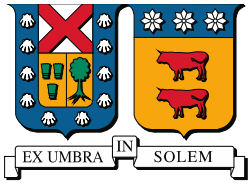

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E.T.

Tips for successful research publication

An Industrial Electronics Perspective

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What is a good paper?

- How to recognize good papers and research work?

Indicators of publication Quality and Impact

- How to recognize good papers and research work?

- How are they evaluated:
  - Number of papers → Productivity measure (quantity)
  - Number of citations → Influence measure (quality)
  - Impact Factor → Quality of a journal
  - Hirsch Factor (H-factor) → Productivity + Quality

Top Journals in Engineering

- Ranked by number of citations in the last 5 years:

Note: this is one out of many databases: Google scholar, Thomson Web of Science, Scopus, etc.

Congratulatios to Editors in Chief, Associated Editors of the TIE for being the N°1 Journal overall in Engineering!!

How to write a good paper?

- First thing first:
  - Bad research can only lead to a bad paper
  - Good research may lead to a good paper…

    … it also may not!

Good work

Well written, good journal

Succesful paper

Poorly written, bad journal

Bad work

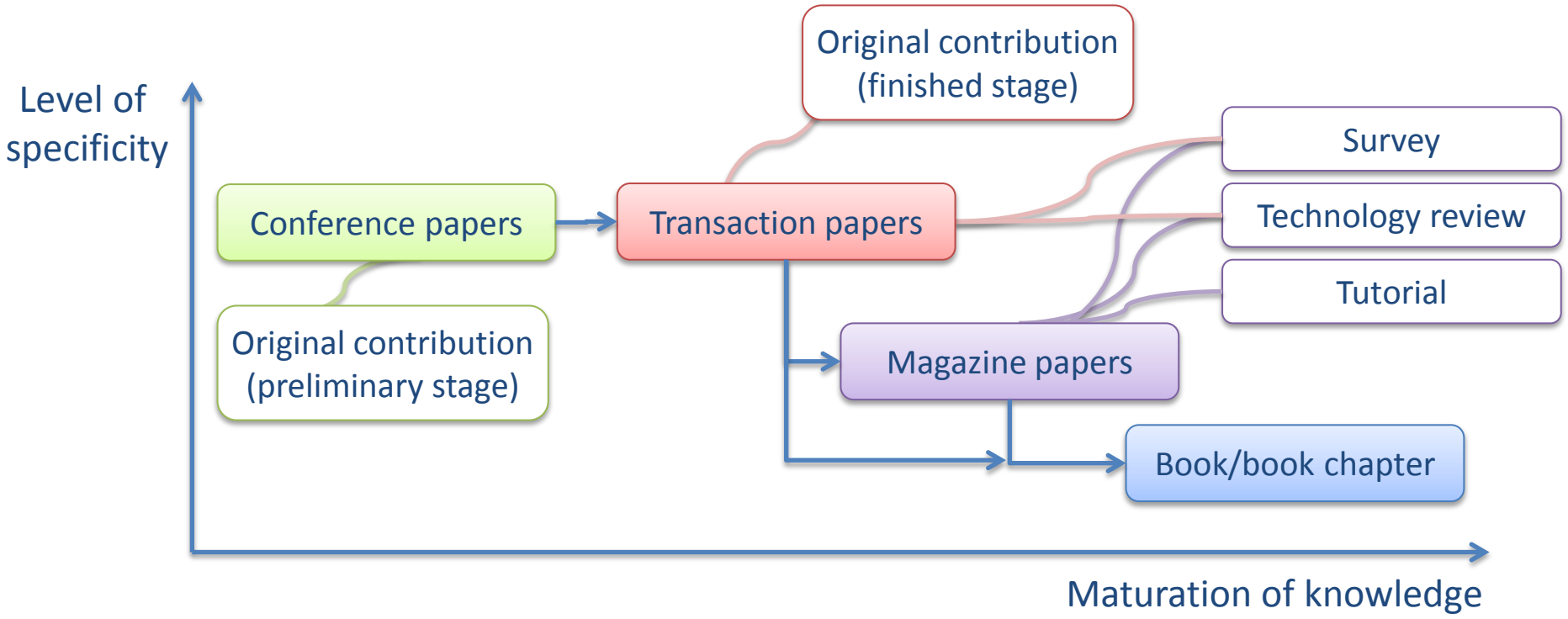
No matter what you do

Bad paper

Good ideas and results, if not well presented, can have little impact!

