Metodologi Penelitian Ilmiah

Penulisan Artikel Ilmiah (2)

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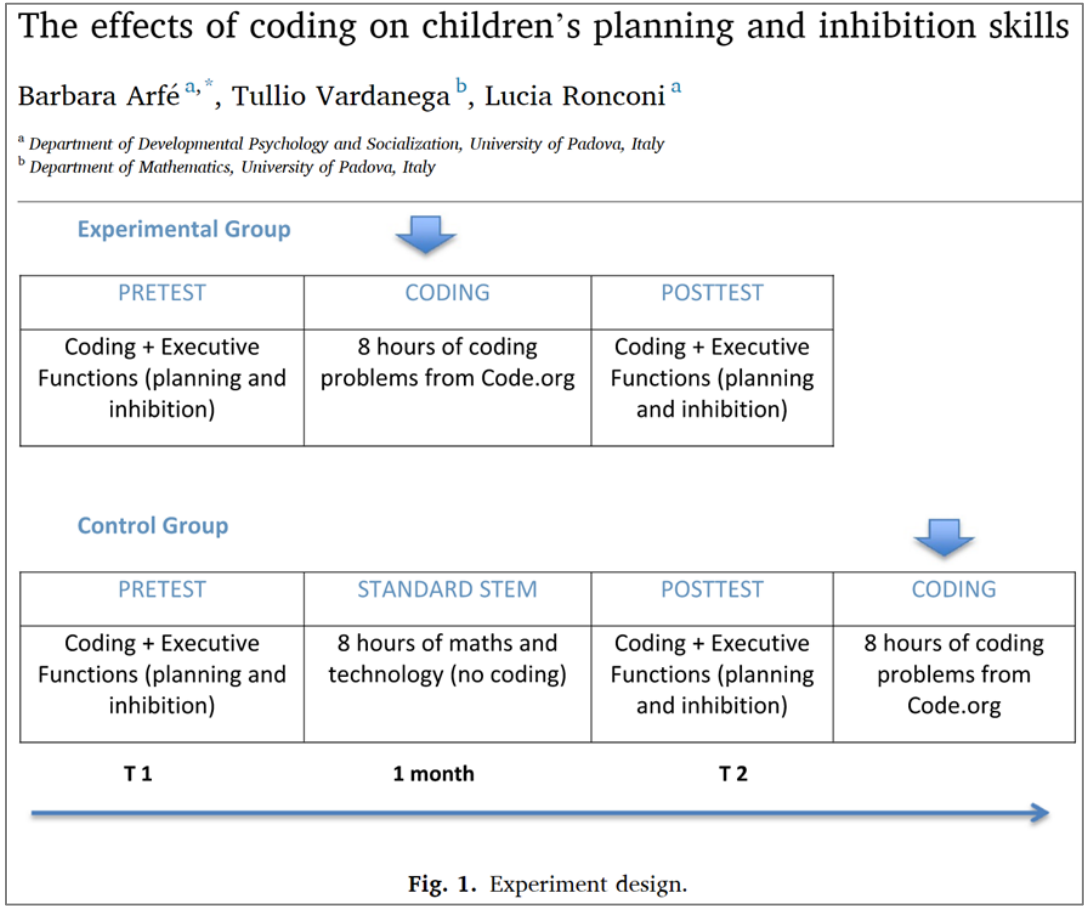
Artikel Ilmiah - Metodologi

"Combination of systematic strategies or methods that outlines the way in which things to be undertaken."

- Metodologi:
  - Desain penelitian
  - Alur penelitian
  - Alat ukur / pengujian
  - Populasi, sampel & Teknik sampling
  - Teknik pengumpulan data
  - Teknik analisys data



The effects of coding on children's planning and inhibition skills

Barbara Arfé [a,*], Tullio Vardanega [b], Lucia Ronconi [a]

[a] Department of Developmental Psychology and Socialization, University of Padova, Italy
[b] Department of Mathematics, University of Padova, Italy

Experimental Group

PRETEST	CODING	POSTTEST
Coding + Executive Functions (planning and inhibition)	8 hours of coding problems from Code.org	Coding + Executive Functions (planning and inhibition)

Control Group

PRETEST	STANDARD STEM	POSTTEST	CODING
Coding + Executive Functions (planning and inhibition)	8 hours of maths and technology (no coding)	Coding + Executive Functions (planning and inhibition)	8 hours of coding problems from Code.org

T 1 — 1 month — T 2

Fig. 1. Experiment design.

The effects of coding on children's planning and inhibition skills, Computer & Education, 148 (2021), 103807

Artikel Ilmiah - Metodologi

- Tuliskan informasi secara rinci, sehingga pembaca (sesuai bidang) dapat melakukannya kembali (mereproduksi penelitian)
- Jangan menuliskan ulang algoritma yang sudah ada, cukup rangkumkan secara umum (*broad summaries*)
- Gunakan diagram jika dibutuhkan
- Reviewer akan memberikan kritik pada deskripsi yang tidak lengkap atau salah (berpotensi penolakan artikel)

