How to Write a “Quality Paper” good for International Journal Publication

Takao ONOYE, Dr.Eng.

Professor, Osaka University

Vice-Chair, IEICE SIS-TC

Contents

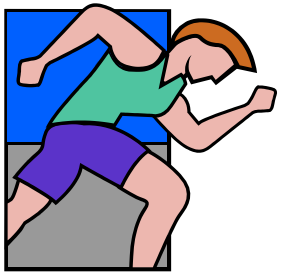
- Preparation: things before start writing
- Tips: basics to write a manuscript
- Manners and customs: what should do and what should not do
- Beneficial resources: learn from others

Preparation

things before start writing

Preparation is very important!

- Motivation & Hesitation
- Important Factors
- Get RRR!
- Selection; Type and Target
- Authors' Guidelines



These people could not attain the records without warming-up.

Usain Bolt holds a **world record** of 9'58", 100 m sprint

Cristiano Ronaldo scored new **record** of 40 goals in 2010-2011 season, Liga Espanola

Motivation and Hesitation(1)

Why scientists want to write and publish research papers?

Ideal Objective

To share their research results (findings, discoveries) with the science community to advance technology, enhance knowledge and understanding in a certain research field.

Practical Objectives

- to get an academic degree
- to get research funding
- to get recognition and/or promoted
- to make the supervisor happy?!

However, editors and reviewers do not care about your personal reasons. ☹

Motivation and Hesitation(2)

And why so small number of papers submitted?

Obstacles to write a paper

- Lack of confidence about research results
- Fear of rejection and criticism
- Poor writing skill and experience
- Short in time for writing due to other studies/jobs
- Absence of advice/support system for writing

Research is not complete, in a true sense, unless it has been published and the results shared with other researchers.

Important Factors

Checklist to submit a "quality" paper

- Does the manuscript have relevance to the journal's scope, field, topic?
- Is the research theme timely set?
- Does the research contain sufficient originality, novelty as to advance the existing body of knowledge?
- Is the research result correct and significant?
- Is the manuscript's contention clearly and consistently stated?
- Is the manuscript well-organized in proper English?

Get RRR (Research Results Ready)!

Gather all necessary materials in hand before writing.

- Experiment Data
- Analysis Results
- Figures
- Tables
- Equations
- Reference Papers

- With these, you can think about what you want to communicate in the manuscript.
- Also works to avoid ambiguity of aim & messages.
- *"Parallel processing"* is extremely difficult.

Selection; Type and Target

Which publication do you intend to submit a manuscript?

Type Selection

- **Journal Paper [PAPER, LETTER, SURVEY PAPER for IEICE Trans.]**
  final original results, refereed by peer reviewers
- International Conference/Workshop Proceedings
- Domestic Conference/Workshop Proceedings
  sometimes preliminary results, a method to be improved w/ reflecting audience's comments, refereed/unrefereed
- Technical Report from an Institute
- Ph.D., Master, Bachelor Thesis

Target Selection

- Area? Topic? Membership? Commercial? Online?
- Level? Reputation? Policy?

Mismatch of these items directly leads to **rejection**. ☹

Authors' Guidelines

Submission style widely varies among journals

Read "Information for Authors" very carefully and repeatedly

Table of Contents of IEICE Trans. Fundamentals "Information for Authors"

1. General Guidelines
2. Process for Initial Submission of a Manuscript
3. Manuscript Style Specifications
4. Galley Proofs
5. Page Charges
6. Copyright
7. Review Process

APPENDIX

Tips

basics to write a manuscript

- General Structure of a Manuscript
- What to Write in Each Part
- Elaboration of the Manuscript

Law of Delay?

Every effort in writing a manuscript takes more time than expected.

Plan writing schedule with sufficient time to polish

General Structure of a Manuscript

- Title
- Summary/Abstract
- Keywords
- Introduction
- Methods
- Results, and
- Discussions
- Conclusions
- Acknowledgements
- References

Very important components to let Editors/Reviewers grasp the overview of the work

Main text body called as "IMRAD"

Title

At the beginning, editors/reviewers/readers definitely look into the manuscript's title.