How to write a good paper?

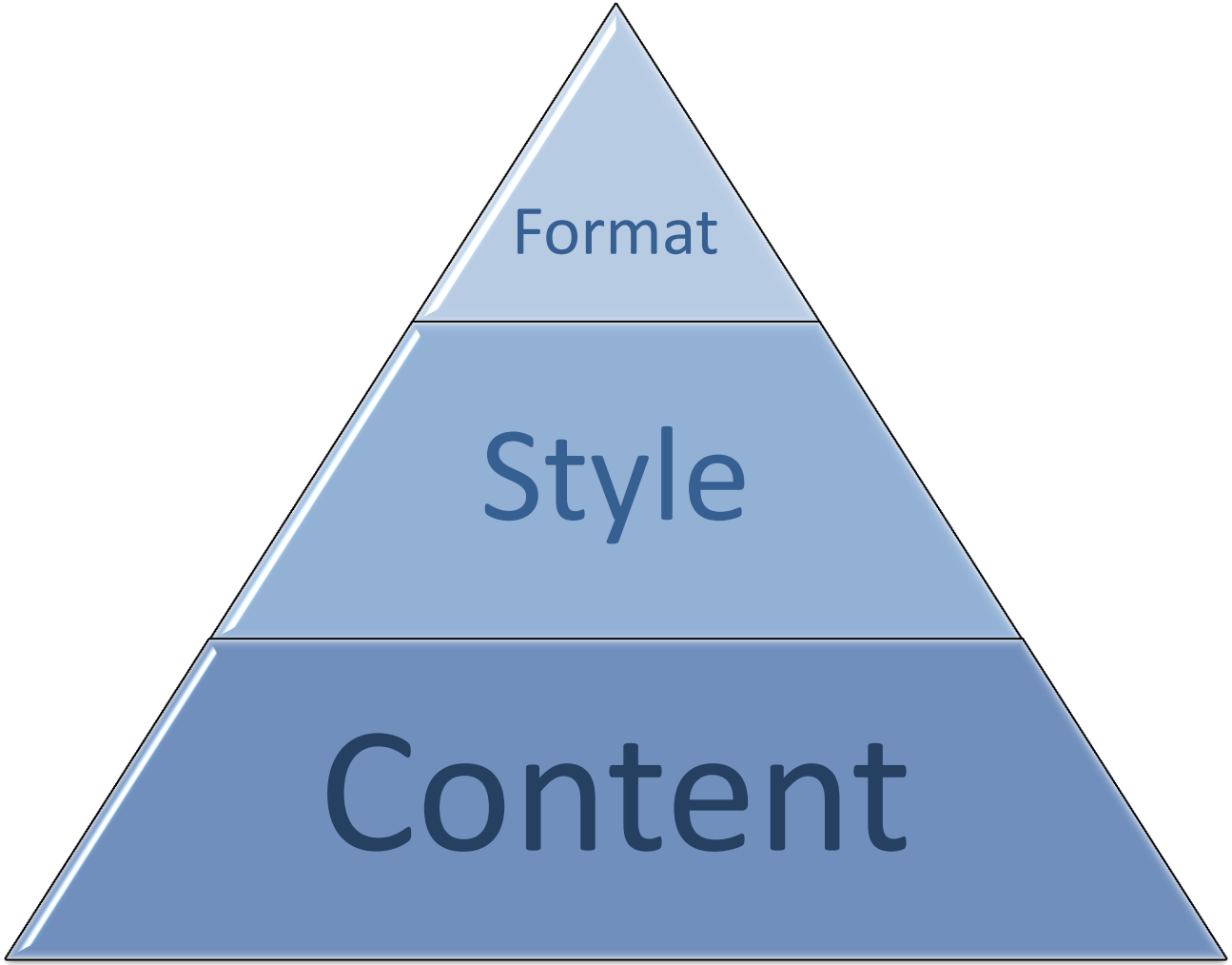
- Types of publications (depth and scope)



