Metodología de la Investigación [DII-711] Capítulo 10 - Elaboración de informes de investigación

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1. Publication of scientific papers

- **Why publish?**

- **Why publish?**
  quest for fame??
  get a PhD??
  to tell others about your work??

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Where should you publish?

- Choose the target before you start writing!
- Journal or conference
- Scope, topics...
- Thomson ISI-indexed, DBLP-indexed, other index??
- How to know the quality, reputation of the journal or conference??...
- How long is the review and publication process???
- Publication costs...

Read

INSTRUCTIONS TO AUTHORS

before!

2. Before you start writing

- **Spelling: British or American?**
  modeling, modelling, labeled, labelled...
- **Active v/s passive voice**
  you should try to avoid the passive voice as far as possible...
- **The incorrectly related participle**
  The cells were grown in ABC medium containing glycine (wrong)
  The cells were grown in ABC medium, which contained glycine (ok)

2. Before you start writing

- **“This” is often incorrect**
  The cells divided in the modified medium and formed clumps that were visible to the naked eye...This showed...
- **The incorrect use of “due to”** (links two nouns)
  The formation of blue colonies was due to the presence of an enzyme in the cells (ok)
  Due to the presence of an enzyme, we saw blue colonies (wrong)
- **kinds, types, and classes**
  “two types of cells” or “two types of cell”?
- **Be careful with hyphenation and abbreviations**

3. The title of your paper

The title page is your first opportunity to make a good impression!

The best titles are short, declarative sentences that describe the major conclusion suggested by the results

- Web-Based Touch Display for Accessible Science Education
- Minimizing the Maximum Number of Open Stacks by Customer Search.
- Adding Constraint Solving to Mercury
- Efficient constraint propagation engines
- Towards a Distributed Search Engine
- A model for fast web mining prototyping

3. The title of your paper

Create 5 paper titles using the following keywords...
examples:
-“A new algorithm for solving the TSP”
-“Combining CP and ACO for solving nurse rostering problems”

- Neural Network
- Modeling language
- Backtracking
- Agents
- HCI
- TSP
- ACO
- CP
- Simulating Annealing
- Framework
- Testing
- Optimization
- Nurse Rostering
- Search Engine
- add new ones...

3. The abstract

- The Abstract provides a brief account of the important points in your paper.
- It allows the reader to judge whether it is worth her time to read the entire text

The Abstract should be written so that it can stand alone, without the full body of the text

Create an abstract considering the following

- El trabajo se centra en la asignación de turnos de enfermeras en un hospital en particular.
- Este proceso es complejo ya que existen diferentes variables a considerar tales como la demanda de enfermeras en diferentes secciones del hospital, regulaciones legales horarias y preferencias personales.
- Actualmente el proceso se lleva a cabo a mano.
- Los autores proponen automatizar este proceso utilizando la programación con restricciones.
- Los resultados obtenidos son satisfactorios ya que permiten automatizar más de 2000 asignaciones en unos pocos segundos.

3. The abstract

“The nurse rostering problem consists in assigning working shifts to each nurse on each day for a certain period of time. In particular, for the Valparaíso Clinic Center, the problem comprises more than 2000 assignments that must consider requirements related to minimal area or floor allocation, legal regulations as well as personnel preferences. This planning is a diffcult and time consuming task that currently is done by hand yielding often unsatisfactory results. In this paper, we provide a description of such a real-world problem and we show how it can be modeled and solved with state-of-the-art constraint programming techniques. Using this approach we provide an automatic generation of such rosters in a few seconds instead of by hand in some days.”

4. The introduction

The Introduction to a full-length paper should be sufficiently long to allow you:

1. To place your research in the context of earlier relevant work by others.
2. To explain your reasons for performing your study.
3. To mention the methods that you used in your study.
4. To provide an indication of the conclusions that you will draw from your results in the Discussion at the end of your paper.

Basically: What you did, why you did it, what you found!

