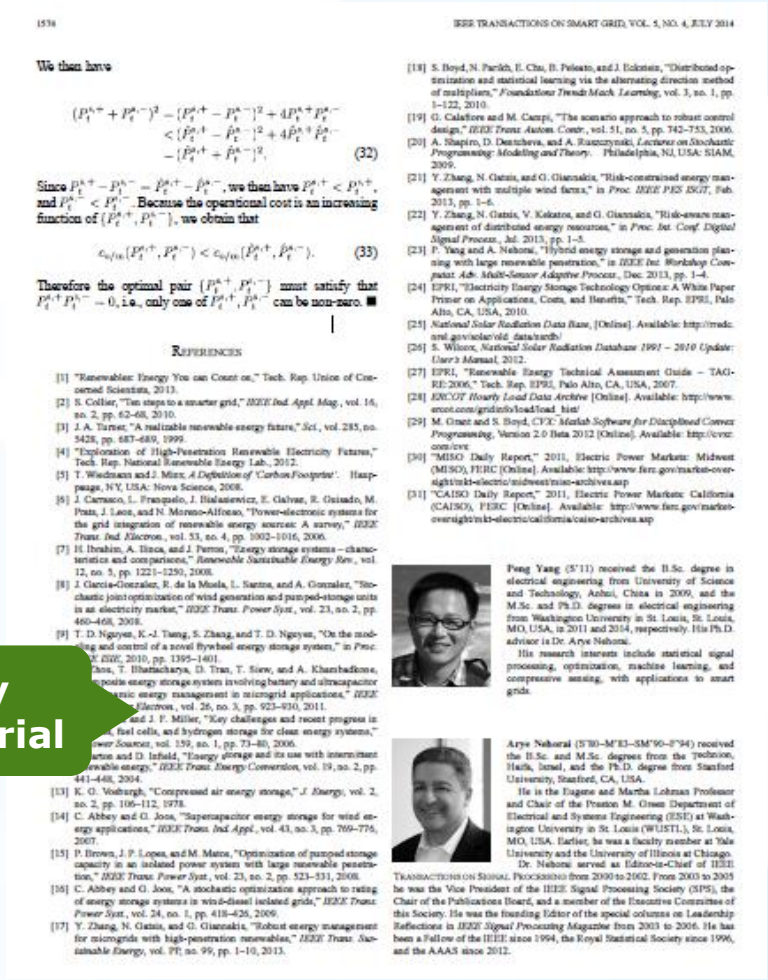
Paper Structure
References

- **Support and validate the hypothesis your research proves, disproves or resolves**
- There is no limit to the number of references
  - But use only those that directly support our work
- Ensure proper author attribution
  - Author name, *article title*, publication name, publisher, year published, volume, chapter and page number
  - IEEE journals generally follow a citation numbering system



1536 IEEE TRANSACTIONS ON SMART GRID, VOL. 5, NO. 4, JULY 2014

We then have

$$(P_t^{s+}+P_t^{s-})^2-(P_t^{s+}-P_t^{s-})^2+4P_t^{s+}P_t^{s-} < (\hat{P}_t^{s+}-\hat{P}_t^{s-})^2+4\hat{P}_t^{s+}\hat{P}_t^{s-} -(\hat{P}_t^{s+}+\hat{P}_t^{s-})^2. \quad (32)$$

Since $P_t^{s+}-P_t^{s-}=\hat{P}_t^{s+}-\hat{P}_t^{s-}$, we then have $P_t^{s+}<P_t^{s+}$, and $P_t^{s-}<\hat{P}_t^{s-}$. Because the operational cost is an increasing function of $\{P_t^{s+},P_t^{s-}\}$, we obtain that

$$c_{o/a}(P_t^{s+},P_t^{s-})<c_{o/a}(\hat{P}_t^{s+},\hat{P}_t^{s-}). \quad (33)$$

Therefore the optimal pair $\{P_t^{s+},P_t^{s-}\}$ must satisfy that $P_t^{s+}P_t^{s-}=0$, i.e., only one of P_t^{s+}, P_t^{s-} can be non-zero. ■

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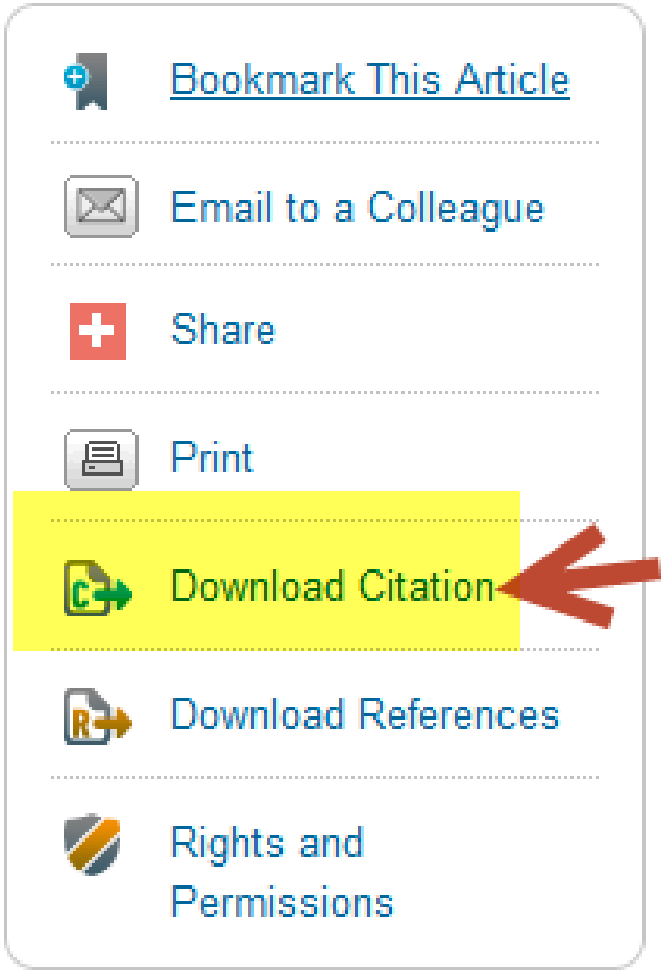