- There is a natural sequence
- The types of paper are different stages in the level of accomplishment in know-how

Elements of a paper

- Elements according to importance and work effort/amount



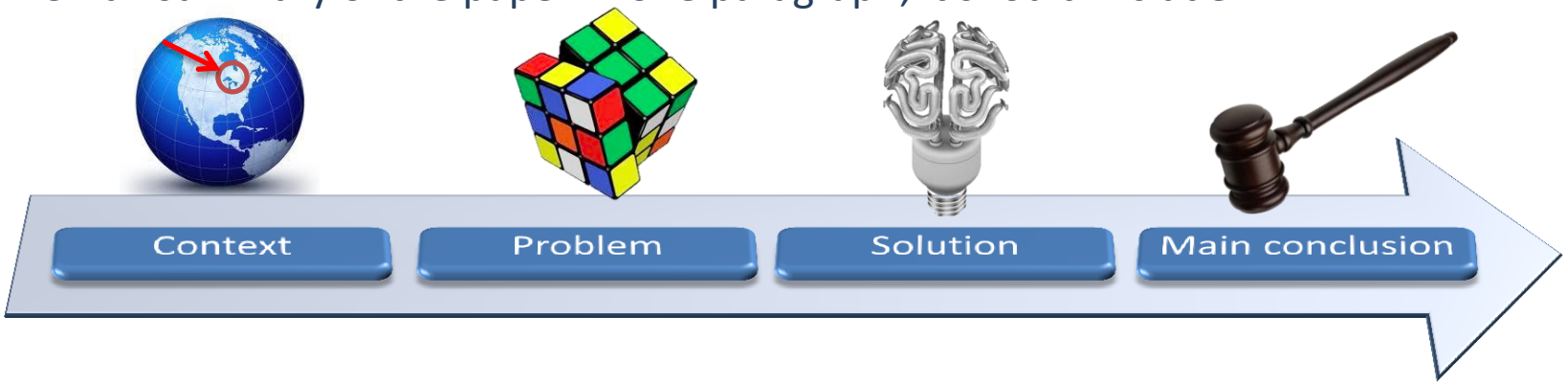
About the content

- The title:
  - Try to avoid long titles (around 10 words)
  - Use key words in the title
  - Avoid use of many (and non-standard) acronyms
  - Be descriptive (be careful with using: “A novel…”, “Next generation…”, “The best…”, etc.)
  - Examples:

Hybrid NPC grid-tied inverter single-phase photovoltaic energy system

Key words, application and descriptive elements

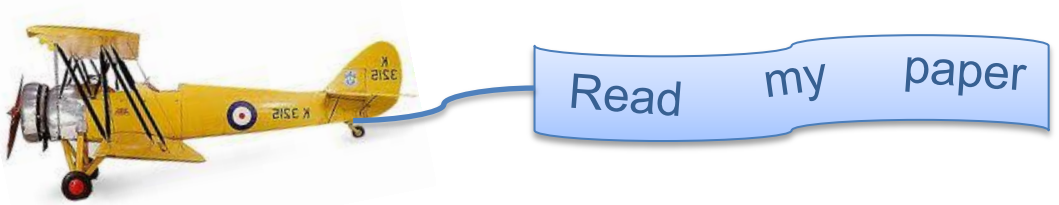
- The abstract:
  - Small summary of the paper in one paragraph, it should include:



About the content

- The introduction:
  - Is a very important section of the paper
  - Establish context, scope of the work, state-of-the-art (references)
  - You must clarify the contribution of the paper!
  - Relate past work with the problem → introduce the contribution

Attract the reader!!!