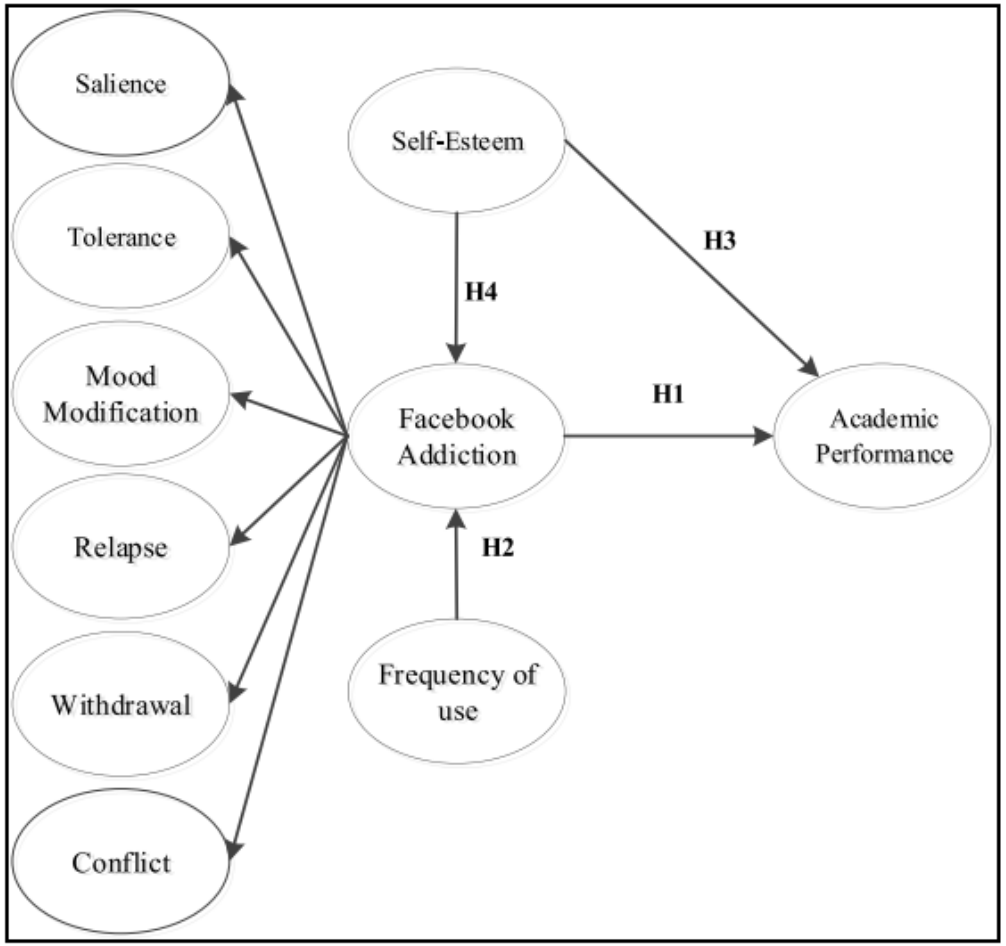


Fig. 1. Research model and hypotheses.

The impact of Facebook Addiction and self-esteem on students' academic performance: A multi-group analysis, Computer & Education, 142 (2019), 103651

Artikel Ilmiah - Metodologi

- Metodologi adalah bagian yang paling diperhatikan oleh reviewer
- Reviewer memutuskan apakah hasilnya dapat dipercaya atau tidak.
- Metode yang pernah diterbitkan harus ditunjukkan dengan kutipan

The detailed steps of the proposed scheme can be described as follows:

1. Read the original image A
2. Divide into B image blocks with a size of 4x4 and perform Arnold Scrambling on B
3. Set the LSB value of the entire image block to zero

$$C = B - (B \bmod 2) \quad (8)$$

where C is the new image block

4. Generate matrix S through the Hadamard matrix block

$$S = \frac{H_4 * C * H_4}{4} \quad (9)$$

and take the largest element $S(1)$ which is the first element of the matrix

5. The next process is the same as the steps in Kang [21] starting from the 6th until the 19th equations for the embedding process and the equations 20 and 21 for the authentication or extraction process.


(a)i

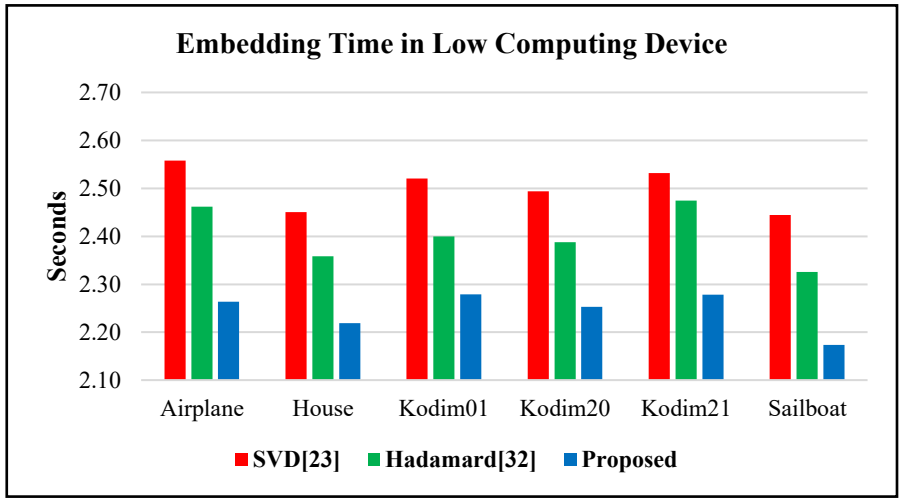

(b)i

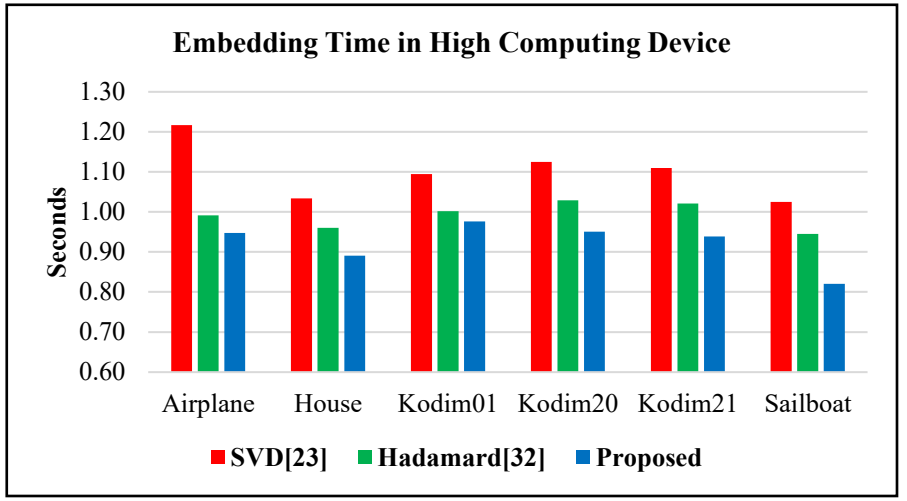

(c)i

Active Tampering Detection for Image Authentication using Hadamard Tracing, ICELTICs, 4th (2022), 78 – 82

Artikel Ilmiah – Hasil / Temuan

- Inti dari sebuah artikel ilmiah, menampilkan hasil yang diperoleh selama penelitian
- Singkat
- Hindari pengulangan
- Pilih hasil yang diperoleh
- Identifikasi hasil yang penting lalu tuliskan
- Membandingkan hasil dengan studi yang ada