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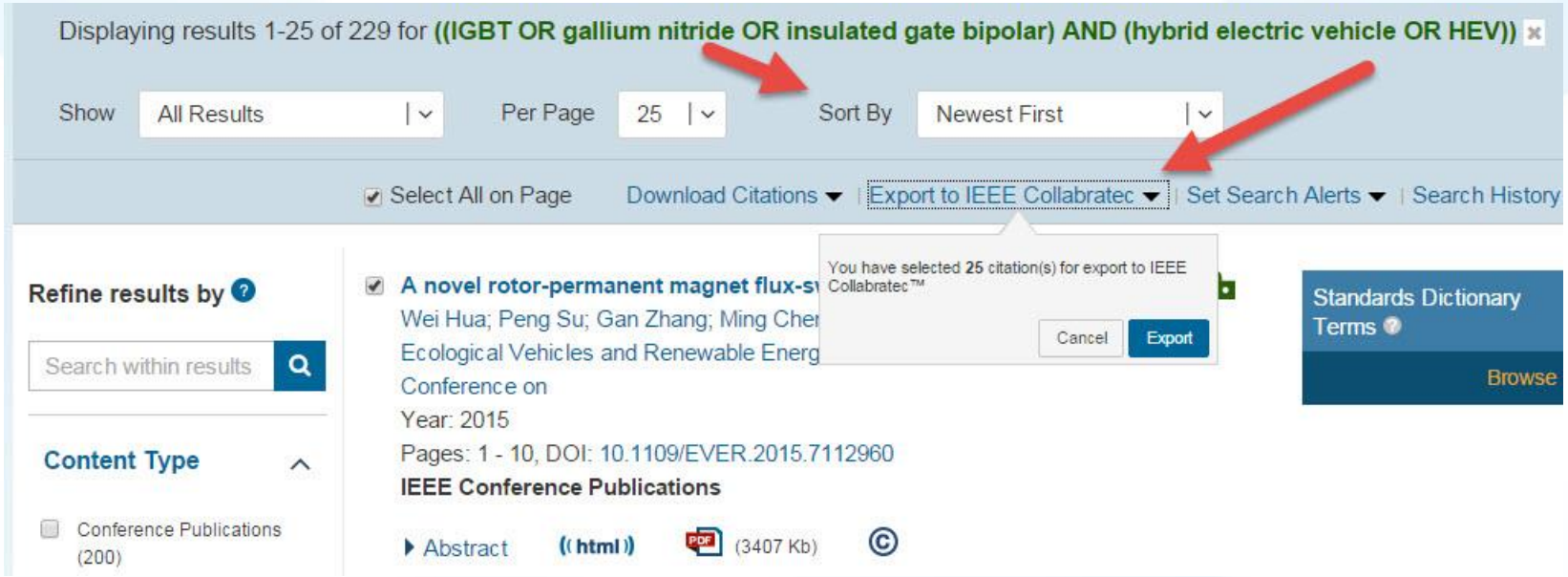

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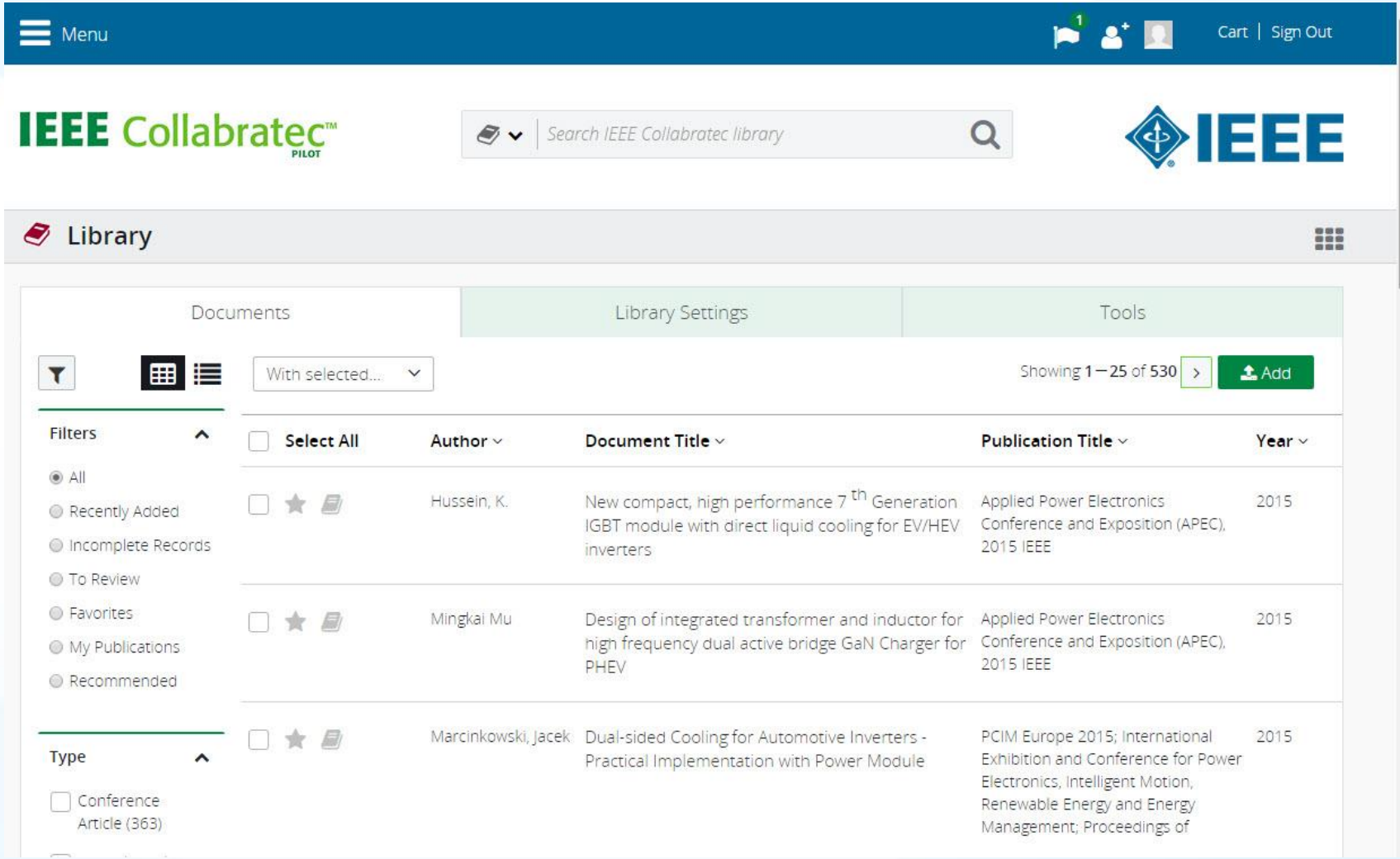