- The contribution/main content:
  - Rule of thumb: include ONE contribution per paper (seriously!)

IEEE TRANSACTIONS ON
INDUSTRIAL ELECTRONICS
A PUBLICATION OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY
FEBRUARY 2010 VOLUME 57 NUMBER 2

1. DTC with hybrid
MPC neutral point
reduced harmonic content for PV application

Remember: less is more!!!

IEEE TRANSACTIONS ON
INDUSTRIAL ELECTRONICS
A PUBLICATION OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY
(ISSN 0278-0046)

M for NPC
neutral point
balancing in NPC
3. NPC for PV application

About the content

- The contribution/main content (continued):
  - Present clearly the system (topology, circuit, control scheme, algorithm, etc.)
  - Define nomenclature and variables relating to the system and diagrams
  - Present theoretical work and analysis (clearly state assumptions)
  - Describe models used for simulation (specify parameters and other considerations)
  - Present and discuss simulation results
  - Describe experimental setup; include design considerations and guidelines
  - Present and discuss experimental results (contrast with simulation)
  - Compare/benchmark with previous contributions (use plots, tables, etc.)
  - Give ALL conclusions: favourable and unfavourable (don't hide… reviewers will find it)
  - Identify future work and open problems (continue research line)

Science should be possible to be reproduced!

About the content

- The conclusion:
  - Should not be a list of what has been presented in the paper
  - Should include insight on the contribution and assess pros and cons
  - All conclusions must be supported by the results or content of the paper

- The references:
  - Be generous in referencing; reference milestone papers; and be respectful
  - Try to avoid unnecessary self-citations

    ⇒ You loose credibility!
  - Cite recent papers

    ⇒ Shows timeliness of the topic
  - Cite papers from the same society and journal, and field

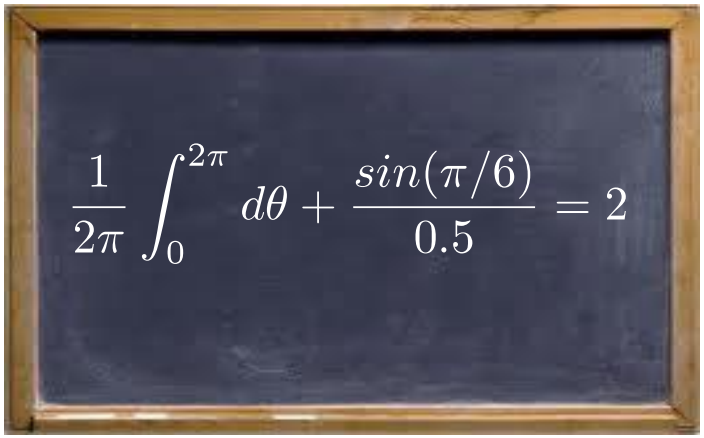
    ⇒ Shows your paper belongs to the scope

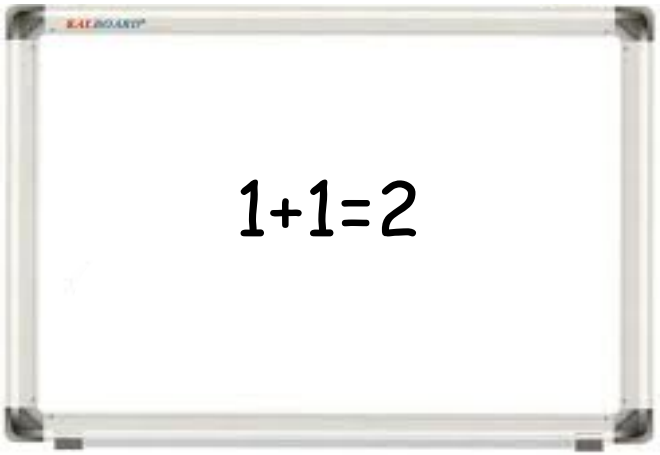
About the style

- Apply the KISS approach:

KEEP IT SIMPLE…
Students!