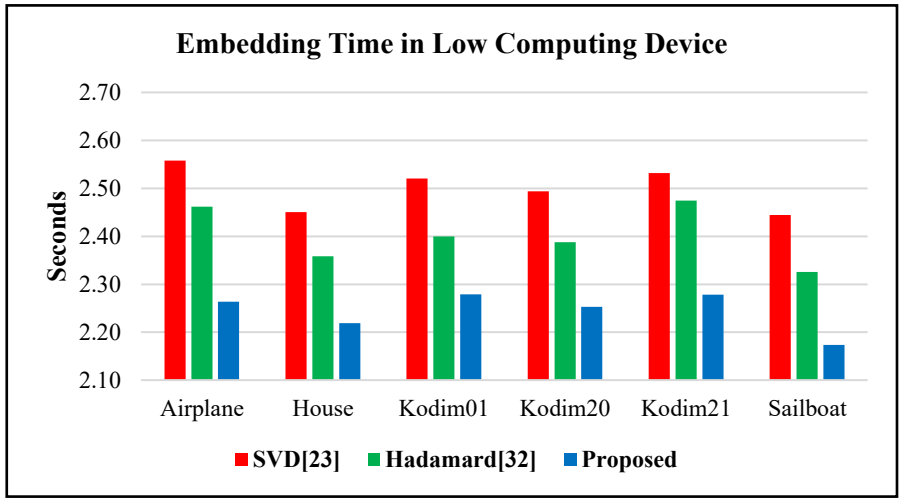


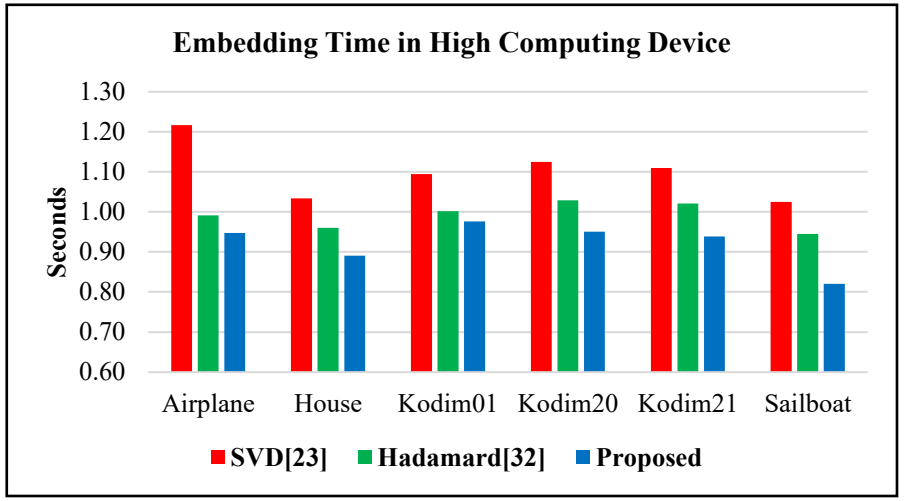
Artikel Ilmiah – Hasil atau Pembahasan?

- Menafsirkan hasil:
  - Apakah penelitian mengkonfirmasi/menolak hipotesis?
  - Jika tidak, apakah hasilnya memberikan hipotesis alternatif?
  - Penafsiran apa yang bisa dilakukan?
  - Apakah hasilnya sesuai dengan penelitian lain?
  - Implikasi studi untuk lapangan ?
  - Saran untuk perbaikan dan penelitian selanjutnya?

- Terdapat gaya penulisan yang menuliskan 'Hasil dan Pembahasan' dalam satu subbab.
  (*sesuaikan dengan pedoman penulisa*n)

The experiment results on two different computing devices showed that the increase in speed is directly proportional to the capabilities of the devices used. In low computing devices, the average improvement of the Dyadic Walsh method compared to the SVD method is only 10% in both embedding and extraction time while the results on high-end devices showed a maximum improvement is 22% in the embedding process and . . .





Artikel Ilmiah – Hasil atau Pembahasan?

- Tentukan:
  - Yang tuliskan pada Hasil, dan
  - Yang dimasukkan ke Pembahasan

- Secara umum:
  - Di bagian hasil, jelaskan hasilnya, tetapi jangan banyak menafsirkannya.
  - Pada bagian pembahasan, berikan interpretasi & perbandingan dengan literatur, tanpa mengulang semua hasil.

> Table 15 illustrates the statistics of students' academic achievement scores for all the combinations formed. In all the combinations being formed, the results obviously showing that non-gamer students gained better mean scores in term of academic achievement compared to gamer students. As to support the superficial results from the mean scores of academic achievements, analyses were done using independent sample t-test with 0.05 level of confidence in order to test its significance differences for all combinations.

Table 15
Statistics of students' academic achievement scores for classes combinations.

Combination		*N*	Mean	SD	SE
A, B, C	Gamer	63	38.51	7.309	0.921
	Non-Gamer	26	39.08	6.305	1.237
A, B, C, D	Gamer	86	36.86	7.752	0.836
	Non-Gamer	38	37.47	6.128	0.994
A, B, C, D, E	Gamer	109	34.46	8.609	0.825
	Non-Gamer	43	35.95	7.270	1.109
A, B, C, D, E, F	Gamer	134	33.00	8.587	0.742
	Non-Gamer	46	35.39	7.588	1.119
A, B, C, D, E, F, G	Gamer	151	32.19	8.707	0.709
	Non-Gamer	56	33.93	7.927	1.059
A, B, C, D, E, F, G, H	Gamer	179	30.29	9.599	−0.717
	Non-Gamer	57	33.86	7.873	1.043

Artikel Ilmiah – Hasil atau Pembahasan?

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Interpretation: The questions that have not been answered here are that if these students were not playing any computer games, would they perform any better academically? Were they performed badly in their UPSR examinations due to other factors such as having low interest towards learning and school? Or was it caused by low cognitive abilities? The opposite situations might have applied to those with good and excellent academic achievement gamer students. In order to make a better justification on students in class H, researchers had sought for more information about students in class H from the school's administrators. According to the school's administrators, most students in class H were placed there because of discipline problems, being slow in learning and unable to follow instructions. Therefore, other factors might have more effect on these students' academic achievements rather than computer games. Nevertheless, without scientific data findings, computer games can be easily becomes the black sheep for the weak and very weak students' bad performance in school.

Artikel Ilmiah – Gambar dan Tabel

- Gunakan gambar untuk menunjukkan hasil utama, jika memungkinkan.
- Gambar umumnya lebih mudah dibaca daripada tabel.
- Setiap gambar harus dirujuk dalam teks.
- Menafsirkan angka-angka dalam teks utama.
- Berikan keterangan untuk setiap gambar
- Gunakan gambar beresolusi tinggi
- Label harus rapi dan dapat dibaca

