Structure



Paper Structure Elements of a manuscript

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

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

Salvador Ceballos, Judy Rea, Irinde Loper, Josep Pos, Senior Member, IEEE, Elder Robles, and Dara L. O'Sullivan

Advance—The Wells tertifice in Militerctional air tertifice who will be proposed efficiently in the page of all flows. The aging and the proposed of t



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

Good Title

VS.

Bad
Title



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

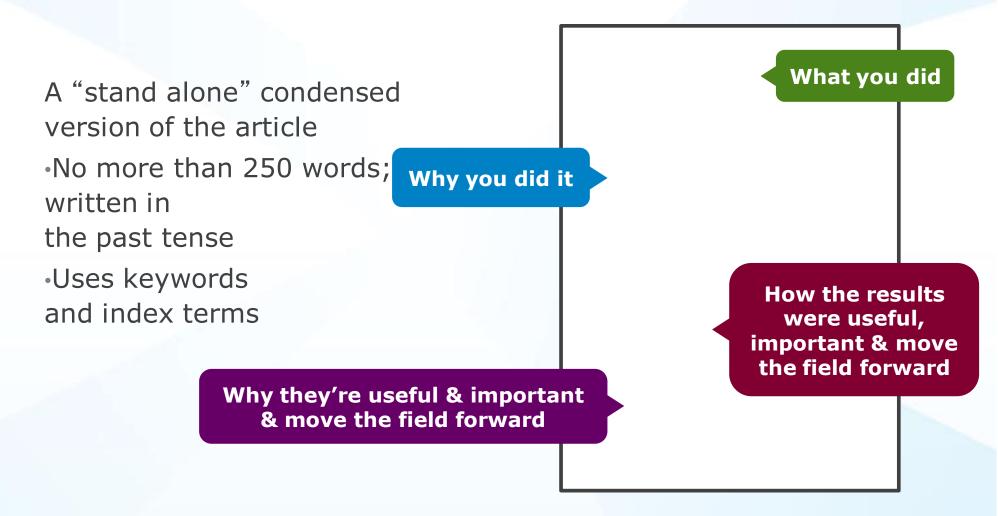
An Investigation into the Effects of Residential Air-Conditioning Maintenance in Reducing the Demand for Electrical Energy

VS

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



Paper Structure Abstract





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.

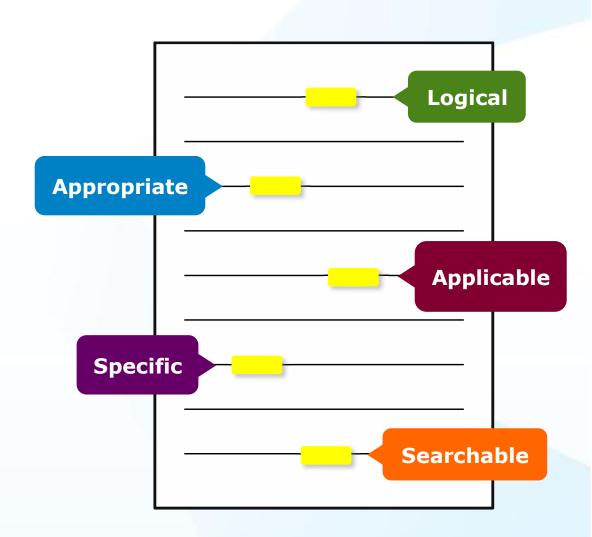
First person, present tense

No actual results, only describes the organization of the paper



Paper Structure Keywords

Use in the Title and Abstract for enhanced Search Engine Optimization





Paper Structure Introduction

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

Generally known information about the topic

Prior studies'
historical
context to your
research

Your hypothesis and an overview of the results

How the article is organized

- The introduction should <u>not be</u>
 - 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



Graphs

Show relationships between data points or trends in data





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

the SC algorithm over the whole range of w values increase to 3-4 K, except for the TIGR: 111 database, with an RMSE of 2 K. This last result is explained by the w distribution, which is biased toward low values of w in this database. When only atmospheric profiles with to values lower than 3 g - cm⁻² are relected, the SC algorithm provides RMS around 1.5 K, with almost equal values of bias and standard deviation, around I K in both cases (with a negative bias, thus the SC underestimates the LST). In contrast, when only w values higher than 3 g - cm⁻² are considered, the SC algorithm. provides RMSEs higher than 5 K. In these cases, it is preferable to calculate the atmospheric functions of the SC algorithm directly from (3) rather than approximating them by a polynomial fit approach as given by (4).