Make the paper title be

- **Concise but informative:** not to confuse readers
- **Accurate, clear, and complete:** to reflect main contribution
- **Attractive:** to improve initial impression of readers

Words to avoid: Study, Investigation, Novel, etc.

Unfavorable: Abbreviations or acronyms used only in the specific field

Title~Examples

Meaningless terms

A Study on Novel High-Speed Algorithm for MPEG-4 Audio Encoder and Its Performance Evaluation

VLSI Architecture of MPEG-4 Audio Encoder for Portable Applications

Too long, boring!

Preliminary Investigation on Pipeline Processing of Continuous Speech Recognition Algorithm using Weighted Finite-State Transducer for Embedded System Implementation

A Parallel Processing Architecture for Continuous Speech Recognition based on Weighted Finite-State Transducers

Main contribution?

Video Decoding Scheme for Portable Terminals

Low Complexity Decoder for High Resolution Video Decoding on Mobile Terminals

Summary/Abstract

Condensation of paper in single paragraph

i.e. Miniature of IMRAD [or MRAD]

Construction: one paragraph, ~300 [P], ~50 [L] words

- Simple explanation of research background and aim [if space available]
- Concise description of the achievement
- Claim of distinctiveness in the contribution
- Results [quantitative value, if any]
- Brief conclusion and vista

Caution! Not include

- Too much Background [e.g. history or general motivation]
- References [in general]
- Figures, Tables, Equations

Editors/reviewers never mind why the authors started the research

Summary/Abstract~Example

Background, Achievement, Distinctiveness, Results and Contribution

Very unbalanced

Interlaced video sequences are widely used for digital terrestrial television and camcorders. However, it cannot be displayed directly on LCDs, which display video sequences by progressive scanning. Therefore, it is necessary to convert video sequences from interlaced format to progressive format. This conversion is called deinterlacing. Various deinterlacing methods have been researched, because it in uences the quality of video so much. Methods based on motion compensation (MC) can achieve high-quality deinterlacing. However, they require much computational cost in terms of processing time and hardware resources. On the other hand, inpainting-based deinterlacing method has been proposed recently. This method can achieve quality equivalent to that of methods based on MC, although it requires lower computational cost. In this paper, we propose a novel architecture for inpainting-based deinterlacing method. By using our architecture, 1080i60 video data can be converted in real-time.

Interlaced video sequences can hardly be displayed directly on LCDs, which are compliant only with video sequences by progressive scanning. In this paper, a hardware architecture is proposed dedicatedly for real-time deinterlacing of HD video sequences. The proposed architecture is based on inpainting approach, which uses cost optimization by shortest path search to interpolate missing lines. Owing to the absence of motion estimation, it is expected that this approach requests small amount of memory bits. The number of processing elements is optimized as a trade-off between video quality and hardware costs. Evaluation results demonstrate that the proposed architecture can process HD video sequences by using 943k gates and 399 Kbits of memory.

Keywords

Registered and searched as labels of paper

For IEICE Trans. Fundamentals, 4-5 keywords are requested.

Not too long: Key "words" may in fact be words or short phrases with 2-3 words.

Choose keywords which best **reflect the contribution and application**.

Checking a keyword candidate through **IEICE Trans. Online** may be good.

VLSI [112], MIMO[64], MPEG[45], Sound Localization[7], etc. [on IEICE-EA]

FYI, IEEE publishes a keyword list [**IEEE Taxonomy**] which includes 4,882 unique terms

Introduction

Very crucial to convince readers what/why/how works done

- Background [current state and motivation] of the research [But not "complete history"]
- Review of existing/related works with some limitation
- Key technique to overcome the limitation or to achieve breakthrough
- Brief summary of the result, and
- May contain outline of the whole paper

Should follow a logical sequence

Editors/reviewers may make their initial decision [accept/reject] about the paper after reading through the introduction

Introduction

Stanford InfoLab's patented five-point structure for introductions
http://infolab.stanford.edu/

Unless there's a good argument against it, the Introduction should consist of five paragraphs answering the following five questions:

- What is the problem?
- Why is it interesting and important?
- Why is it hard? (E.g., why do naive approaches fail?)
- Why hasn't it been solved before? (Or, what's wrong with previous proposed solutions? How does mine differ?)
- What are the key components of my approach and results? Also include any specific limitations.