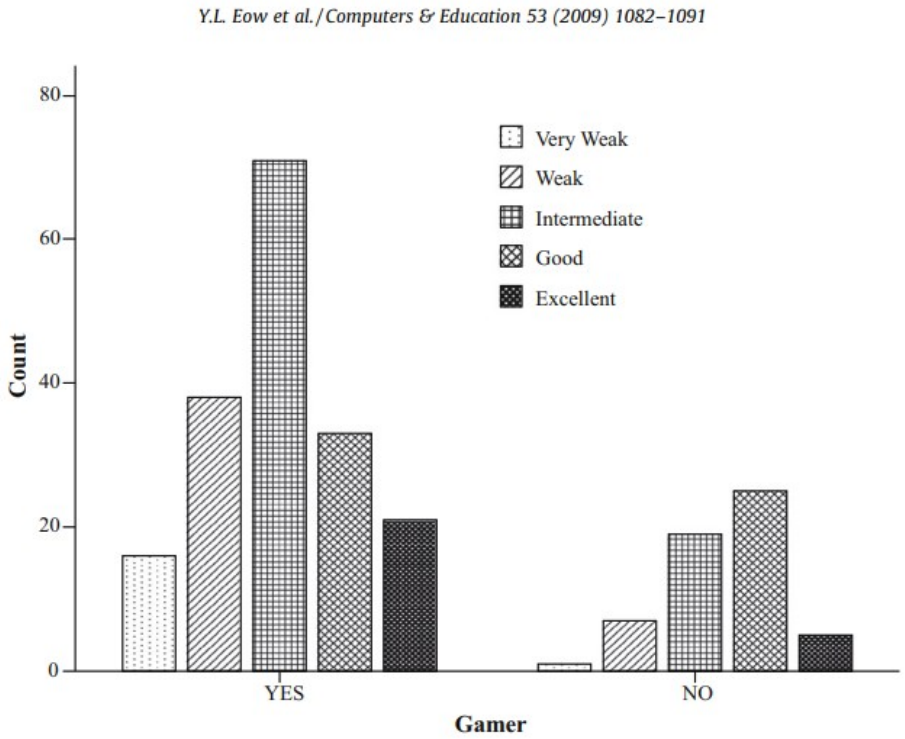

Fig. 2. Distribution of gamer and non-gamers across students' academic achievements categories.

Artikel Ilmiah – Gambar dan Tabel

- Buat tabel jika:
  - Terdapat sejumlah angka yang tidak dapat ditampilkan ke dalam gambar
  - Nilai ambang / float (dibelakang koma) penting.
- Setiap tabel harus memiliki keterangan
- Letakkan tabel panjang (melebihi 1 halaman) di lampiran

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Artikel Ilmiah – Pembahasan

- Salah satu hal yang sulit untuk ditulis karena memerlukan:
  - Latihan logika,
  - pengetahuan literatur
  - pengalaman tentang bidang yang diteliti
- Isi pembahasan antara lain:
  - Menafsirkan, mendiskusikan & menyimpulkan hasil/temuan yang disajikan.
