



Aalto University
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Engineering

Peer Review, JUFO, Impact Factor What You Should Know When Writing a Scientific Journal Paper

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Outline

- Requirements for scientific articles
- Example editorial process
 - An IEEE journal
- What editors and reviewers watch in manuscripts
- Dos and don'ts
- Impact factor
- JUF0 ranking system
- BONUS: H index





Required from Scientific Articles

- Must present something “new”
 - New observation/application/solution, new/improved method...
- Must be validated
 - The new “thing” must have been tested and have advantages
 - Advantage can be w.r.t. accuracy, efficiency, cost, speed...
 - Usually need to compare with previous results or ground truth
- Must be well written
 - Sufficiently good use of the English language
 - Old and new must be clearly separated!
 - Old = inherited knowledge; New = what is proposed in the paper
 - Common problem: Confusing so that readers can’t see easily what is new, what is old, what is relevant...

First Step in Journals: Editorial Check

- Editor-in-Chief or Senior Editor checks each submission
- Example: *IEEE/ACM Transactions on Audio, Speech and Language Processing*
 - I was a Senior Area Editor in audio, handling 2-3 submissions weekly, about 100 per year, >500 submissions in 2015-2020
 - I started as the Editor-in-Chief in the *Journal of the Audio Engineering Society* in Sept. 2020, where I check about 200 annual submissions
- The basic screening should take max 15 min
 - Try to make it easy for the editor to “like” your paper



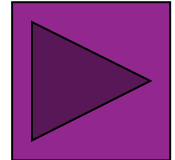
Editorial Check (in 15 min)



- The Editor-in-chief or Senior Editor routinely checks the following points:
 1. Relevant topic to this journal? (References to this journal)
 2. Plagiarism checking (iThenticate report)
 3. Is there novelty?
 - Can reader FIND novelty? Search for “new”, “novel”, “propos”...
 4. Is it properly validated?
 - Comparison/evaluation/validation/experiments...
 5. Is it well written?
- If the submission fails even in 1 → Immediate Reject [IR]

Typical Reasons for Immediate Reject

- Poorly written
 - Plagiarism <*iThenticate example*>
 - Language deficiency
 - Difficult to (quickly) see what's new or the benefits
- Lack of novelty
 - Contributions are too minor
 - Something similar was published earlier (lack of references)
 - Difficult to distinguish between previous and new ideas
- Incomplete
 - Validation (or comparison) is missing or is too limited
 - Not reproducible (lacking details, such as parameter values)



Example iThenticate report

The colored text passages are copied from other sources (every sentence!)

ORIGINALITY REPORT

37%

SIMILARITY INDEX

Abstract—A new nonlinear multichannel active noise control (ANC) scheme based on a set of adaptive spline filter has been designed in this paper. The proposed method employs an adaptive spline filter as the component controller, which is a cascade of an adaptive finite impulse response (FIR) filter and an adaptive spline activation function. The weights of the FIR filters, as well as the control points of the adaptive spline activation function, are updated using a new learning rule. The bounds for the learning rates for the proposed method has been computed and a detailed computational complexity analysis of the proposed algorithm has been carried out to show the reduced computational complexity of the proposed approach. The proposed approach has been shown to offer good noise mitigation under nonlinear ANC scenarios at a significantly lower computational load in comparison with other methods compared. In addition, the proposed controller can transform itself from a non-linear to a linear one depending on the noise control scenario.

Index Terms—Nonlinear filter, active noise control, multichannel systems, adaptive filter, spline filter.

I. INTRODUCTION

Acoustic noise control may be broadly divided into two categories namely passive noise control (PNC) and active noise control (ANC). PNC methods are not effective for attenuating low frequency noise and ANC has recently emerged as an effective method for noise cancellation in the low frequency zone [1]. The basic principle of ANC is the destructive superposition of sound waves. A basic feed-forward ANC system consists of a reference microphone (which measures the primary noise which needs to be cancelled), a loudspeaker (which generates the necessary anti-noise), an error microphone (which senses the level of noise cancellation achieved) and a controller which drives the loudspeaker to generate the necessary anti-noise [1], [2]. In an ANC scheme, the controller is usually an adaptive finite impulse response (FIR) filter, the weights of which are updated using a suitable learning rule. The most popular learning scheme used is the filtered-x least mean square (FxLMS) algorithm [3].