V. DISCUSSION AND CONCLUSION The two Landsot-S TIR bands allow the intercomparison

of two LST retrieval methods based on different physical s, such as the SC (only one TIR band required) thms (two TIR bands required). Direct inversion transfer equation, which can be considered withm, is assumed to be a "ground-truth" **Discussion** radition that the information about the and L_d) is accurate enough. The SC algoin this letter is a continuation of the previous SC veloped for Landsot-4 and Landsot-5 TM sensors, na ETM+ sensor on board the Landsat-7 platform. [9], and it could be used to generate consistent LST products from the historical Landsat data using a single algorithm. An advantage of the SC algorithm is that, apart from surface emissivity, only water vapor content is required as input. However, it is expected that errors on LST become unacceptable for high water vapor contents (e.g., $> 3 \text{ g} \cdot \text{cm}^{-2}$). This problem can be purify solved by computing the atmospheric functions directly from τ , L_{ν} , and L_{L} values [see (5)], or also by including air temperature ax input [15]. A main advantage of the SW algorithm is that it performs well over global conditions and, thus, a wide range of water vapor values; and that it only requires water vapor as input (apart from surface emissivity at the two TIR bands). However, the SW algorithm can be only applied to the new Landant-8 TIRS data, since previous TM/ETM sensors only had one TIR band.

The LST algorithms presented in this letter were tested with simulated data sets obtained for a variety of global atmospheric conditions and surface emissivities. The results showed RMSE values of typically less than 1.5 K, although for the SC algorithm, this accuracy is only achieved for us values below 9 g - cm⁻². Algorithm testing also showed that the SW errors are lower than the SC errors for increasing water vapor, and vice versa, as demonstrated in the simulation study presented. in Sobrino and Jiménez-Mutoz [18]. Although an extensive validation exercise from in sits measurements is required to assess the performance of the two LST algorithms, the results obtained for the simulated data, the sensitivity analysis, as well as the previous findings for algorithms with the same mathemotical structure give confidence in the algorithm accuracies

Results

- [4] V. Kastas and M. Anderson, "Advances in thermal infrared nemotic ing for land surface modeling," Agric. Porest Mateurol., vol. 149, no. 12,
- pp. 2071-2061, Dec. 2009.

 [3] Z.-L. Li, R.-H. Tang, H. Wu, H. Ren, G. Yan, Z. Wan, I. S. Trigo, and I. A. Sobrino, "Satellite-derived land surface temperature: Current and I. A. Scheine, "Statistic-derived land surface temperature: Currient status and pempeadray," Streams Sant. Extrator, vol. 131, pp. 14–37, Apr. 2003.
 [3] Z.-L. I. H. Wu, N. Wang, S. Qiu, J. A. Sobrine, Z. Wan, S.-H. Tong, and G. Yan, "Land surface semisivity notifiest from satellite data," Int. J. Streams Surv., vol. 24, no. 150, pp. 5064–5127, 2013.
 [7] A. M. Miller, "Trace decades of Landar instruments," Photogramum, Eng. Streams Surv., vol. 62, no. 7, pp. 6054–625, Ph. 1697.
 [8] I. A. Karal, J. R. Sobert, E. D. Pallacconi, D. L. Heider, S. J. Mook,