  - Menunjukkan kemampuan sebagai peneliti untuk berpikir kritis tentang suatu masalah & menemukan solusi.
  - Menyajikan makna yang mendasari sebuah penelitian. Untuk menunjukkan pentingnya sebuah penelitian.
- Jika memungkinkkan dapat ditambahkan:
  - Kesamaan atau perbedaan dengan temuan sebelumnya (milik sendiri, orang lain, atau keduanya).
  - Kemungkinan alasan untuk persamaan & perbedaan.

Artikel Ilmiah – Pembahasan

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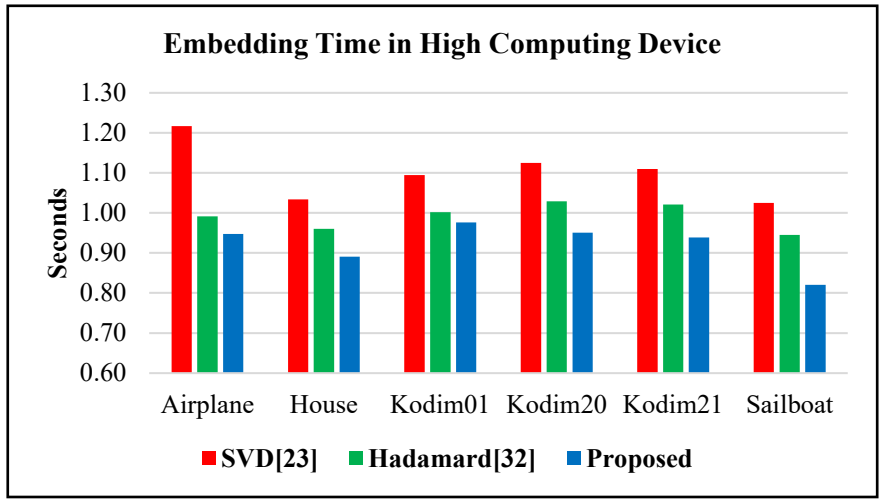
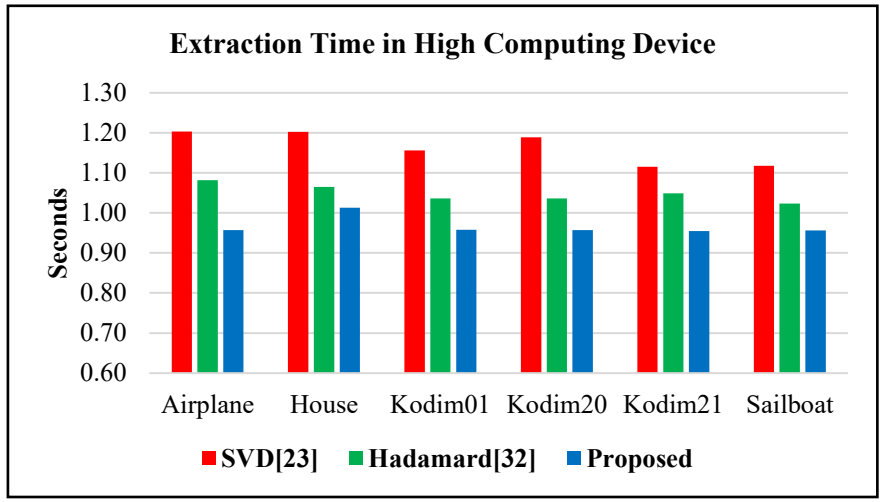
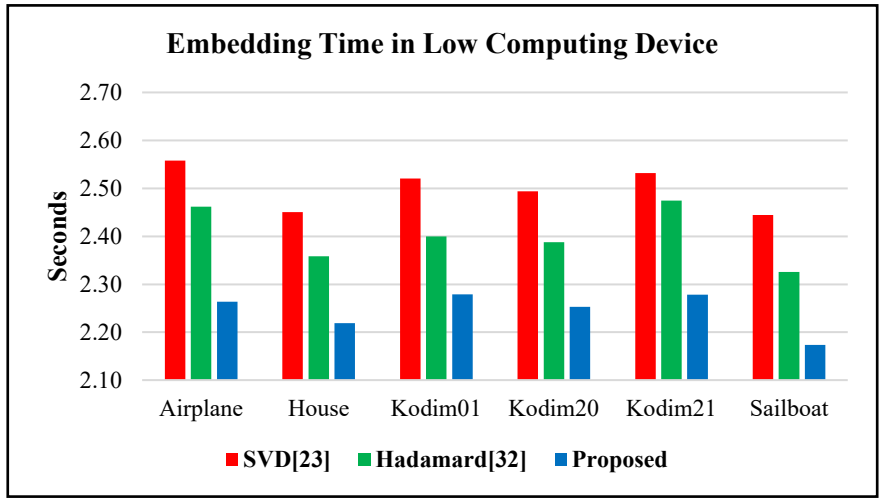
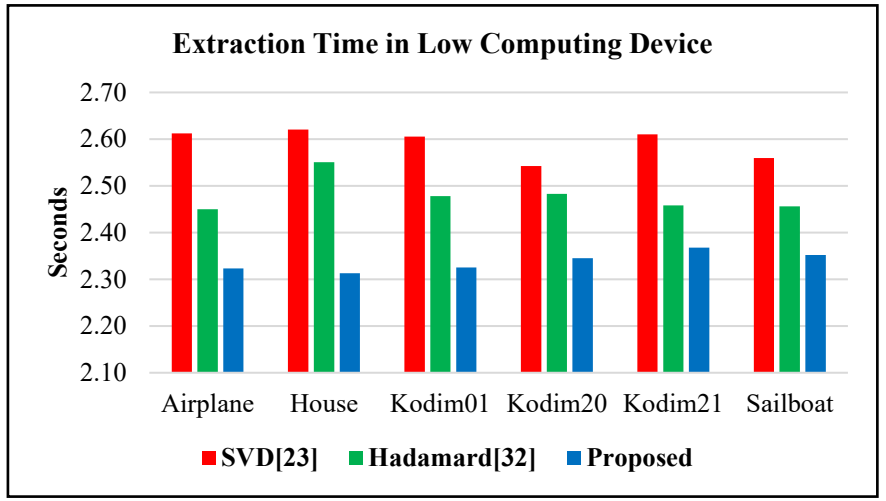
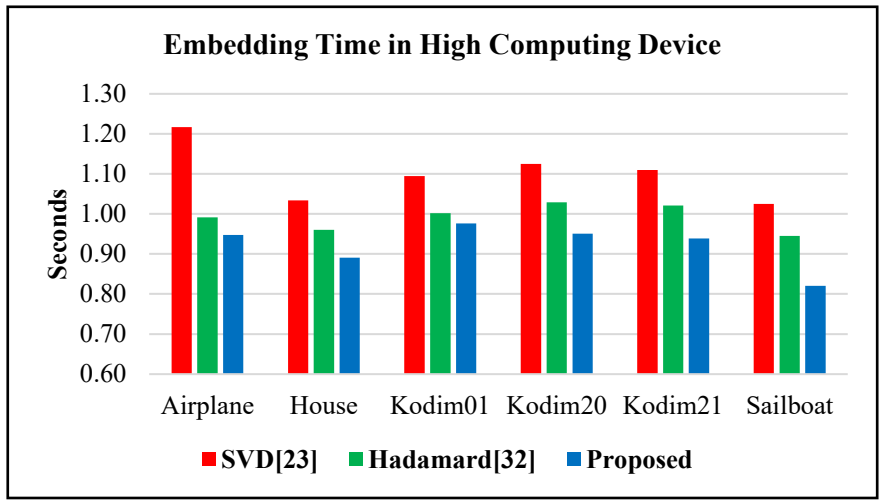