Fig. 1 shows the basic block diagram of a feed-forward ANC system updated using a FxLMS algorithm. In the figure, $x(n)$ is the reference noise signal filtered by the reference microphone. $d(n)$ is the disturbance as observed at the error microphone. $P(z)$ is the transfer function of the primary path (the path from the reference microphone to the error

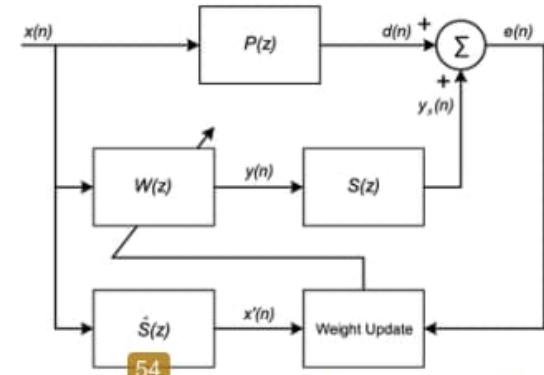


Fig. 1: Block diagram of feedforward ANC

controller, $y(n)$ is the output of the controller, $S(z)$ is the transfer function of the secondary path (the electro-acoustic path from the controller output to the error microphone output), $y_s(n)$ is the controller output sensed by the error microphone, $e(n)$ is the error signal, $\hat{S}(z)$ is the transfer function of the model of the secondary path and $x'(n)$ is $x(n)$ filtered through $\hat{S}(z)$. In a FxLMS algorithm based ANC scheme, the weights of the adaptive filter are updated as

$$\mathbf{w}(n+1) = \mathbf{w}(n) + 2\mu e(n) \mathbf{x}'(n) \quad (1)$$

where μ is the step size, $\mathbf{w}(n)$ is the adaptive weight vector of $W(z)$ and $\mathbf{x}'(n)$ is the tap delayed input signal vector $x'(n)$ filtered through the model of the secondary path.

In the presence of nonlinearities in the ANC system, the FxLMS algorithm based ANC system has been shown to offer poor noise cancellation [4]–[6]. Nonlinear ANC schemes, which use an adaptive nonlinear filter as the controller has been reported to provide improved noise mitigation under such scenarios. The popular among them are the controllers based on adaptive Volterra filter and the functional link artificial neural network (FLANN), which comes under the class of linear in the parameters nonlinear filters [7], [8]. A spline adaptive filter has been reported as an effective nonlinear filter [9]. A basic spline adaptive filter consists of an adaptive FIR filter followed by an adaptive spline activation function. The weights of the FIR filter as well as the control points of the spline activation function are updated using a suitable

What Editors Like



1. It is obvious to see that the topic belongs to this journal
 - Familiar terms in the paper title and abstract; Refs to this journal
2. Not too similar or different from other papers
 - iThenticate: $5\% < \text{Similarity index} < 30\%$
3. Easy to see the novelty
 - Words like “new”, “novel” appear in abstract, intro, and elsewhere
 - Own results are clearly indicated (“proposed”, “new”, “novel” ...)
4. Clear validation
 - Often, advantage shown w.r.t. previous best result (state-of-the-art)
5. Easy to read, no typos, not verbose, clear figures/tables