- B. L. Markham, G. Chander, and E. M. O'Donnell, "Londont TM and ETM+ thermal band calibration," Con. J. Remote Serv., vol. 29, no. 2, pp. 141–152, 2003. [F] Y. C. Resinac-Marico, J. Cristifoni, J. A. Sebrino, G. Sinia, M. Ninyemia
- [7] J. C. Hambins-Oulinier, J. Chindhou, J. A. Solvenie, G. Seins, M. Shuyerin, and X. Fore, Towlston of the single-channel algorithm for land surface temperature retained from Lundar thermal-influent dam, "IEEE Trans. General Senses Sense, vol. 47, mo. 1, pp. 259–249, for 2002.
 [8] L. M. McMille, "Entimation of use author temperatures from two breast window measurements with different theoretim," J. Geophys. Rev., vol. 60, m. 36, pp. 5113–5117, 1972.
 [10] J. A. Solvino, Z.-L. Li, M. P. Seoll, and F. Escher, "Multi-channel and multi-ough algorithms for estimating are and land surface temperature.
- with ATSR data," Int. J. Remote Sens., vol. 17, pa. 11, pp. 2089-2114,
- [12] J. C. Rminer-Matter and J. A. Setrino, "Spin-window coefficients for land surface temperature retrieval from low-resolution thermal infrared sensors, "NEEL Generic Remote Steen Lett., vol. 5, no. 4, pp. 805-408, Oct. 2008.
- [17] A. Ruck, G. R. Anderson, R. K. Arbarya, J. H. Chebyand, L. S. Rematab E. R. Shetle, M. W. Mathew, and S. M. Adist-Golden, MODUTAIN Dwe'r Monael. Rencom AFR, MA, USA: Air Pette Res. Ltb., 1999.
- [14] A. M. Enitridge, S. F. Shoir, C. I. Grove, and G. Rivera, "The ASTER spectral library vention 2.0," Semant Star. Emittee, vol. 113, no. 4,
- p. 711–715, Apr. 2009. Cristital, J. C. Reskar-Mulior, J. A. Sebrine, M. Ninyscola, and
- [15] Y. Cristfoni, J. C. Smikara-Medica, J. A. Schrine, M. Ninyamia, and N. Pena, Temporamental in hard surface supercursa setting them to Luminar setting security hand using water report and air temporators," J. Greysley, Rev., vol. 18, no. Dis., D. 1909, 2009.
 [16] D. R. Den, S. M. Uppsie, A. J. Simmons, R. Sarristoni, R. Passe, S. M. Uppsie, A. J. Simmons, R. Sarristoni, R. Passes, R. Sarristoni, V. A. Estimano, R. Sallott, N. Revenera, P. Basskeit, A. C. M. Radjann, L. vun de Rang, R. Ridde, N. Revenera, C. Deleo, R. Dengel, M. Passeites, A. G. Gee, L. Riethberger, S. R. Rady, R. Harristoni, R. V. Ridden, L. Indrae, R. Railberg, M. Krolley, M. Methodomi, A. P. Mohlylly, R. M. Mange-Sara, J. C. Morawiste, R. M. Methodomi, A. P. Mohlylly, R. M. Mange-Sara, J. C. Morawiste, R.-M. Park, C. Feuberg, R. de Rassan, C. Torolese, J.-N. Talgant, and S. Viller, The ERA-Absteries cancelly size Configuration and performance of the data assimilation system, "Q. J. R. Mateurel, Soc., vol. 197, no. 658, pp. 555–567, 2011. pp. 555-597, 2011.
- C. Mostar, C. Durán-Alarofo, J. C. Resines-Mirfor, and J. A. Sobrino, "Global Atmospheric Profiles from Reconfysis Information (GAPRI): A new dotaset for forward simulations in the thermal inflared region," IEEE
- [18] J. A. Sobrino and J. C. Renlinan-Muffer, "Land surface temperature 7. A. Sottino de I. C. Immino-centor, Line autres desperates settlerel from thermal infrared data: An assessment in the content of the surface processes and ecosystem changes through response analysis (SPECTRA) mission," J. Geophys. Sex., vol. 110, no. D58, p. D16108,



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





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

1531

Properly

cited material

We then have

$$(P_i^{n,\tau} + P_i^{n,\tau})^2 = (P_i^{n,\tau} - P_i^{n,\tau})^2 + 4P_i^{n,\tau}P_i^{n,\tau}$$

 $\leq (\hat{P}_i^{n,\tau} - \hat{P}_i^{n,\tau})^2 + 4\hat{P}_i^{n,\tau}\hat{P}_i^{n,\tau}$
 $= (\hat{P}_i^{n,\tau} + \hat{P}_i^{n,\tau})^2.$ (32)

Since $P_1^{k,+} - P_1^{k,-} = P_2^{k,+} - P_1^{k,-}$, we then have $P_2^{k,+} \in P_1^{k,+}$, and $P_1^{k,-} \in P_1^{k,-}$. Because the operational cost is an increasing function of $(P_2^{k,+}, P_1^{k,-})$, we obtain that