Methods

Main part to explain details of the work

- Can be broken into sub-sections
- Complete description of the technique used in the work by all means [e.g. Figures, Tables, Equations, Pseudo Codes]
  - New method: Describe in detail
  - Existing Method: Describe with citation [don't repeat descriptions]
- Use Appendix if limited but yet important interest for readers [e.g. derivation of equations]
- Try hard to explain "novelty" and "significance"

Results

Validation of contribution

- Usually, experiments are conducted to evaluate how the proposed method works
  - Experimental setup
  - Test sets
  - Procedure
  - Arrangement of resulting data [graph and table]
  - Comprehensive comparison with existing methods [fairness]

Figures and Tables

The most informative components to show results

In general:

- Figures give intuitive knowledge of research results [qualitative]
- Tables give more precise data of research results [quantitative]

Figure caption below the figure while table caption above the table. [Not too long but not too short]

Must be cited and explained in main text part.

Worth for a thousand words

Figures and Tables~Examples

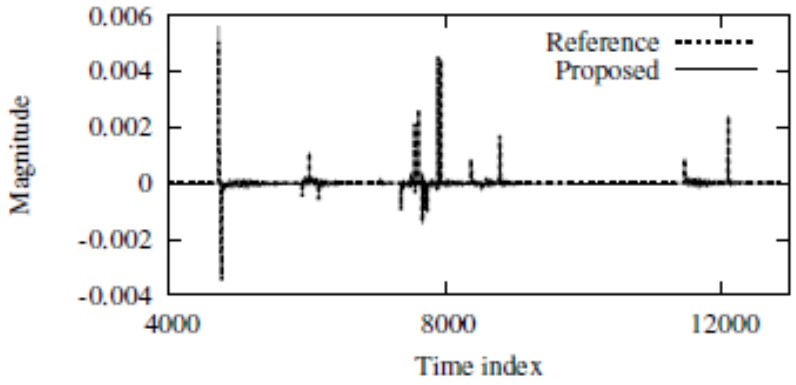


Figure 7: Comparison of IRs estimated by the proposed method and Simpson's rule (overview).