Review Process

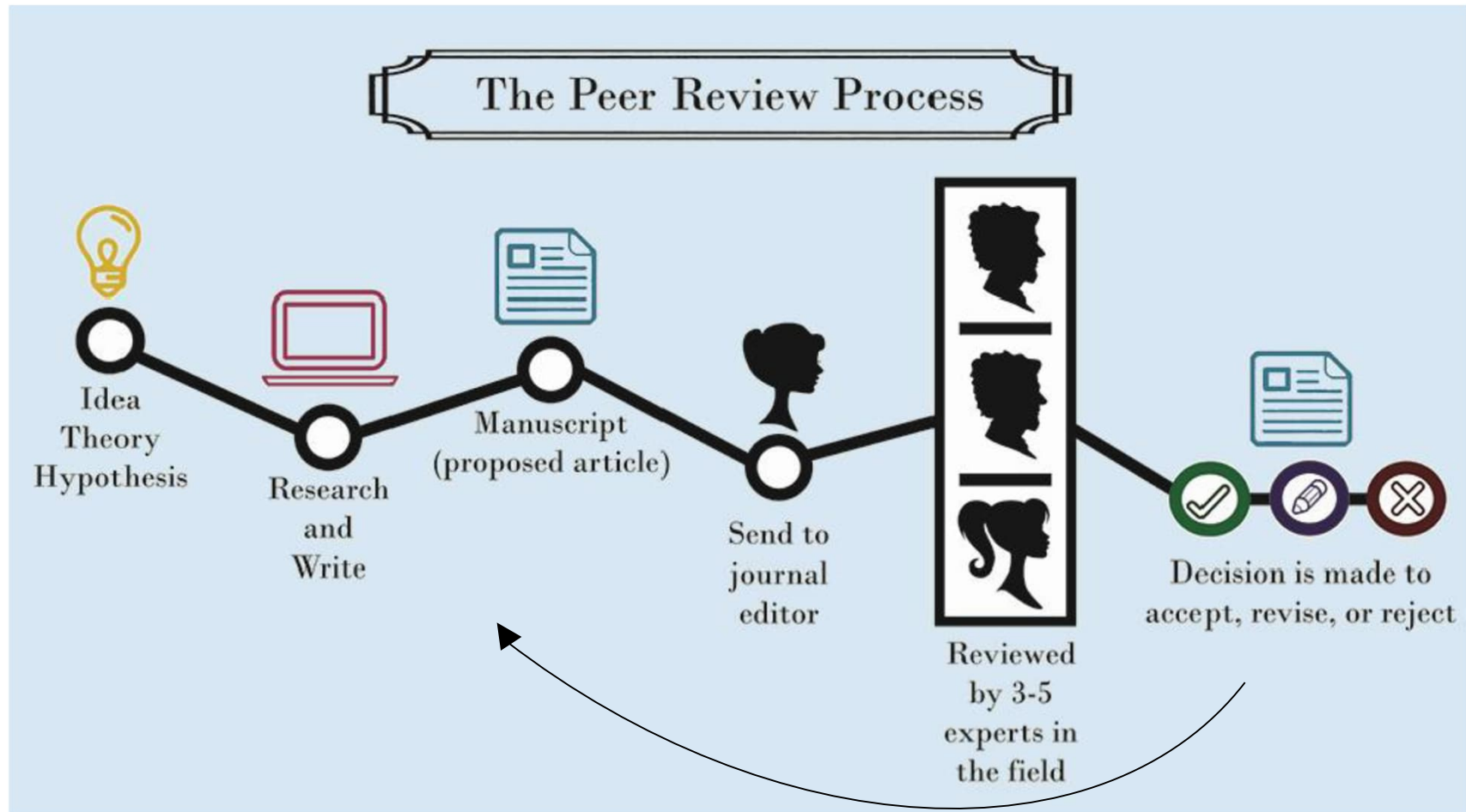


Figure taken from: <http://libguides.evergreen.edu/peerreview>

Review Process



- After the editorial check, the manuscript is assigned to an *Associate Editor*
 - She/he will invite 3-5 *reviewers* to evaluate the submission
 - Names of reviewers are often searched from the reference list!
 - Reviewers are instructed to look at *the same aspects* as editors (relevance to journal, novelty, validation, clarity, refs)
 - They are allowed 3-6 weeks, depending on the journal
 - In IEEE journals, reviewers will suggest **(A)**cccept, Minor revision (**AQ**), Major revision (**RQ**), or **(R)**eject
 - Associate Editor will decide based on reviewers' suggestions
 - Often the average, but sometimes the minimum
 - For example, one “**R**” may lead to rejection
-

Dos and Don'ts



- Use a short and descriptive title
- Use a standard structure for your manuscript
- Learn to write flawless (technical) English
- Separate new material from background – Don't mix them!
- Identify novel material explicitly using words like “new”, “novel”
 - In the intro, body, and conclusion (but not allowed in the paper title)
- Don't copy&paste sentences from anywhere (plagiarism)
- Draw iconic figures to visualize your ideas
- Cite as many previous papers/books as you can
 - Cite papers published in the same journal where you submit
 - Be sure to cite papers *from the past 2 years* (“state-of-the-art”)

Impact Factor, JUFO, H Index

What's the Impact Factor?