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

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

Resources

- [1] "Renewables: Unergy You san Count on," Tech. Rep. Union of Conowned Scientists, 2013.
- [2] S. Collier, "The steps to a squarter grid," IEEE lbd. Appl. Mag., vol. 16, no. 7, no. 62-69, 2010.
- 60, 2, pp. 62-68, 2010.
 J. A. Turner, "A realizable nanowable energy future," *Sci.*, vol. 285, no. 5428, pp. 667-680, 1996.
- [4] "Exploration of High-Penetration Heravechia Electricity Futures," Took Hep. National Renerable Spergy Lab., 2012.
- [5] T. Washnam and J. Mers. A Definition of Corbon Footprine. Haup-page, NY, USA: Hove Science, 2008.
 [6] J. Carraco, L. Françasio, J. Stelanowicz, E. Galvan, R. Guisado, M.
- [8] J. Carrosco, L. Franqueiro, J. Distantentica, E. Calvine, R. Chenado, M. Potas, J. Laou, and N. Moreno-Alfonso, "Poven-electronic systems for the grid computation of renewable energy sourcest: A survey," IEEE Trans. Incl. Silicorum, vol. 53, no. 4, pp. 1002–1016, 2006.
- [7] H. Hoshim, A. Linca, and J. Perma, "Energy arongs optimis—characteristics and comparisons," *Homosophic Nationalle Uniongy New*, vol. 12, no. 5, pp. 1221–1250, 2008.
- [8] J. Caccia-Gorzalez, R. de la Moela, L. Sietzer, and A. Gorzalez, "Stochastic joint opticitation of wind generation and purposed-atmage units as a electricity market," IEEE Trans. Power Syst., vol. 23, no. 2, pp. 450–460, 2008.
- [9] T. D. Ngoyen, K. -J. Theng, S. Zhang, and T. D. Ngoyen, "On the moding and control of a novel flywhool energy storage system," in Proc. JC 0507, 2010, oz. 1593–1401.
 - T. SEEZ, 2010, pp. 1395—1401.
 See, T. Bhatascharya, D. Tran, T. Stew, and A. Kharshadkone.
 poolse earing: strenge system involving bettery and ultracapacitors arise swage; manageresses in micrograd applications. IEEE, J. Petrova, vol. 26, pp. 523–590, 2011.
 - MacNew, Vol. 25, no. 3, pp. 923–930, 2011.
 and 3 V. Miller, "Eay challenges and recent progress in final cells, and hydrogen storage for clean energy systems," year Sources, vol. 159, no. 1, no. 73–80, 2000.
 - cour Source, vol. 159, no. 1, pp. 73-40, 2000.

 atto and III Infield, "Energy decays and its use with international country," IEEE Trans. Energy Convention, vol. 19, no. 2, pp. 441-440, 2004.
- [13] K. O. Woltungh, "Compressed air mange storage," J. Storage, vol. 2, no. 2, pp. 106–112, 1978.
- [14] C. Abbey and D. Jone, "Superaspector energy storage for mind energy applications," IEEE Trans. Ind. Appl., vol. 43, no. 3, pp. 769-776, 2007.
- [15] P. Brown, J. P. Lopes, and M. Marce, "Optimization of puropad storage impactly in an included power system with large ensemble posetration," *IEEE Trans. Proceedings*, vol. 23, no. 2, pp. 523–531, 2008.
 [16] C. Abbey and G. Jose, "A stochastic optimization approach to rating
- [16] C. Abbey and O. Joos, "A stochastic optimization approach to rating of energy storage systems in whol-dissel isolated gride," IEEE Trans. Preset Syst., vol. 24, no. 1, pp. 418–425, 2009.
- [17] Y. Zhang, H. Gamis, and G. Giannalyis, "Robust energy management for microgrids with high-posteration merovables," ISSN Trans. Suninfrashle filtergy, vol. PP, no. 99, pp. 1–10, 2013.