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- How do they fit together?
- Does each section perform its appointed task?
- Is the order logical?
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- Does the same material appear more than ones?
- Can it be clearer?
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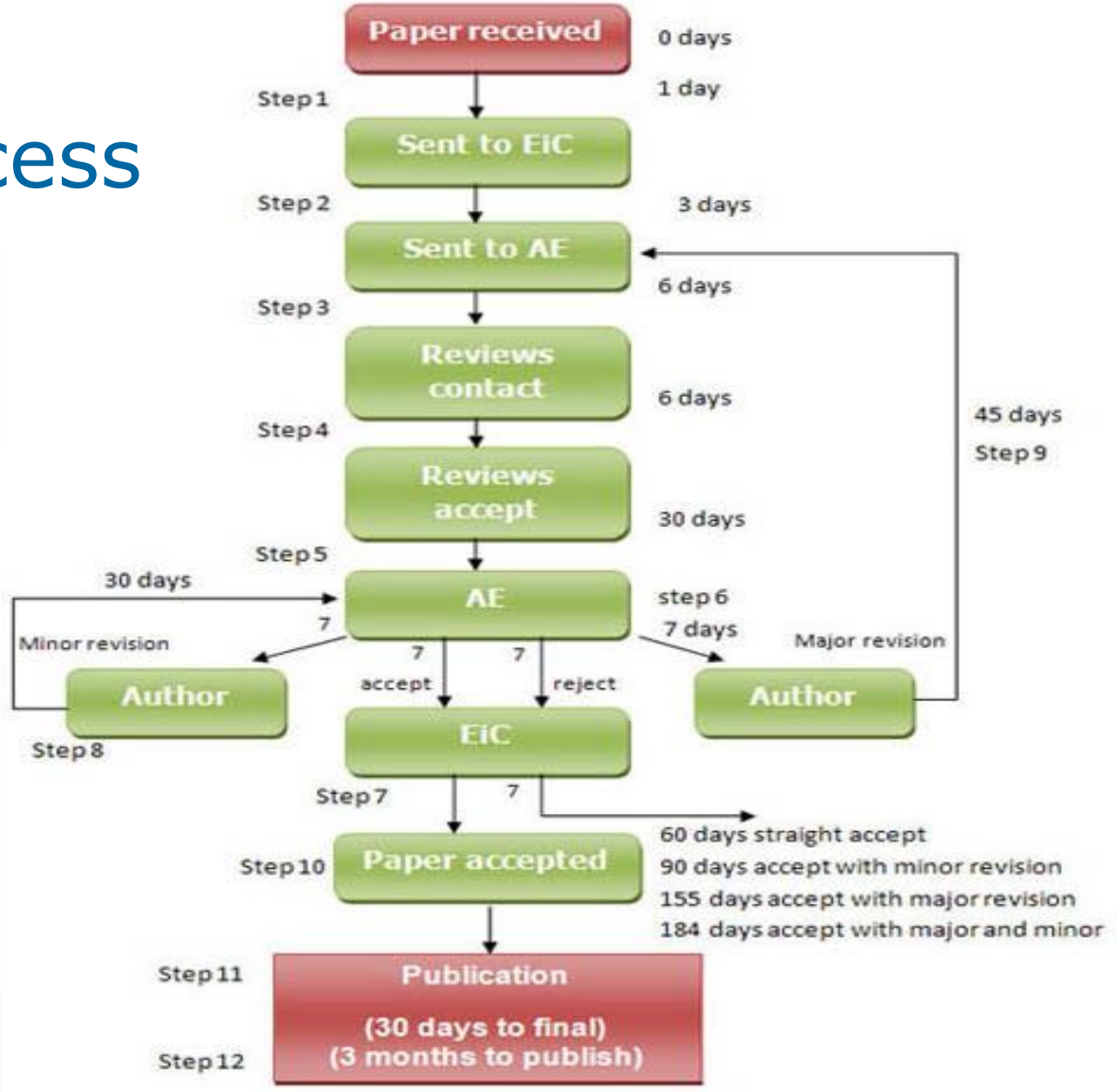
Review Process