- Good scientific journals have an Impact Factor (IF)
- IF is a simple estimate of the average number of citations a paper gets in that journal
- IF of 2017 is computed like this for an example journal:

$$\text{IF}_{2017} = \frac{\text{Citations}_{2017}}{\text{Publications}_{2016} + \text{Publications}_{2015}} = \frac{74090}{880 + 902} = 41.577$$

i.e., ratio of citations to papers in 2 previous years to the total number of papers published in 2 years (in that journal)

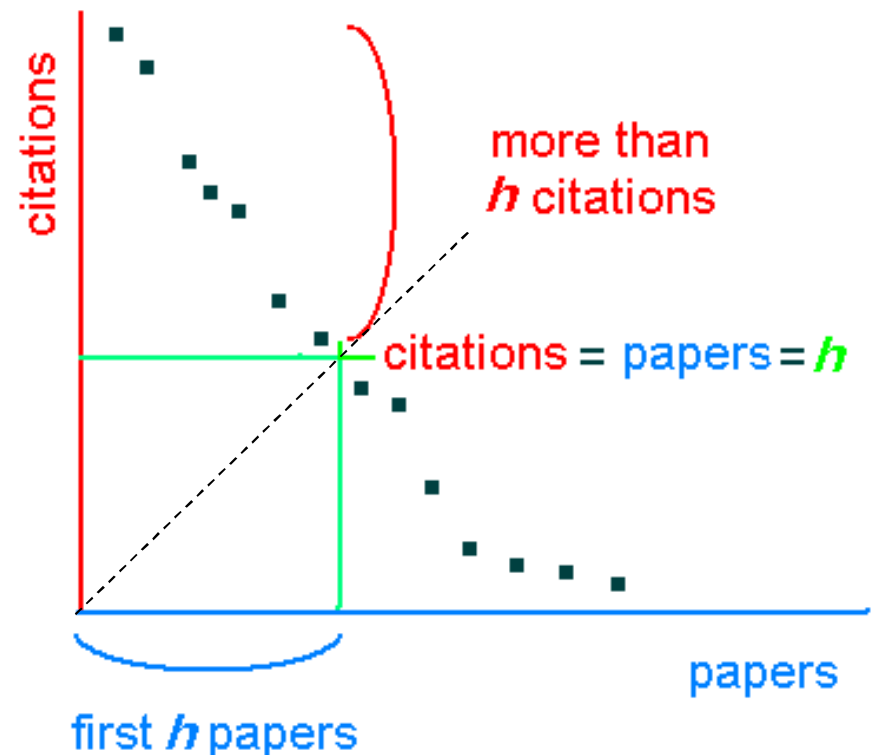
- Varies much among journals. In electrical engineering, good journals have $\text{IF} > 1$.

What About JUFO?

- JUFO = Julkaisufoorumi (publication forum):
<https://www.tsv.fi/julkaisufoorumi/haku.php?lang=en>
 - Finnish national system for ranking scientific journals and conferences, which started in 2015
 - The Finnish Ministry of Education and Culture uses JUFO points for funding decisions for universities
 - JUFO systems has 3 classes and the “no class”
 - Classes 0 and “-” mean that the publication is not ranked
 1. Basic quality: most peer-reviewed journals and conferences
 2. Leading quality: respected int’l journals and conferences
 3. Highest quality: Only the top int’l journals, one in each field
-

What Is the H Index?

- H index is a measure of a researcher's scientific success, proposed by Hirsch in 2005
- E.g. when $H = 6$, she/he has 6 papers with 6 or more citations.
- For successful researchers:
H index $>$ years from PhD
- H index can be computed from Web of Science, Scopus, or Google Scholar.
 - They're all different!



<https://guides.library.ubc.ca/citationmetrics/workshop/researchers>