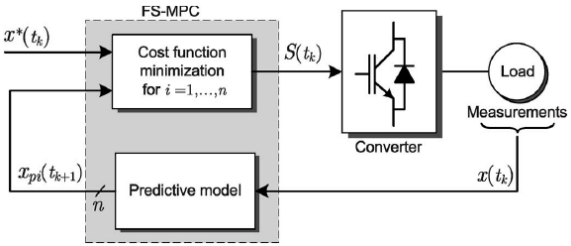
  - Students believe making something complicated = more scientific value
  - Simple is better!



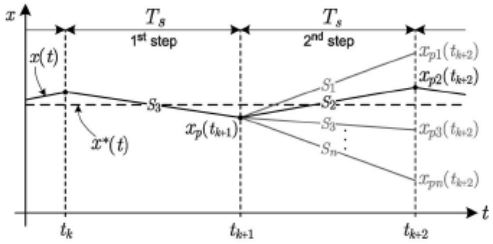


About the style

- Complexity should be kept to the minimum necessary to convey the contribution
- Order ideas in a logic way (tell the “story”)
- Support the “story” with clear diagrams, tables and figures

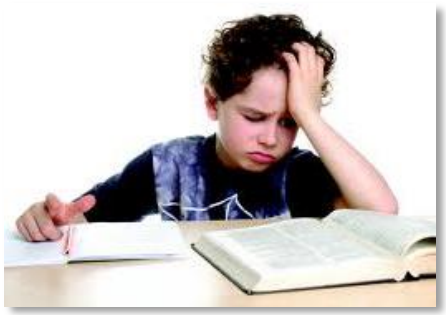


Parameter	Symbol	Value
Line to Line Grid Voltage	$v_{s_{ll}}$	3.3 kV_{RMS}
Grid Frequency	f_s	50 Hz
Rated Power	P_{nom}	1.2 MW
Rated Current	i_{snom}	300 A_{RMS}
Input filter inductance	L_s	2 mH
Input filter resistance	R_s	0.1 mΩ
DC-link capacitance	C	3700 μF
Maximum power current of module	I_{pm}	7.84 A



- Be clear and concise (avoid elaborated prose)