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Audience

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Ethics

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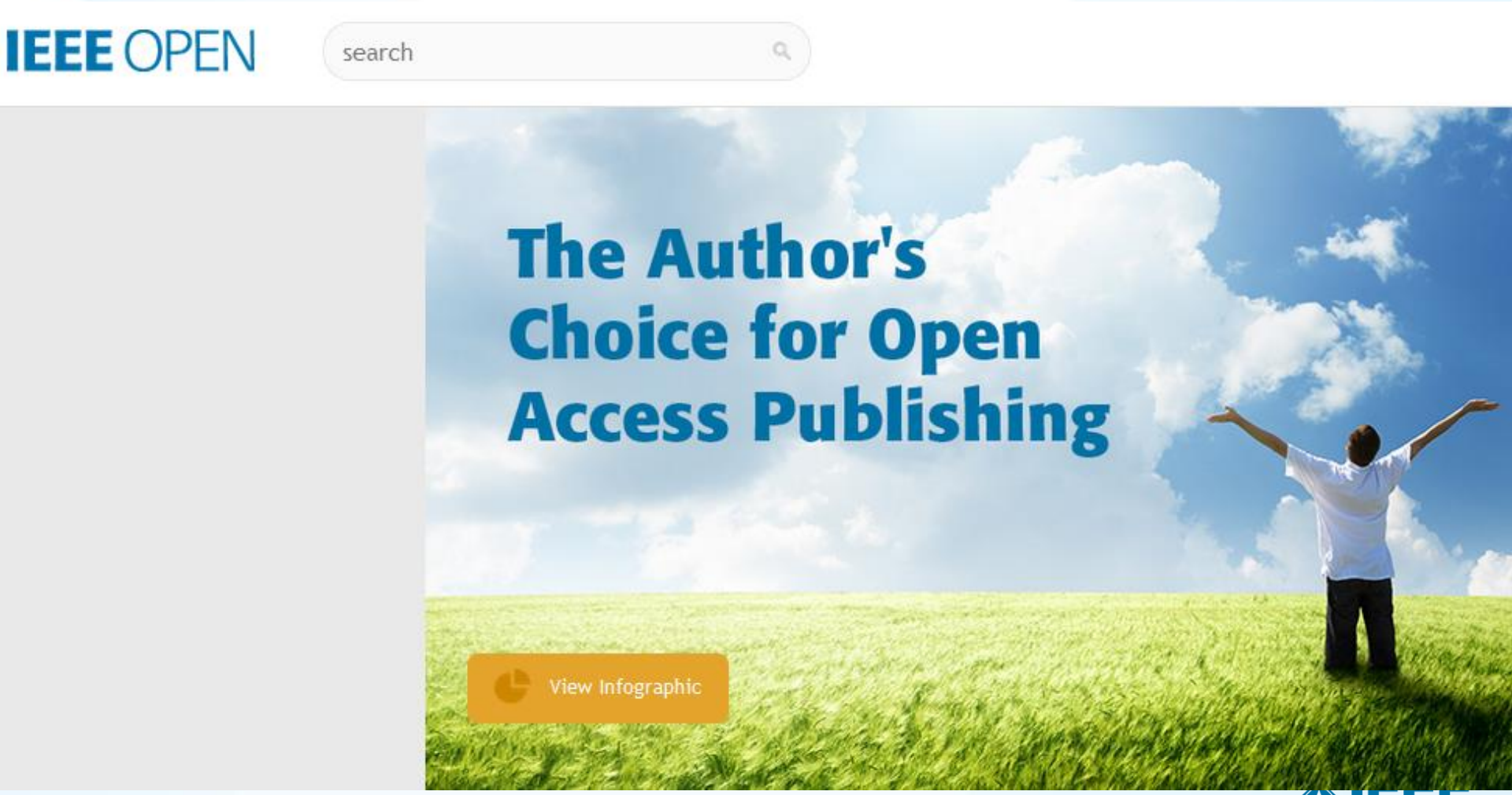

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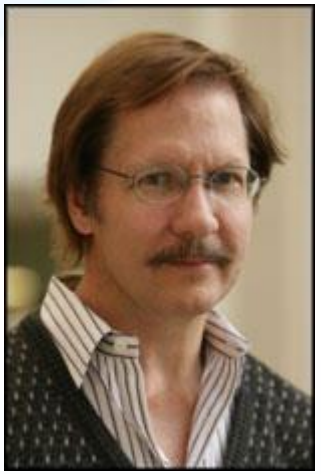

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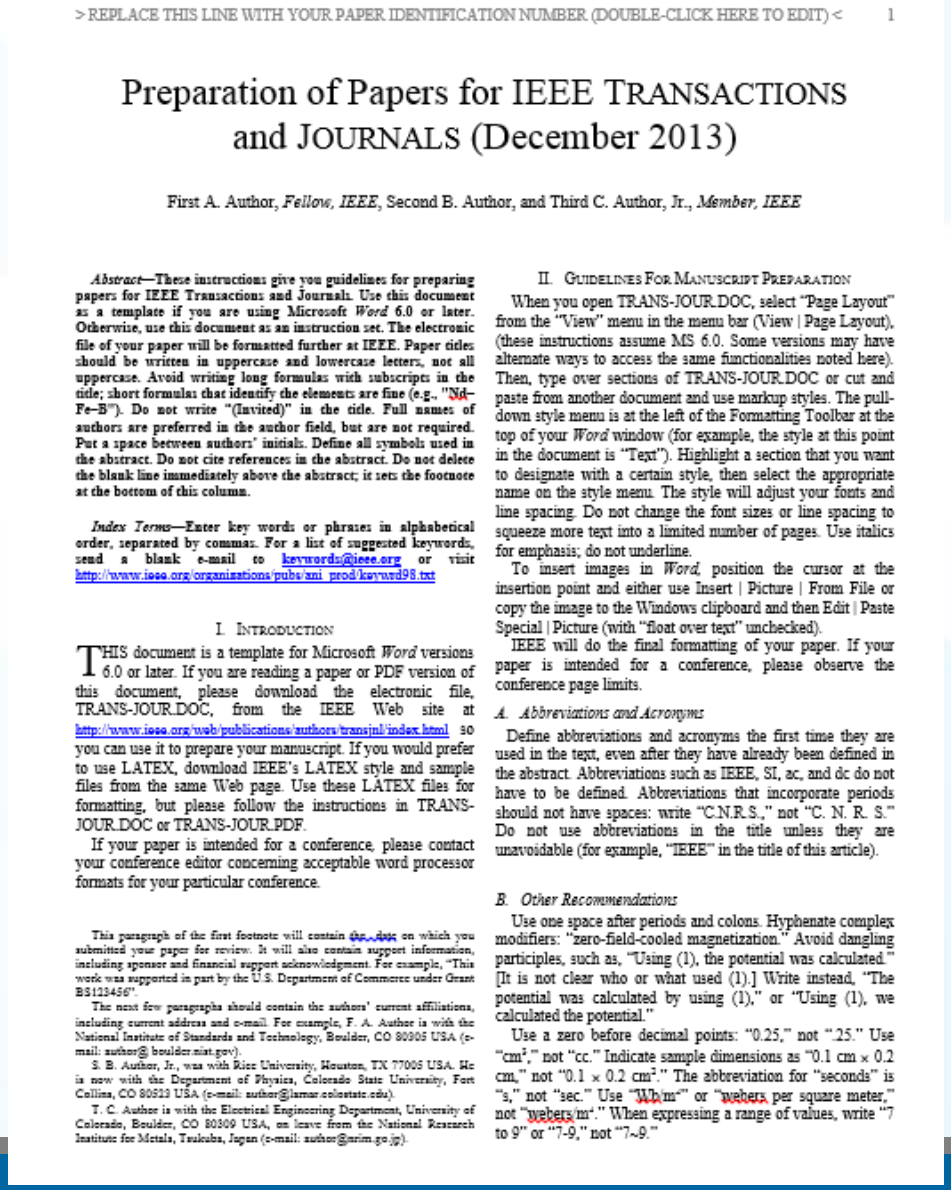

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S. B. Author, Jr., was with Rice University, Houston, TX 77005 USA. He is now with the Department of Physics, Colorado State University, Fort Collins, CO 80523 USA (e-mail: author@lamar.colostate.edu).