Undetectable difference b/w Reference and Proposed

Change to plot Error only

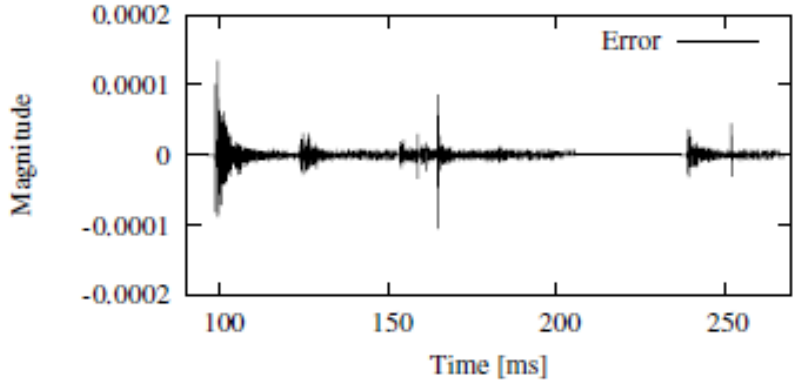
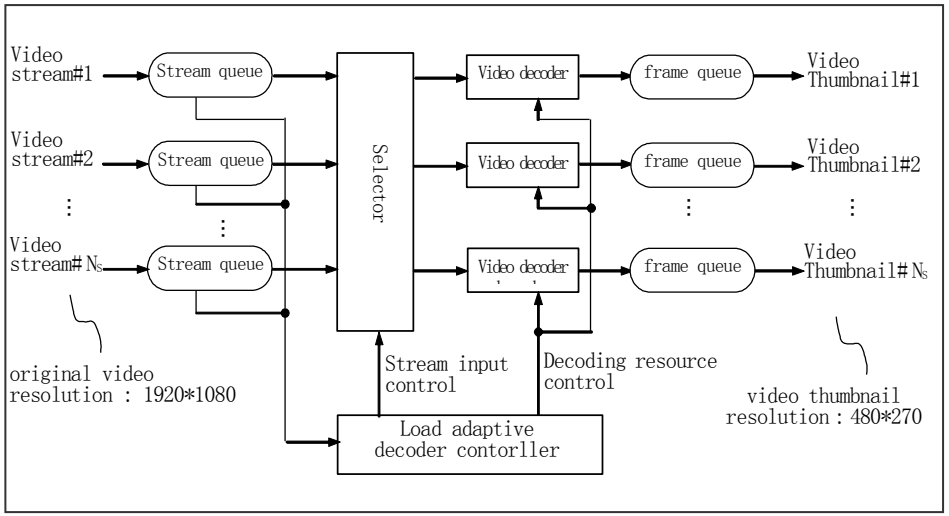
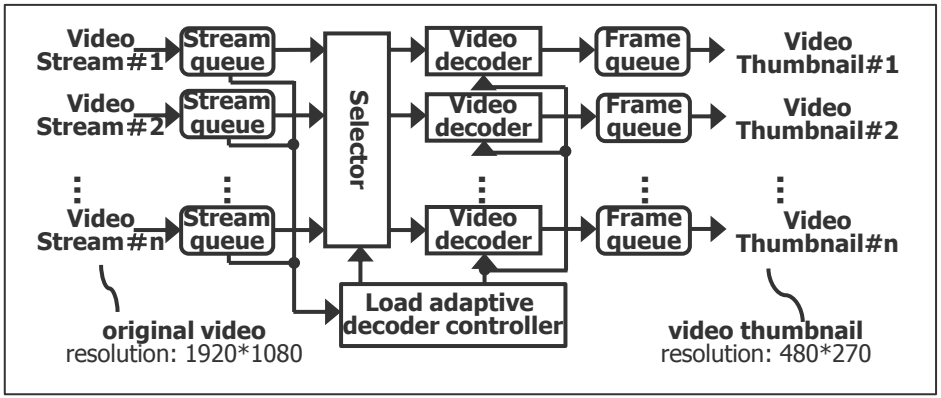


Figure 7: Errors between IRs estimated by *Edge diffraction toolbox* and the proposed method.

Figures and Tables~Examples



Very poor visibility with much "white" space



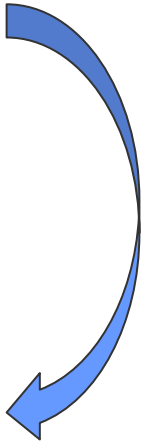
Change font and box size

Figures and Tables~Examples

Table 1: Transcoding time and bitrate.

	transcoding time	bitrate
original		12.9Mbps
scheme(1)	89.6sec	11Mbps
scheme(1)SIMD	55.7sec	11Mbps
scheme(2)	86.52sec	10.53Mbps
scheme(2) SIMD	53sec	10.53Mbps
scheme(3)	80.1sec	9.8Mbps
scheme(3) SIMD	49.6sec	9.8Mbps

Messy table



Change style

Table 1: Transcoding time and bitrate.

	transcoding time (sec)		bitrate (Mbps)
	w/o SIMD	w/ SIMD	
original			12.9
scheme(1)	89.6	55.7	11.0
scheme(2)	86.5	53.0	10.5
scheme(3)	80.1	49.6	9.8

Novelty and Significance

Reviewers evaluate the content of paper by following criteria

- **Novelty**
  - Is the work done by original idea?
  - Does the achieved result contain something new?
- **Significance**
  - Can the work be used for practical applications?
  - Does the work display high technical quality?
- **Correctness**
  - Is deduction/induction of the paper technically correct?
  - Is there any misleading description?