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

- [18] S. Boyd, N. Parikh, H. Cha, B. Peleam, and J. Loisman, "Distributed opter transce and maintainal learning via the alternating direction method of multiplian," Foundations Twinds Mach. Learning, vol. 3, no. 1, pp. 1–122, 2010.
- [19] G. Calaffore and M. Campi, "The sumanto approach to solute control design," IEEE Traves Autom. Contr., vol. 51, no. 5, pp. 742–753, 2006.
- [20] A. Stapiro, D. Dentcheva, and A. Rustczynski, Lecturer on Stochastic Programming: Modelling and Theory. Philadelphia, NJ, USA: SIAM, 2009.
- [21] Y. Zhang, N. Gamis, and G. Giannalois, "Risk-constrained energy management with multiple wind farms," in Proc. IEEE PSS ISSET, 746, 2013, pp. 1–6.
- [22] Y. Zhang, N. Gatsis, V. Kokarros, and G. Giannakin, "Risk-aware managenesed of distributed strongy resources," in Proc. Set. Conf. Digital Digital Processes, 3rd, 2013, pp. 1–5.
 [21] P. Yang and A. Nelsons, "Hybrid energy acomage and generation plan-
- [23] P. Yang and A. Nebons, "Thybrid energy storage and generation planning with large meetable penetration," in IEEE Int. Storkshop Computer Adv. Molif-Ventor Adaptive Process., Doc. 2011, pp. 1—4.
- [24] FFRI, "Electricity Energy Storage Technology Optimes: A White Paper Printer on Applications, Costs, and Benefits," Tech. Rep. EPSE, Pale. Alto, CA, 188A, 2010.
 [23] National Solaw Residence Flora Base, [Online]. Available: http://residence/index.doi.org/10.1006/j.
- [23] National Solar Realistics Data Base, [Online]. Available: http://credc.and.gov/uolar/old_data/nath/.
 [26] S. Wilson, National Solar Radiation Database 1991 2010 Update
- [26] S. Wilson, National Solar Radiation Database 1997 2010 Update User's Manual, 2012.
- [27] EFRI, "Rescriptive Eastgy Tachnical Assessment Guide TAG-RE 2006," Tech. Rep. EPRI, Pulo Alto, CA, USA, 2007.
- [28] ERCOT Hourty Load Data Archive [Online]. Available: http://www.ercot.com/gradiofo/cod/load/bid/
- [39] M. Orazz and S. Boyd, CPX: Mexical Software for Disciplined Convex Programming, Version 2.0 Bens 2012 [Option]. Available: http://overcom/eve
- [30] "MISO Daily Report," 2011, Electric Power Markett: Midwar (MISO), PERC [Chales]. Available: http://www.ferr.gov/market-over-sight/mkt-electric/eldwest/mist-erobyver.asp
- [31] "CAISO Daily Report," 2011, Electric Power Markets: California (CAISO), PERC [Online]. Available: http://www.fier.gov/marketcversight/in-bi-electric/california/caiso-archives.asp.



Peng Yang (S'11) received the B.Sc. degree in electrical engineering from University of Science and Technology, Autor. China in 2009, and the M.Sc. and 79-D. degrees in electrical engineering from Washingson University in St. Louis, Sc. Louis, MO, USA, in 2011 and 2014, respectively, His Ph.D. derivor in Dr. Ayro Nebers.

His research interests include statistical signal processing optimization, machine learning and compressive sensing, with applications to amort gride.



Arys Neberal (S180-M*E3-3M*90-8*94) received the B.Sc. and M.Sc. degrees from the Technico, Faith, Irrael, and the Ph.D. degree from Stanfard University, Stanford, CA, USA

He is the Degene and Martin Lehman Professors and Chair of the Position M. Clima Department of Electrical and Symmus Pagineering (1851); at Washington University in St. Lonis (WUSTL), St. Lonis (WUSTL)

Textuser-thronous Season, Picconstant from 2004 to 2005, From 2000 to 2005, he was the Visa Previolent of the IRDE Signal Processing Society (SPS), the Chair of the Publications Biospit, and a member of the Inscatting Committee of the Society, He was the founding Editor of the special columns on Leadership. Reflections in IRDE Signal Processing Adaptives from 2001 to 2006. He has been a Reflow of the IRDE sizes 1994, the Royal Statistical Society stocs 1994, and the AAAS shant 2017.