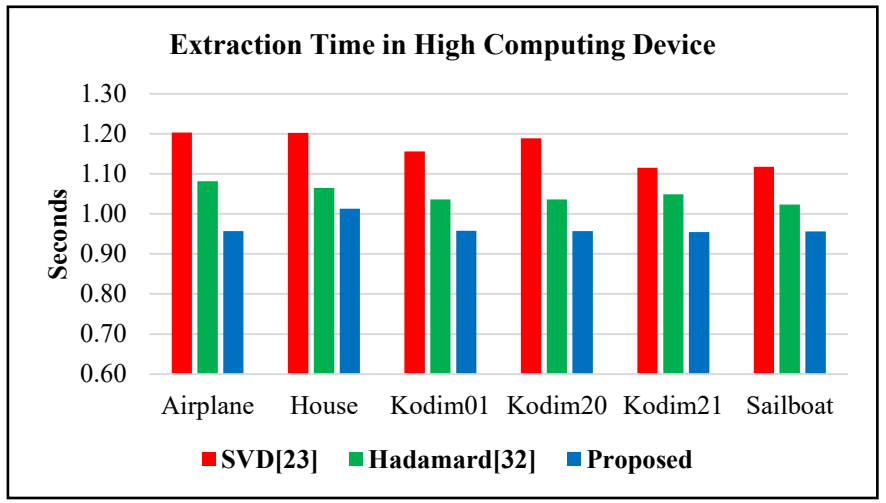


Artikel Ilmiah – Pembahasan







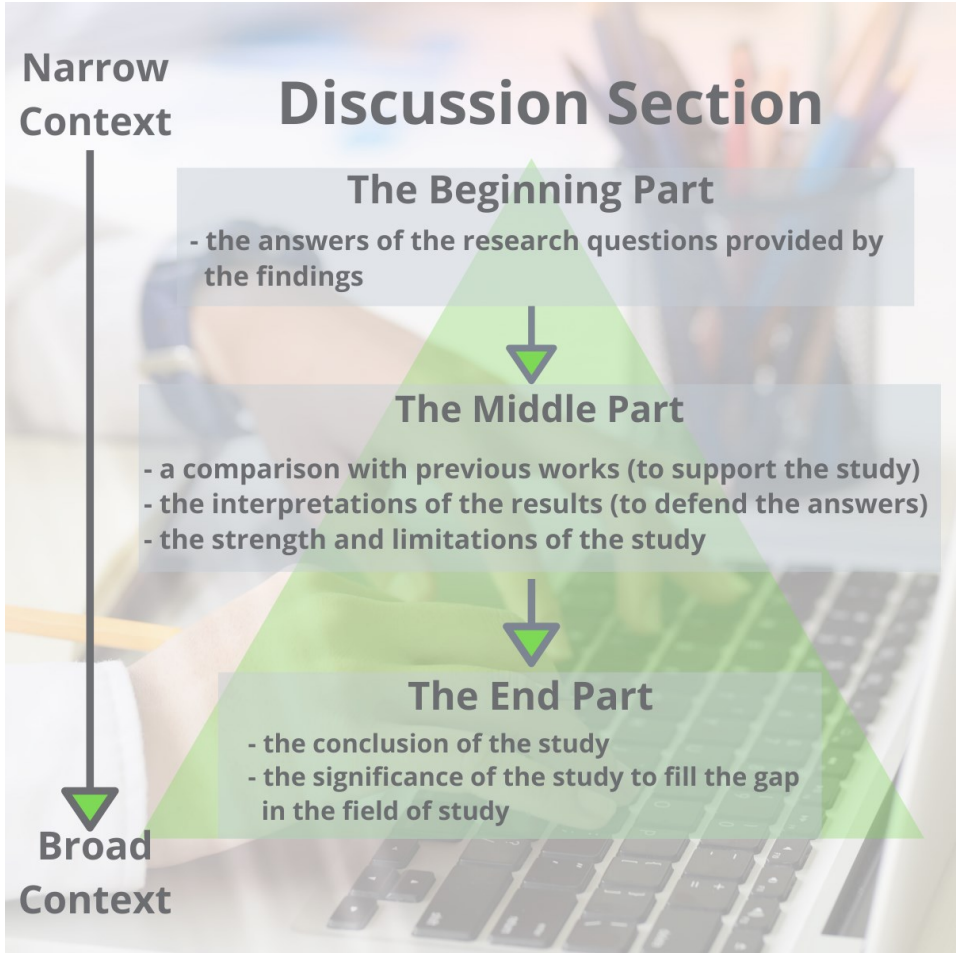


[23] Q. Kang, K. Li, and H. Chen, "An SVD-based Fragile Watermarking Scheme With Grouped Blocks," in *ICITEC* , 2014, pp. 172–179.

[32] P. W. Adi and P. Arsiwi, "A novel watermarking method using hadamard matrix quantization," *J. ICT Res. Appl.*, vol. 14, no. 1, pp. 1–15, 2020, doi: 10.5614/itbj.ict.res.appl.2020.14.1.1.

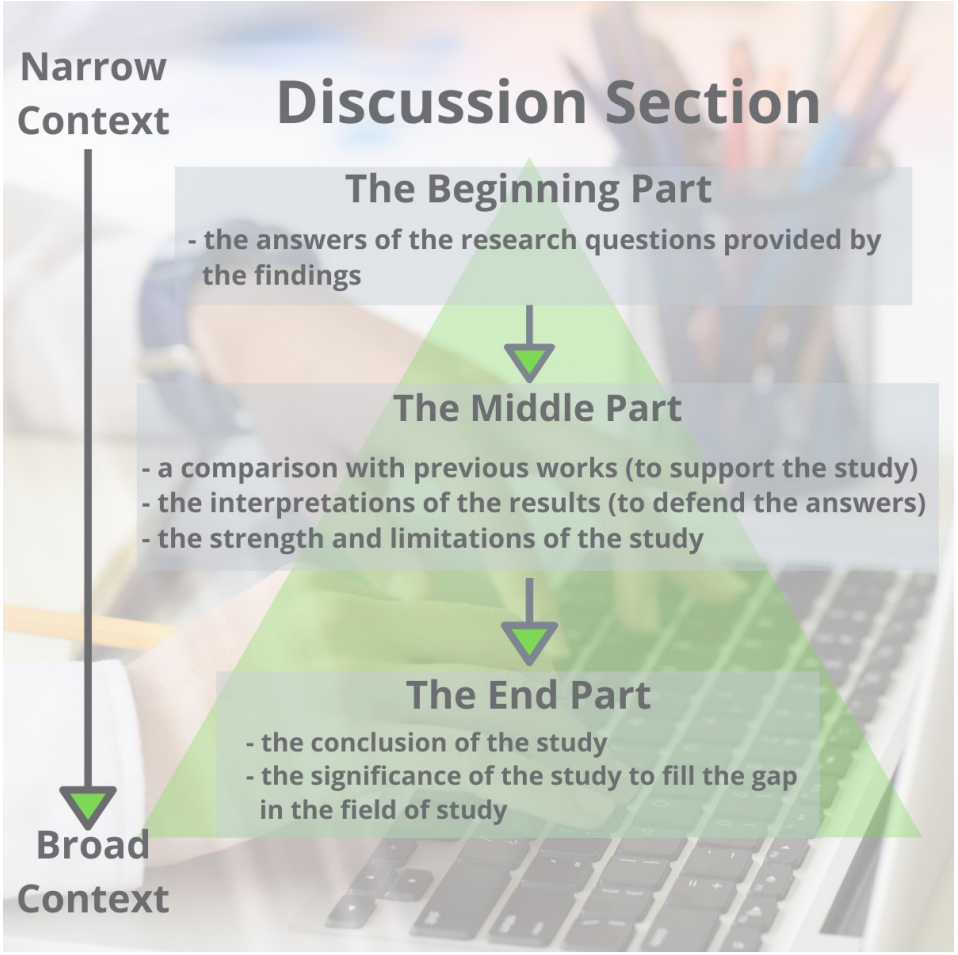
Artikel Ilmiah – Pembahasan

- Jika memungkinkan tambahkan
  - Aplikasi dan Implikasi, misal:
    - Kemungkinan penggunaan praktis dari temuan (bisnis, kebijakan publik, pertanian, dll)
    - Hubungan temuan dengan teori/model yang ada:
      - Mendukung / sesuai ?
      - Menyangkal / tidak sesuai ?
      - Menyarankan modifikasi?



Artikel Ilmiah – Pembahasan

- Jika memungkinkan tambahkan
  - Kekuatan studi
    - Misalnya: metode unggul, data ekstensif.
  - Keterbatasan studi
    - Lebih baik menyebutkan batasan, daripada reviewer & pembaca berpikir bahwa Anda tidak menyadarinya.
    - Jika keterbatasan tidak mempengaruhi kesimpulan (asumsi), dapat menjelaskan alasannya.
    - Contoh: Ukuran sampel kecil, data tidak lengkap, kemungkinan sumber bias, masalah dengan prosedur eksperimental.