Discussions

Appealing how worthy the proposed method is

- **Strength and truthfulness** of discussion directly relates to reviewers' decision.
- Must be conducted **comprehensively** based on evaluation **results**.
- Ensure **logical consistency** during discussion.
- No exaggeration, **fairness** is the most important to win reviewers' confidence.
- Disclose **weakness, demerits, and discrepancies** as well as advantages and merits.

Conclusions

All's Well That Ends Well ~ *William Shakespeare*

- Good conclusion enhances reviewers' clear understanding of the work
- Should not be a copy of Abstract

May contain:

- Contribution to the particular area
- Novelty and practical significance
- Limitation and/or weakness of the work **to avoid reviewers' "attack"**
- Future works for further improvement

Acknowledgements

Gratitude is not only the greatest of virtues, but the parent of all the others
~Marcus Tullius Cicero

Should be placed between main text and references.

- Someone who helped to conduct the research and/or to write the paper
- Company or organization providing research funding, facilities, tools

but not to be included in the authors

Delicate factor: please discuss among the authors

References

Fools say they learn from experience; I prefer to learn from the experience of others
~Otto von Bismark

Very important to show how adequately the authors studied/surveyed existing methods

- Different journals have different formats for reference
- All references must be cited in the main text
- Try hard to research all related works; small # references gives relatively bad impression
- Do not list too much of references; secondary authors, loosely related papers, etc.
- Be careful about self-citations; must not be too much

Manners and Customs

what should do and what should not do

Not a *shortcut* but a good way to win acceptance!

- English presentation
- Unethical behaviors
- Authorship
- Electronic submission
- Copyright form and page charge agreement
- Step-up plan
- Humbleness to editors/reviewers/readers

English Presentation

Accurate, Concise, and Clear English is preferred

- **Use Direct and short sentences**
  - Long sentences may confuse readers
- Avoid using too many abbreviations
- Define all symbols when firstly used
- Don't copy sections/paragraphs from other papers
- Avoid wrong use of words and phrases
  - 3rd singular form
  - No nouns, Multiple nouns
  - Passive voice for intransitive verbs
  - Spoken abbreviations (can't, isn't, it's, …)

Unethical Behaviors[1]

Deadly sins as scientific researchers

- Multiple submissions
- Redundant publication
- Plagiarism
- Data fabrication and falsification
- Inappropriate paraphrasing

All of these definitely affect carrier of you and co-authors

Unethical Behaviors[2]

In 2002, Jan Hendrik Schön (Bell Labs)'s scandal shocked the scientific community.

"Retraction Watch" site collects paper retraction information almost everyday. http://retractionwatch.wordpress.com/

- IEICE-EA "Information for Authors" includes description of plagiarized and duplicate submissions.
- "A Plagiarism FAQ" page in IEEE defines 5 levels of misconduct. http://www.ieee.org/publications_standards/publications/rights/plagiarism_FAQ.html
- iThenticate software by iParadigms offers the world's largest scholarly comparison database. [20+ billion webpages, 86+ million articles, 30+ million items from 70,000 journals]. http://ithenticate.com

Authorship

All authors must have sufficient contribution

- Funding acquisition, data collection, English proofreading, or general supervision alone must not be the reason to justify authorship
- The contact author has responsibility to obtain authentication from all co-authors
- Ordering of authors is also important
- Authors information and paper title cannot be changed after submission