T. C. Author is with the Electrical Engineering Department, University of Colorado, Boulder, CO 80309 USA, on leave from the National Research Institute for Metals, Tsukuba, Japan (e-mail: author@nrim.go.jp).

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Use one space after periods and colons. Hyphenate complex modifiers: "zero-field-cooled magnetization." Avoid dangling participles, such as, "Using (1), the potential was calculated." [It is not clear who or what used (1).] Write instead, "The potential was calculated by using (1)," or "Using (1), we calculated the potential."

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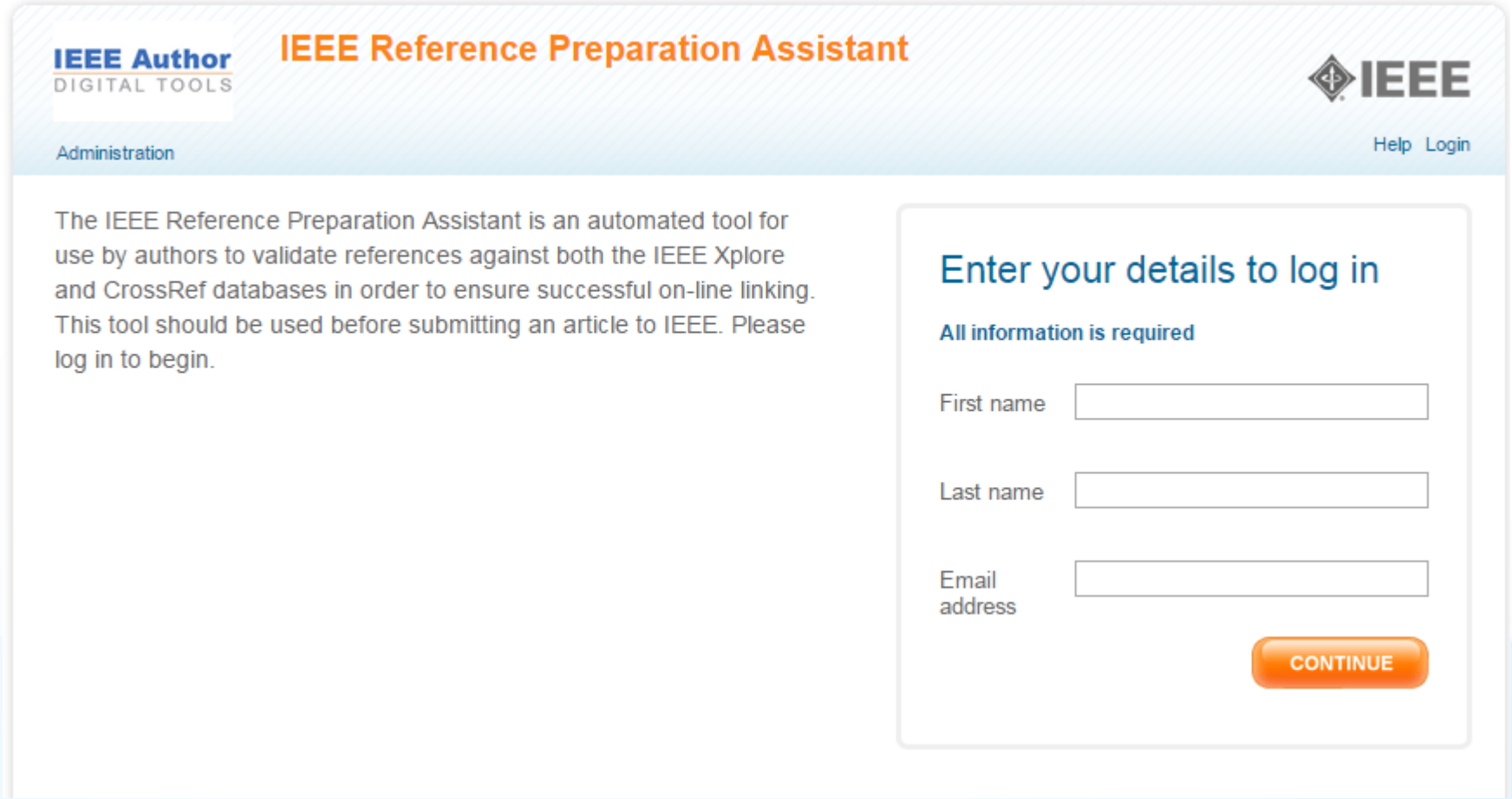

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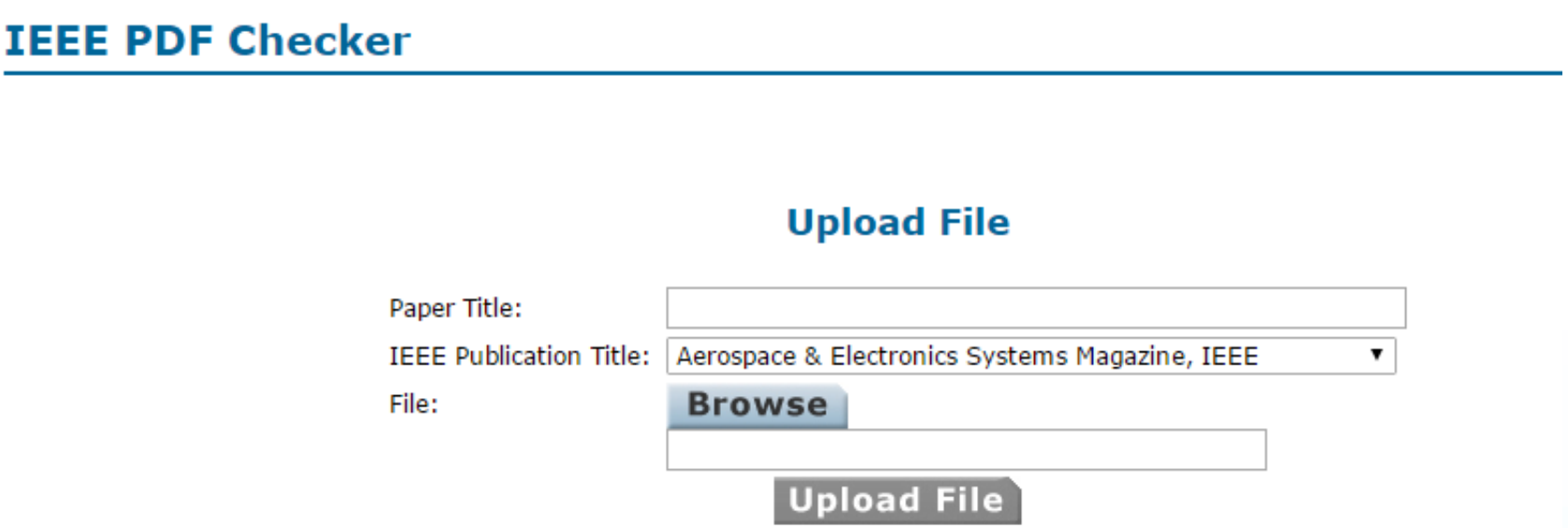