Artikel Ilmiah – Pembahasan

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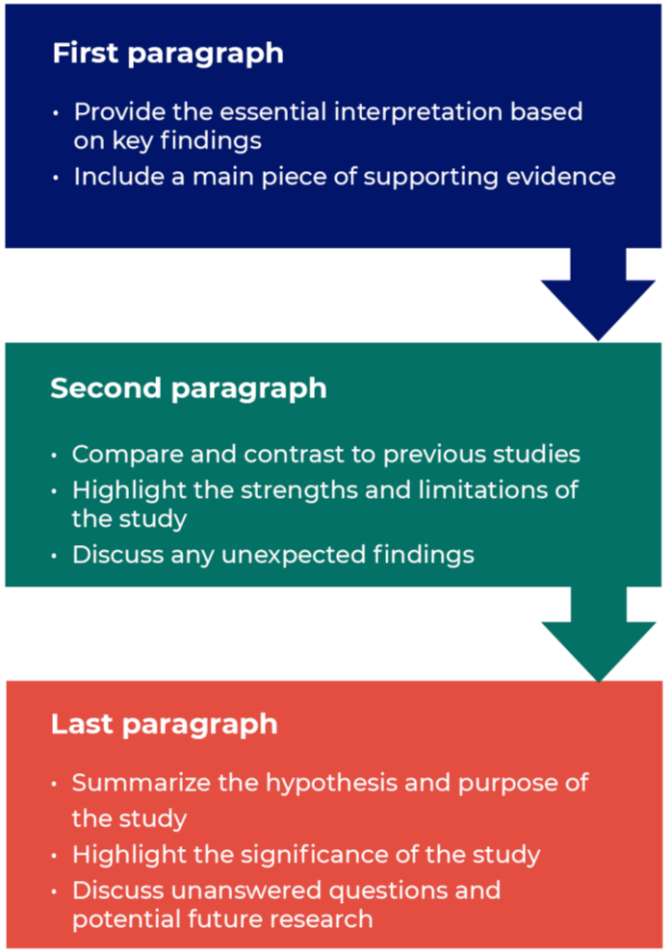
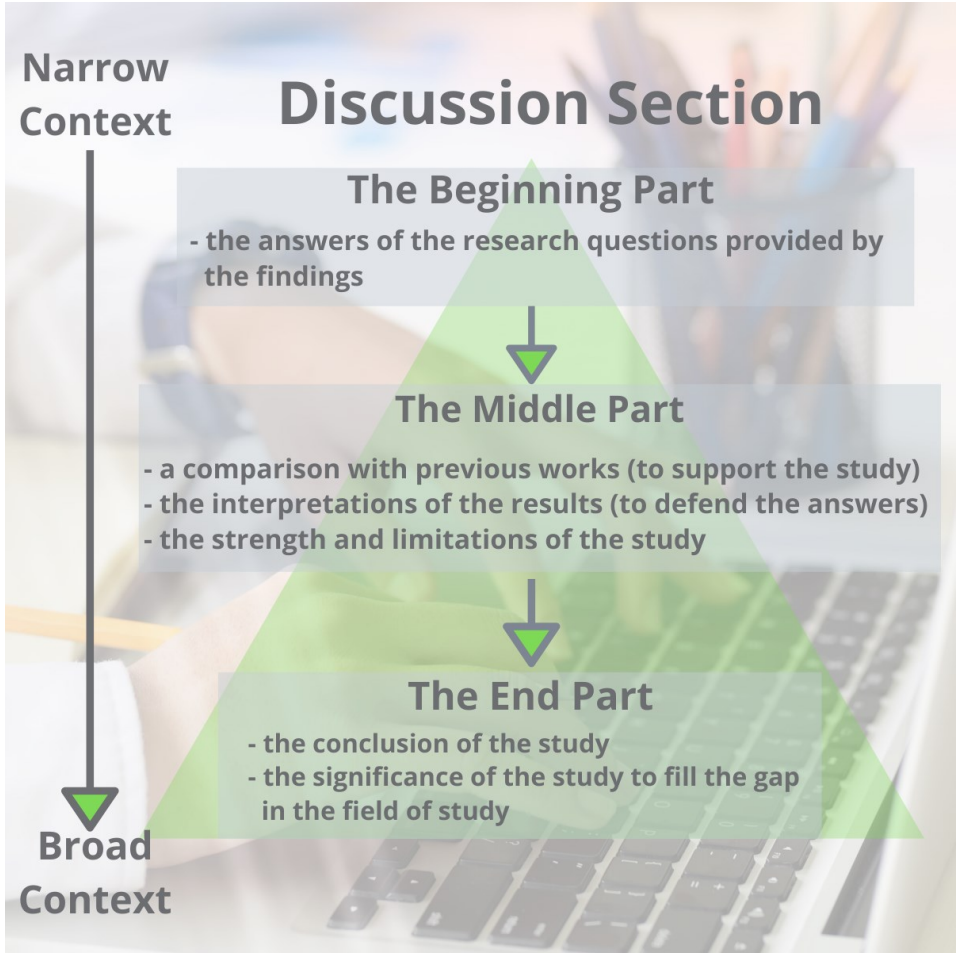


PLOS



Goldbio

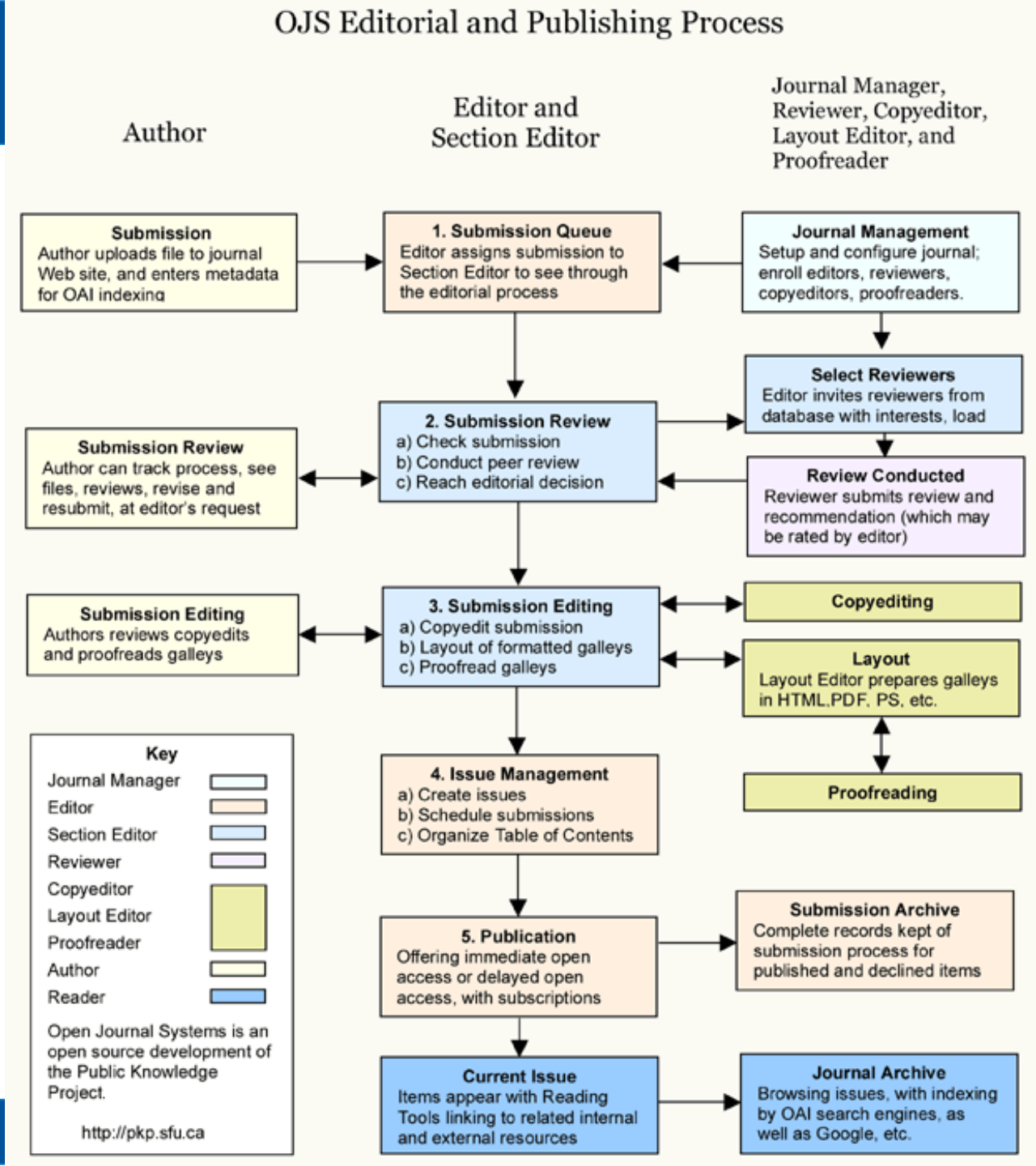
Artikel Ilmiah – Daftar Pustaka / Referensi