Writers last task once all sections are written:

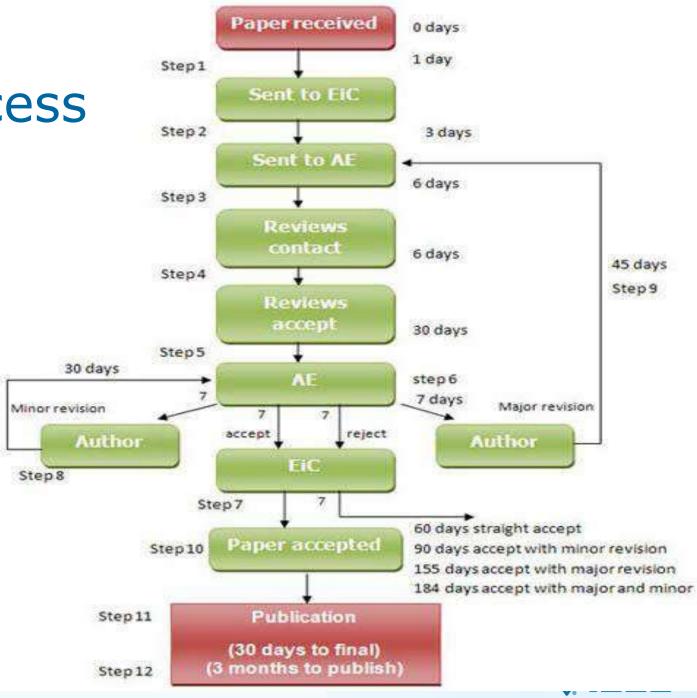
- How do they fit together?
- Does each section perform its appointed task?
- Is the order logical?
- Do the ideas flow together? Is it easy to read?
- Does the same material appear more than ones?
- Can it be clearer?
- Is there enough detail?



Review

Review Process

e.g. IEEE
Transactions on
Information
Technology in
Biomedicine



Audience

What IEEE editors and reviewers are looking for

- Content that is appropriate, in scope and level, for the journal
- Clearly written original material that addresses a new and important problem
- Valid methods and rationale
- Conclusions that make sense
- Illustrations, tables and graphs that support the text
- References that are current and relevant to the subject



Audience

Why IEEE editors and reviewers reject papers

- The content is not a good fit for the publication
- There are serious scientific flaws:
 - Inconclusive results or incorrect interpretation
 - Fraudulent research
- It is poorly written
- It does not address a big enough problem or advance the scientific field
- The work was previously published
- The quality is not good enough for the journal
- Reviewers have misunderstood the article



Ethics



Ethics

Types of misconduct

Conflict of Interest

 A financial or other relationship with the publication at odds with the unbiased presentation of data or analysis

Plagiarism

 Copying another person's work word for word or paraphrasing without proper citation

Author Attribution

 Must be given if you use another author's ideas in your article, even if you do not directly quote a source

Author involvement/contributions

- Include any and all who have made a substantial intellectual contribution to the work
- Do not include minor contributors



Ethics Ethical publishing

Duplication, Redundancies & Multiple Submissions

- Author must submit original work that:
 - Has not appeared elsewhere for publication
 - Is not under review for another refereed publication
 - Cites previous work
 - Indicates how it differs from the previously published work
 - Authors MUST also inform the editor when submitting any previously published work



Refer to our Tips Sheet
http://www.ieee.org/public
ations standards/publicatio
ns/authors/plagiarism and
multiple submissions.pdf



Where to Publish?



Types

- Traditional Journals –
 Users/Libraries pay for access
- Open Access Journals –
 Author pays, free download
- Hybrid Journals –
 Most articles are traditional,
 some are open access (author
 preference)



Fully Open Access Topical Journals

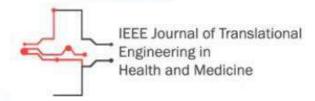


IEEE Transactions on Emerging Topics in Computing





IEEE Journal of Electron Devices Society



Editors in Chief



Fabrizio Lombardi, *IEEE Transactions on Emerging Topics in Computing*



Carmen S. Menoni, IEEE Photonics Journal



Renuka P. Jindal, IEEE Journal of Electron Devices Society



Clifford Dacso, IEEE Journal of Translational Engineering in Health & Medicine



Atam P. Dhawan, IEEE Journal of Translational Engineering in Health and Medicine