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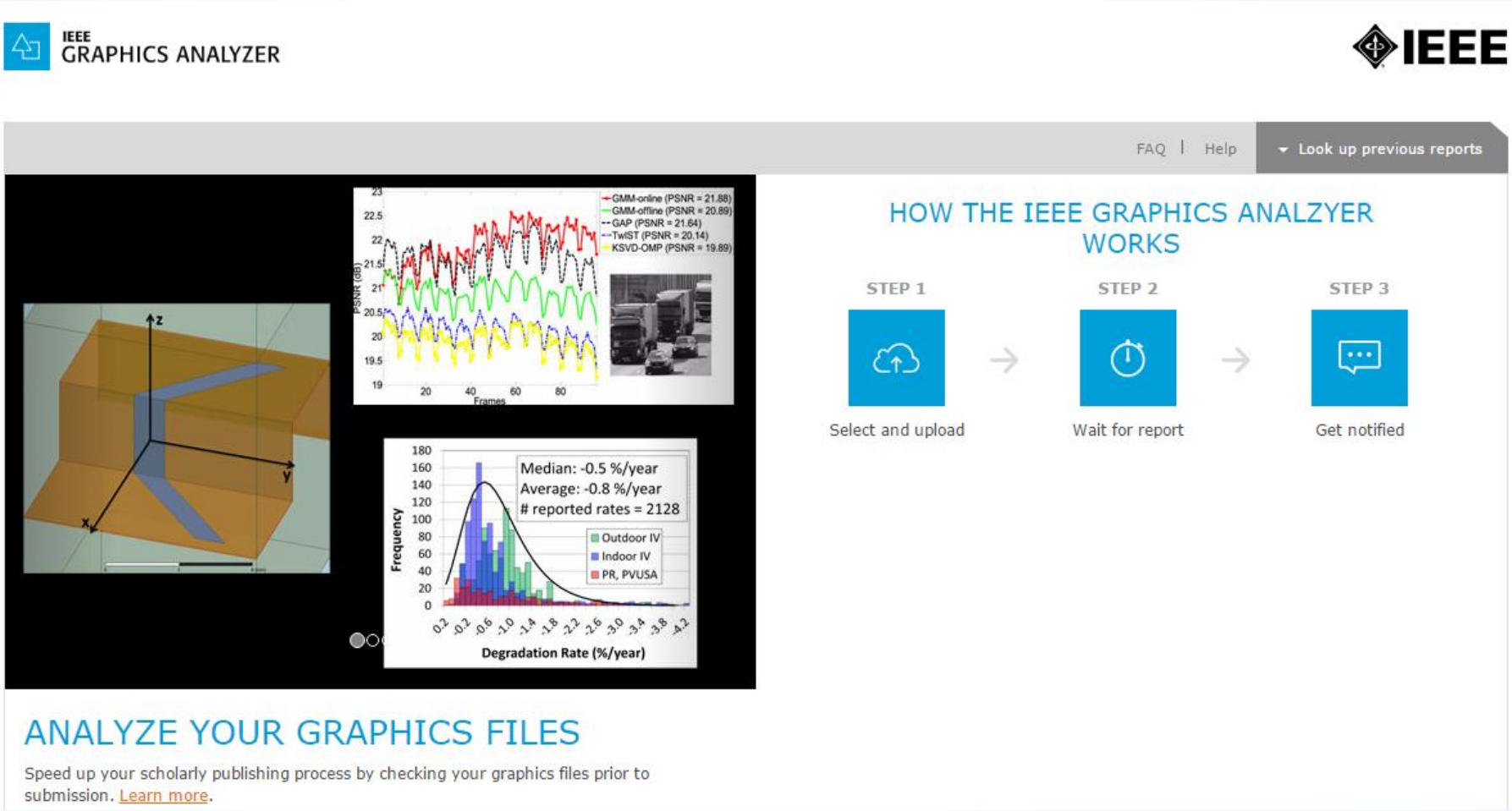