- Berisi referensi atau studi yang terkait dengan penelitian Anda
- Fungsi daftar pustaka antara lain:
  - Memberikan pengakuan kepada orang lain (kutipan) atas studi mereka
  - Menambah kredibilitas penelitian Anda dengan menggunakan sumber informasi yang valid
  - Membantu menjunjukkan hubungan dengan studi sebelumnya
  - Membantu pembaca menemukan informasi lebih lanjut
- Terdapat beberapa gaya pengutipan /sitasi, sesuaikan dengan panduan
- Gunakan alat pengelola referensi (Reference Manager)

Proses Penerbitan Artikel Jurnal

1. Kirim artikel
2. Editor
   - Sesuai
   - Tidak sesuai
3. Reviewer
   - Komentar, kritik, masukkan
4. Editor
   - Terima (*lanjut*)
   - Tolak
5. Revisi (*jika diterima*)
   - Setuju dengan reviewer
   - Tidak setuju, argumen
6. Keputusan
   - Terima
   - Tolak

Proses 3 & 4 dapat berlangsung beberapa babak (round)



Isu-isu Terkait

- Ketika hendak mengirimkan sebuah artikel ilmiah umumnya terdapat 2 isu yang sering dialami
  - Penelitian bidang informatika harus menghasilkan kontribusi berupa perbaikan atau penemuan metode baru
  - Reviewer adalah orang yang paling hebat, hasil rekomendasi reviewer wajib diikuti

Isu-isu Terkait

- Penelitian bidang informatika harus menghasilkan kontribusi berupa perbaikan atau penemuan metode baru?
  - Tidak untuk jenjang S1, kontribusi berupa implementasi dan pengembangan. Namun jika ada akan lebih baik. Sesuaikan dengan level jurnal yang akan dituju.
  - Wajib untuk jenjang S2 & S2

Aspek	Tugas Akhir (D3/D4)	Skripsi (D4/S1)	Tesis (S2)	Disertasi (S3)
Level Kontribusi	Penguasaan Kemampuan Teknis	Pengujian Teori	Pengembangan Teori	Penemuan Teori Baru
Bentuk Kontribusi	Implementasi dan pengembangan	Implementasi dan pengembangan	Perbaikan Secara Inkremental dan Terus Menerus	Substansial dan Invention
Target Publikasi	-	Domestic Conference	International Conference	International Journal

(Permendikbud No 3 tahun 2020 tentang SNPT)

Isu-isu Terkait

- Reviewer adalah orang yang paling hebat, hasil rekomendasi reviewer wajib diikuti
  - Tidak, kita boleh mengikuti saran reviewer atau mempertahankan pendapat dengan memberikan argument yang valid
  - Contoh mengikuti saran reviewer:

5. The 5th comment:

Author needs to define density of attacks. Author needs to evaluate with other attacks, number of attacks are not enough to prove the contribution of this paper.

Response:

I add gamma correction and rotation attacks.
The density is defined in Chapter 4.2

Modification:

I add the density of the additional attacks

4.2. Robustness (1st paragraph)

JPEG Compression with quality of 50%, Gaussian filtering with sigma of 0.5, contrast enhancement 0.02, resizing [2 0.5], center cropping of 100x100 pixels, gamma correction of 0.95,and rotation of 45^0

4.2. Robustness (Table 2)

Gamma Correction	SVD	0.2757	0.2838	0.2558	0.2729	0.2403
	Proposed	0.1817	0.1767	0.1901	0.1903	0.1848
Rotation	SVD	0.2546	0.2517	0.2496	0.2697	0.2447
	Proposed	0.2023	0.1782	0.1821	0.1743	0.2007

P. W. Adi and P. Arsiwi, "A Novel Watermarking Method using Hadamard Matrix Quantization", *J. ICT Res. Appl.*, vol. 14, no. 1, pp. 1-15, Jul. 2020.

Isu-isu Terkait

- Reviewer adalah orang yang paling pintar, hasil rekomendasi reviewer wajib diikuti
  - Contoh mempertahankan pendapat / berargumen:

2. The 2nd comment:

Contribution is not seems to be that much novel. Can you give proper justification regarding this?

Response:

The Hadamard matrix is an existing method, but the paper proposed a new embedding algorithm that utilizes it to replace the SVD. The novelty is the equation (6) - (12) that run faster than SVD [14],[15] (briefly described in equation 2 & 3). It is result in same robustness and imperceptibility

4. The 4th comment:

What is its significance? NC values of 0.93 and 0.92 are low robustness. Author needs to compare to the existing benchmark of watermarking scheme

Response:

NC value is between 0 and 1, so 0.92 – 0.93 is high NC value. Almost of the watermark research use it to measure the robustness.

6. The 6th comment:

. You have shown comparisons only with SVD. You must compare your work with some most recent works.

Response:

The main objective of this paper is to reduce the computational time of previous SVD based method from [14] and [15]. So this paper only perform a comparison with the related scheme of SVD

P. W. Adi and P. Arsiwi, "A Novel Watermarking Method using Hadamard Matrix Quantization", *J. ICT Res. Appl.*, vol. 14, no. 1, pp. 1-15, Jul. 2020.

TERIMAKASIH