4. The introduction

- DON'T MAKE INTRO TOO LONG!!
- Don't provide a complete history of field

Create a paper introduction using the subject (computer science) that you want

4. The introduction

Create an introduction considering the following

- Sistema de distribución de agua es uno de los componentes más importantes de una ciudad.
- Realizar una instalación óptima es relevante en términos económicos (elevados costos de instalación, mantención y operación) para la ciudad y el país en general.
- Antiguamente el método más utilizado era el “trial and error”. Desde los años 70, con los avances en la computación, es posible realizar diseños óptimos en forma automatizada.
- Sin embargo, el problema es de alta complejidad computacional, debido principalmente a la relación no-lineal entre el flujo y la pérdida, la presencia de variables de decisión discretas tales como el diámetro de las tuberías, las funciones de costo, la geografía del terreno, múltiples patrones de demanda de agua, ubicación de los tanques, bombas, válvulas, etc...
- Existen muchos trabajos al respecto:
- Modelos de optimización que utilizan diámetros continuos (Pitchai 1966; Jacoby 1968; Varma et al. 1997)

4. The introduction

- Modelos de optimización que utilizan split pipes (Alperovits & Shamir 1977; Quindry et al. 1979; Goulter et al. 1986; Fujiwara et al. 1987; Kessler & Shamir 1989; Bhave & Sonak 1992). Es importante remarcar que el uso de diámetros continuos no es recomendable; mientras que la conversión de diámetros continuos al más cercano valor comercial no garantiza una solución óptima real.
- Una solución conocida es enumerar todas las soluciones posibles y elegir la mejor, sin embargo es impracticable debido al crecimiento exponencial de las posibles soluciones cuando se aumenta el número de variables.
- Hace 2 décadas se comienzan a utilizar los algoritmos evolucionarios, estos permiten buscar una solución “suficientemente” buena en un período de tiempo finito.
- Algoritmos genéticos (Dandy et al. 1996; Savic & Walters 1997; Vairavamoorthy & Ali 2000, 2005), (Montesinos et al. 1999; Neelakantan & Suribabu 2005; Kadu et al. 2008),
- Simulated annealing (Cunha & Sousa 1999), (Eusuff & Lansey 2003)
- Ant colony optimization (Maier et al. 2003; Zecchin et al. 2007; Ostfeld & Tubaltzev 2008),
- Particle swarm algorithm (Suribabu & Neelakantan 2006a,b)
- En este paper presentamos un algoritmo de evolución diferencial para el diseño óptimo de redes de distribución de agua, el cual presenta resultados prometedores...

5. The body: Materials and Methods

- Provide sufficient detail for others to repeat and/or understand differences from past/future studies
- Use subtitles
- Use appropriate diagrams and figures
- If unusual complexities, consider appendix
- Make sure statistics are appropriate

6. Results

- Logical sequence of presentation
- You should ensure that your results are reproducible
- Minimize “unpublished results”
- The validity of your results also depends on the size of your sample: **the larger the sample, the greater the value of your results.**
- Use appropriate tables/illustrations

6. Results

Describe the results considering the following table

Benchmark	sC to FsC	FsC to Gecode/J		FsC to ECL^{i}PS^e	
		Java	AMMA	Java	AMMA
Send	0.237	0.052	0.688	0.048	0.644
Stable	0.514	0.137	1.371	0.143	1.386
10-Queens	0.409	0.106	1.301	0.115	1.202
18-Queens	0.659	1.122	3.194	0.272	2.889
Packing	0.333	0.172	1.224	0.133	1.246
Production	0.288	0.071	0.887	0.066	0.783
20 Ineq.	0.343	0.072	0.895	0.072	0.891
Engine	0.285	0.071	0.815	0.071	0.844
Sudoku	3.503	1.290	4.924	0.386	4.196
Golfers	0.380	0.098	1.166	0.111	1.136

6. Discussion

"Reviewers rarely complain a discussion is too brief"

- Provide summary of results and how results led to conclusion
- Place results in context of current knowledge
- Impact of data (present and future)
- Limitations of study
- **Don't overemphasize** your own work

7. References

- CHECK WITH “INSTRUCTIONS TO AUTHORS”
- Numerous variations
- Full names vs. initials
- Number of names before et al
- Punctuation
- Order in text vs. alphabetical
- No unpublished data or personal communications in this section

From Korner, AM. Guide to Publishing a Scientific Paper