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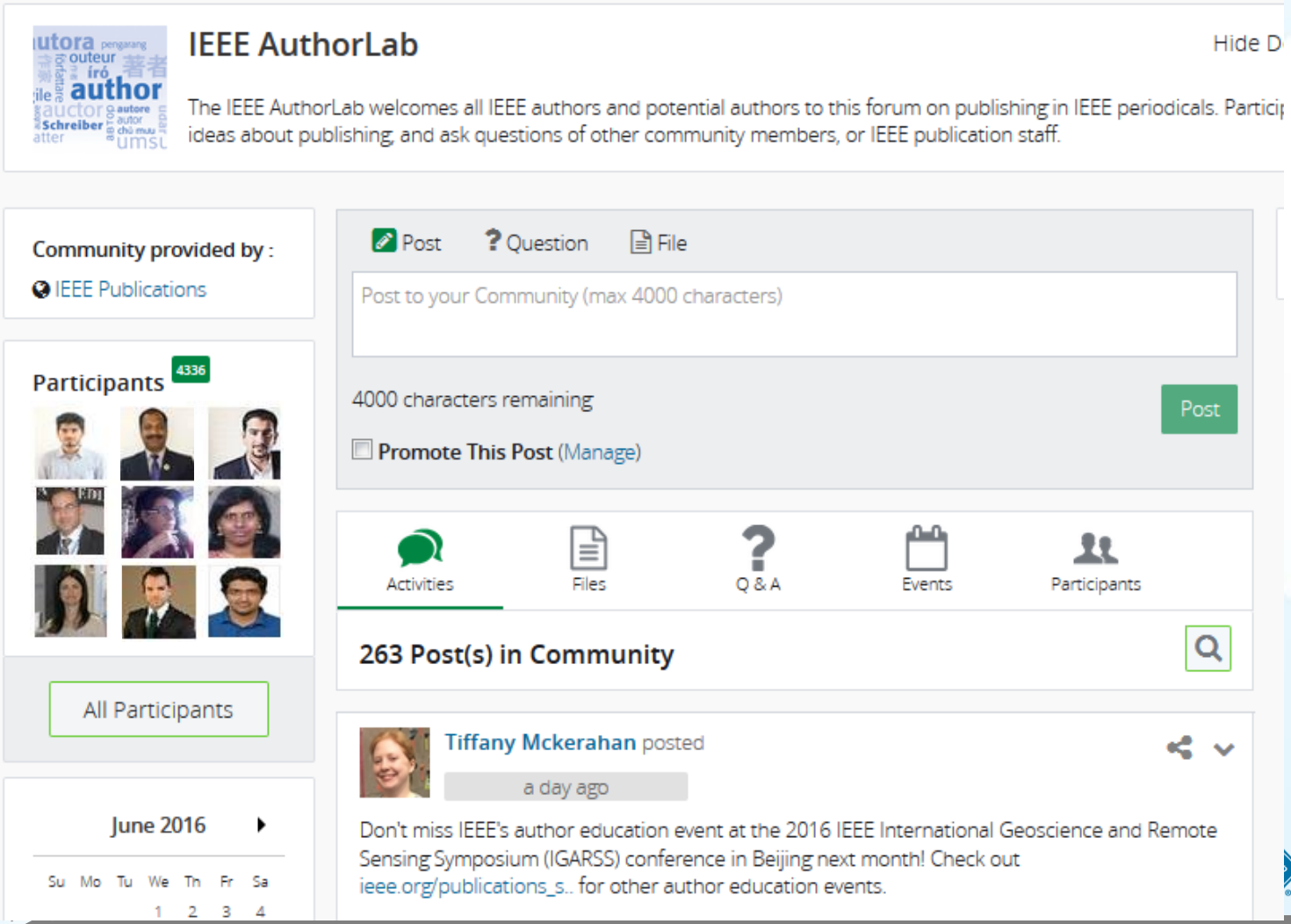

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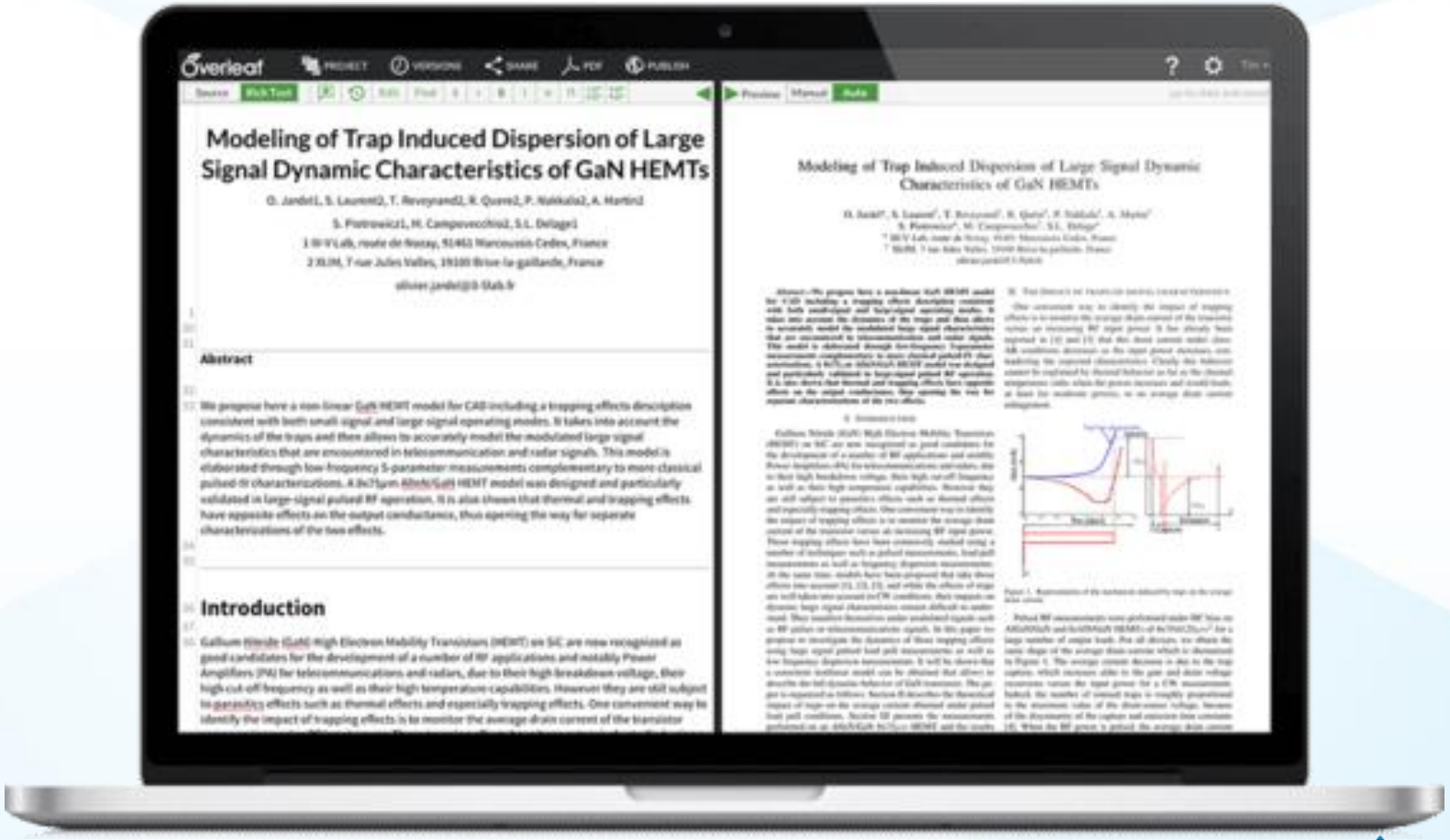