Little writing effort…



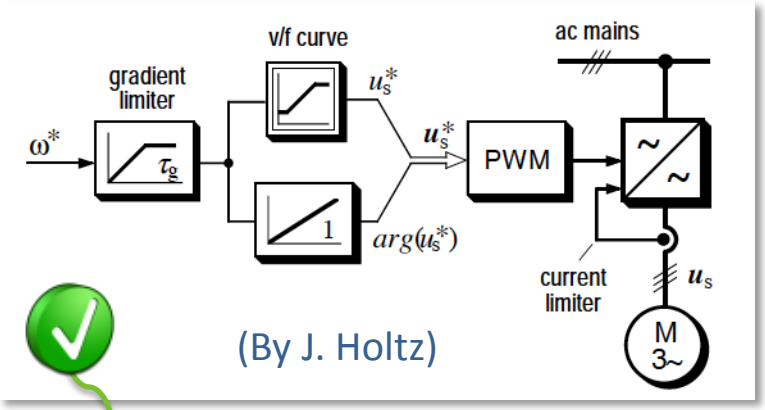
…bad reading disposition

Make your best effort to facilitate comprehension by the reader

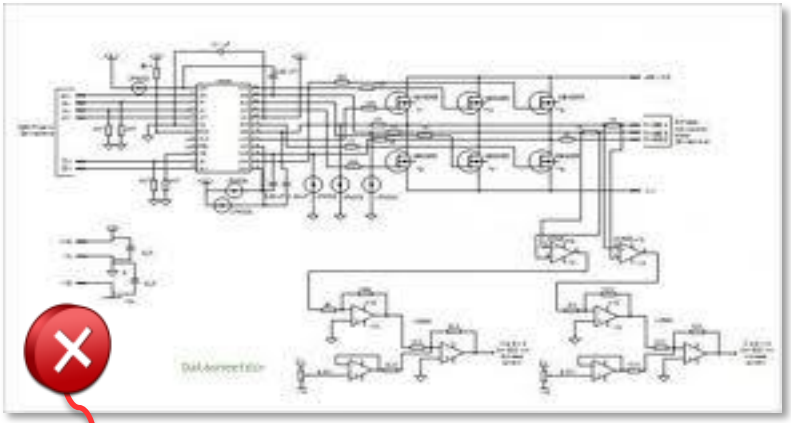
About the format

- Stick to IEEE format and guidelines
- Diagrams, figures and tables:

Its all about quality!



Simple, concise: beautiful!



Bad presentation originates rejection!

- Use standard nomenclature, acronyms and jargon
- Check spelling and grammar
- Use consistent nomenclature (in figures, equations, tables, etc.)

Careful formatting and good presentation shows respect and appreciation to the reviewer/reader

About survey papers…

- The 10 most cited paper of the TIE:

#	Citations	Authors	Title	Year
1	1731	Rodriguez, J.; Jih-Sheng Lai; Fang Zheng Peng	Multilevel inverters: a survey topologies, controls and applications	2002
2	1662	Hung, J.Y.; Gao, W.; Hung, J.C	Variable structure control: A survey	1993
3	897	Kazmierkowski, M.P.; Malesani, L.	Current control techniques for three-phase voltage-source PWM converters: A survey	1998
4	851	Wheeler, P.W.; Rodriguez, J.; Clare, J.C.; Empringham, L.; Weinstein, A	Matrix converters: a technology review	2002
5	817	Carrasco, J.M.; Franquelo, L.G…	Power-electronics systems for the grid integration of renewable energy sources: a survey	2006
6	798	Utkin, V.I.	Sliding mode control design principles and applications to electric drives	1993

About survey papers…

- The 10 most cited paper of the TIE (continuation):

#	Citations	Authors	Title	Year
7	785	Holtz, J.	Pulsewidth modulation, a survey	1992
8	724	Blaabjerg, F.; Teodorescu, R.; Liserre, M.; Timbus, A.V.	Overview of control and grid synchronization for distributed power generation systems	2006
9	715	Singh, B.; Al-Haddad, K.; Chandra, A.	A review of active filters for power quality improvement	1999
10	653	Weibing Gao; Yufu Wang; Homaifa, A	Discrete-time variable structure control systems	1995

All are survey papers!!!

About survey papers… why are they so attractive (so cited)?

- They are written and reviewed by experts
  - Usually invited by the editor
- They summarize and establish the state-of-the-art
  - Currently more than 10.000 papers on power electronics are published per year!
  - Surveys separate contributions that did have impact from the rest
  - They define the milestones

- Reading a good survey speeds the learning curve
  - You are getting the conclusions of five to ten years of work in a field

This is what everybody wants to know (specilly students)!!!

Elements of a good survey paper

- About the topic:
  - Timeliness (must be novel but with emerging or evolving industry)
- The introduction
  - Give Context
  - Show the importance, the impact of the topic in industry/society (give examples)
- The core:
  - Give brief background of how the topic evolved, and stress what from all contributions is mature/mainstream technology (already used in industry)
  - Give short and clear explanation of the different new contributions (not older than five years), and provide references for further detail
  - Compare the different alternatives (define qualitative and quantitative comparison indexes), summarize drawbacks and advantages of each of them
- The icing on the cake:
  - Discuss nev
  - Include sor
  - Give useful references

Writing a good survey is a time-consuming but rewarding endeavour

Concluding remarks…

- A good paper becomes a highly cited paper:
  - If it is easy to read and understand
  - If it describes a problem and has a clear contribution
  - If it is timely
  - If it is well presented and properly formatted
- High impact contributions have:
  - A strong theoretical and analytical background
  - Rigorous experimental validation
- Accomplishing this demands hard work, but…

…hard work pays off!!!

Thank you…