Electronic Submission

Sophisticated IEICE Submission System

- All actions of paper submission can be done online
  - Manuscript registration
  - Electronic data of a paper, figures, tables
  - Supporting materials
- Paper format (LaTeX and MS-Word) is provided
- Information on individual paper status can also be checked online

http://www.ieice.org/eng/authors.html

Copyright Form and Page Charge Agreement

Very important paper-works

- Authors must agree to copyright transfer and page charge responsibility when submitting a manuscript
- Authorized signature has strong meaning

COPYRIGHT TRANSFER
and PAGE CHARGE AGREEMENT

THE INSTITUTE OF ELECTRONICS, INFORMATION AND COMMUNICATION ENGINEERS©

This signed statement must be received by the Institute of Electronics, Information and Communication Engineers (the "IEICE") when your manuscript is first submitted to an IEICE publication.
By signing this statement, the author(s) are agreeing to be bound by the IEICE Provisions on Copyright
http://www.ieice.org/jpn/about/kitei/files/chosakukenkitei.pdf (Japanese)
http://www.ieice.org/eng/about/copyright.html (English)

IEICE Transactions on : _____

In the event the following manuscript is not accepted or is withdrawn by the author(s) before acceptance, this agreement becomes null and void.

Title of the manuscript: _____
Author(s): _____
Affiliation(s): _____

Step-up Plan

Rome wasn't built in a day

- Consider level and status of research and journal reputation
  - Meeting report
  - Thesis
  - Technical report
  - Domestic conference
  - International conference
  - Journal
- IEICE accepts polished version of those published papers except for copyright violation

Humbleness

Editors and reviewers; friend or foe

- Reviewers may act as **FAULT-FINDERS**
- Think readers as general undergraduate students
- Editors/reviewers are not supervisors and English correctors

NEVER GIVE UP!

Beneficial Resources

learn from others

- **IEICE Trans. Online**
  http://search.ieice.org/
- **"For Authors" page**
  http://www.ieice.org/eng/authors.html
- **IEICE-EA Information for Authors**
  http://www.ieice.org/eng/shiori/mokuji_ess.html
- **A Plain Professional English Handbook**
  http://www.ieice.org/eng/plaineng.html
- **About Duplicate Submission**
  http://www.ieice.org/eng/ads.html

- **Also check IEEE Authors Digital Tool Box page**
  http://www.ieee.org/publications_standards/publications/authors/authors_journals.html

Submission Eligibility

At least one of the authors must be a (student) member of IEICE.

Annual Membership Fee w/ 1 Society (in Japan)

Regular Member: 13,000 JPY

Student Member: 4,500 JPY

Annual Membership Fee w/ 1 Society (Overseas)

Regular Member: 7,000 JPY

Regular Member (OMDP): 5,000 JPY

Student Member: 2,000 JPY

Student Member (OMDP): 1,000 JPY

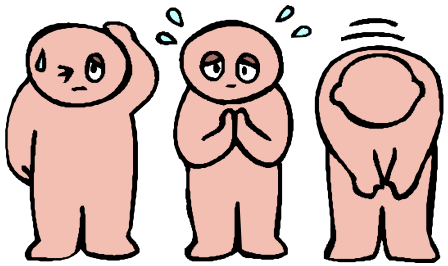
(*)OMDP (Overseas Membership Development Program) is provided for candidates from countries/areas in Asia(except Republic of Korea, Taiwan, China, and Singapore), Africa, Central America, and South America.

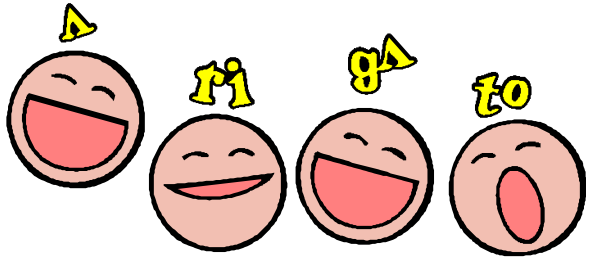
http://www.ieice.org/eng/member/workshops.html

Thank you for your attention.

Any question?

onoye@ist.osaka-u.ac.jp





Maraming salamat po!