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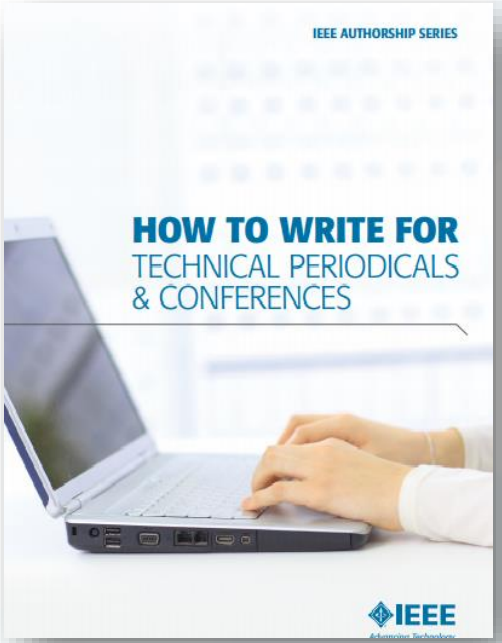

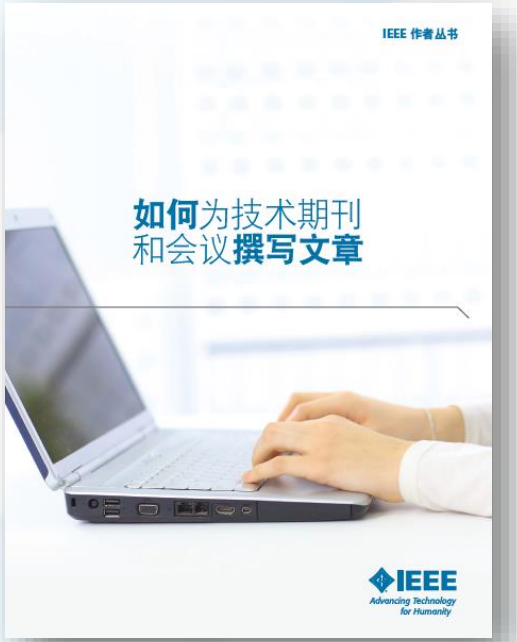

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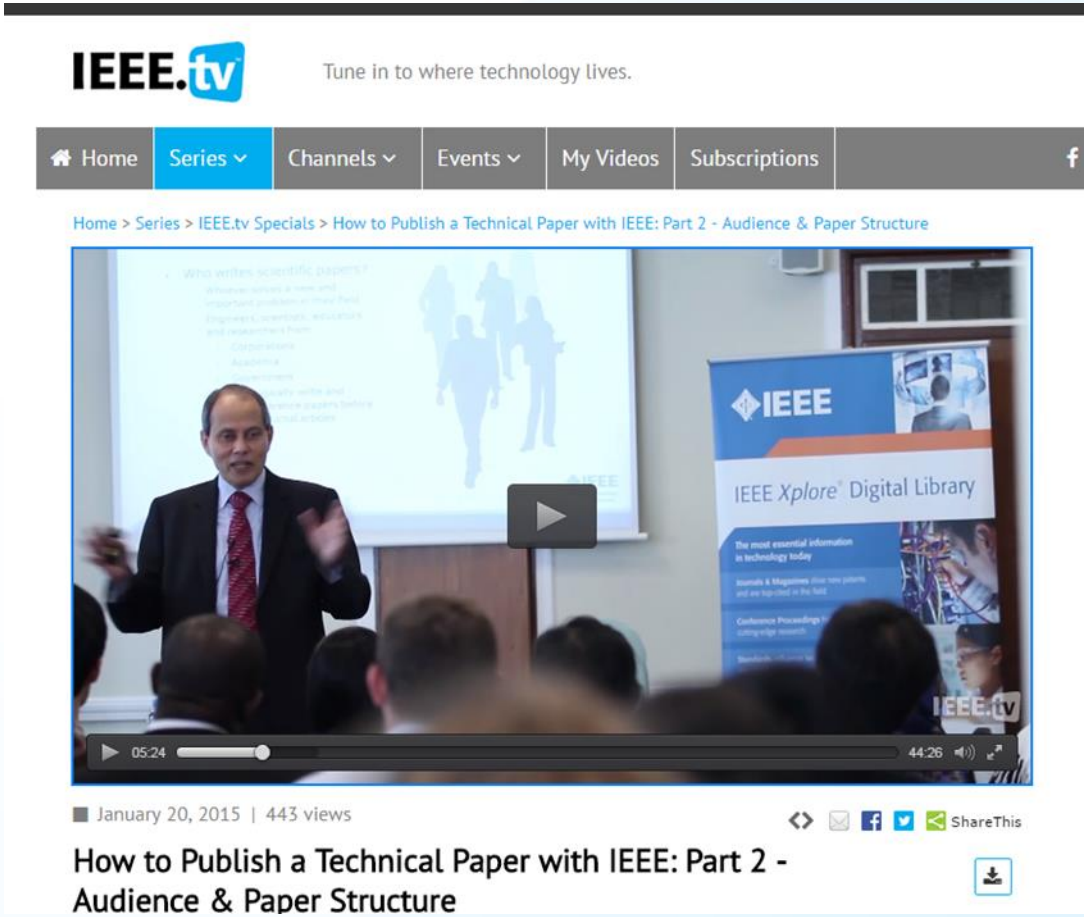

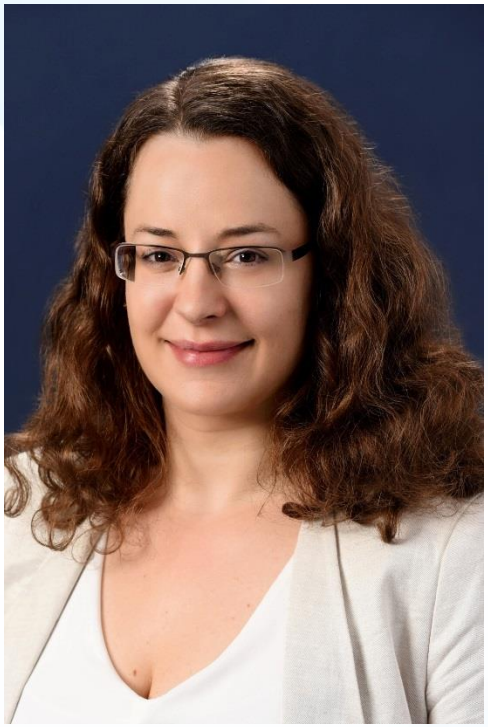

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