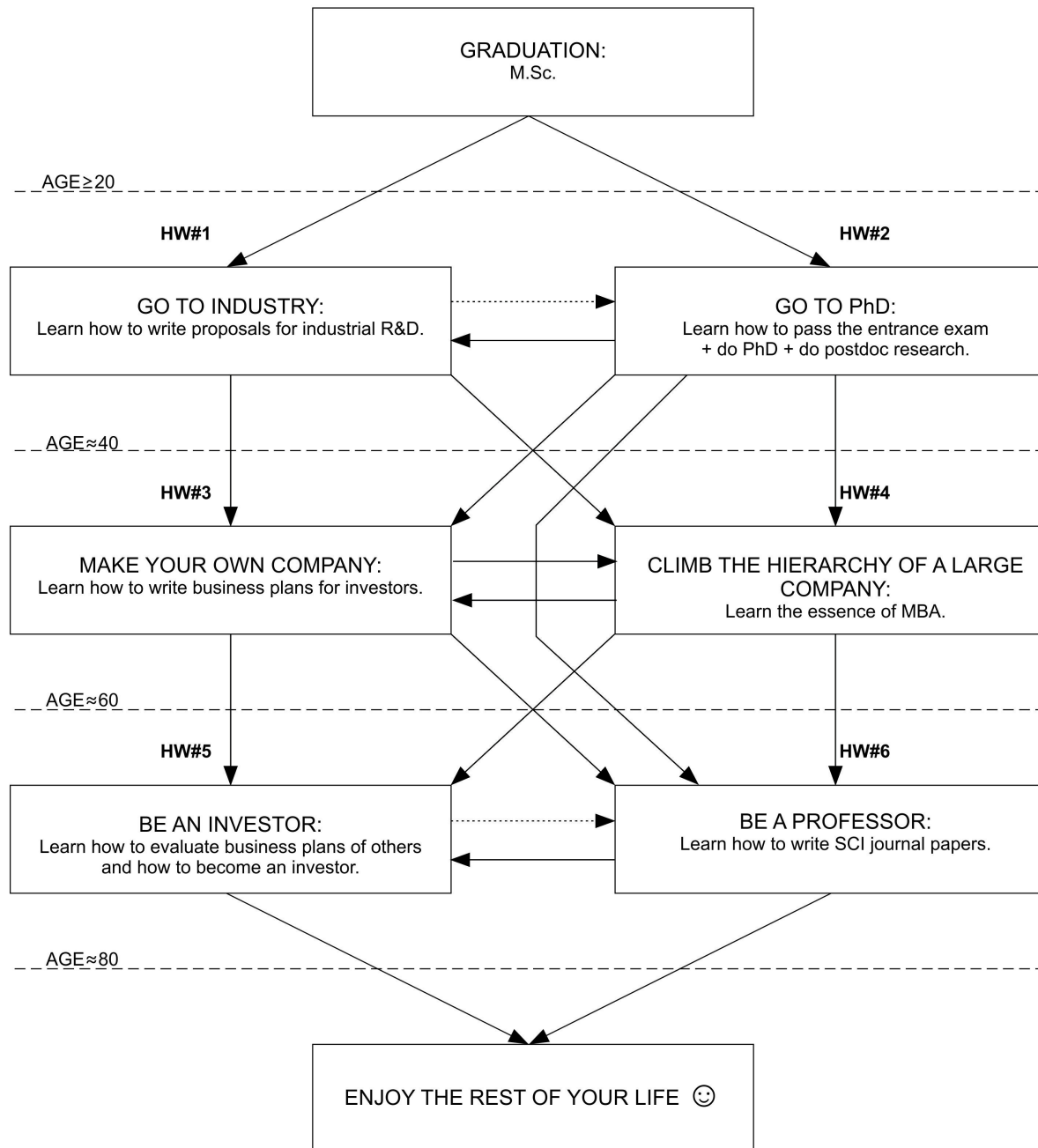# Pro Life Management

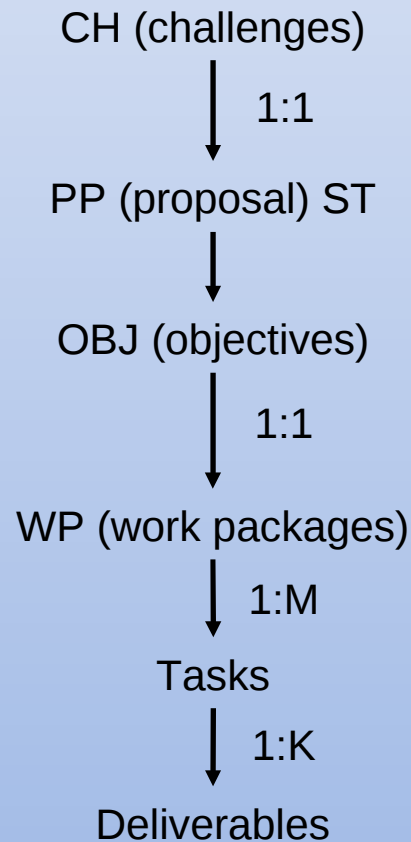Veljko Milutinović
Fellow of the IEEE

Literature

- GRE (2 weeks)
- FP7 (2 weeks)
- MBA in the Nutshell (2 weeks)
- Harvard Business Plan Template (1 week)
- Clemson Decision Making Methodology (1 week)
- PhD in the Nutshell (2 weeks)
- Drucker (1 week)
- LLOYD (1 week)
- Nobel Laureates About Inventiveness:
  Friedman, Arrow, Glashow, Maskin (1 week)
- Nobel Laureate About Creativity:
  Perl (1 week)

Part#1: GRE+GMAT

- Verbal reasoning (input), important for teaching schools

- Quantitative reasoning (CPU); tough to compete with Chinese and Indians

- Analytical writing (output), important for research schools

Part#2: FP/FP7/CALLn/ClosingDate/E1M->E4M(STREP)/E40M(IP)

CH (challenges)

$\downarrow$ 1:1

PP (proposal) ST

$\downarrow$

OBJ (objectives)

$\downarrow$ 1:1

WP (work packages)

$\downarrow$ 1:M

Tasks

$\downarrow$ 1:K

Deliverables

RISKS MUST BE ELABORATED!

15=ST(5)+MF(5)+ED(5)
13.5
10

OBJ_1-OBJ_Y [SC (success criteria)$_{1-N}$]

$\updownarrow$ 1:1

WP_0-WP_Y [MS (precise milestones)$_{1-N}$]

If   x>=10 and each{ST,MF,ED}>=3
Then: E10K, if leader
            E3K, if WP leader
            E1K, if partner

Part#3: MBA

- MBA,
  Master in Business Administration
- Postgraduate studies;

  Sloan experiences
- Work and MGMT experience required (at least 4/2 years)
- Significant investment into scholarship, but great return on investment

Part4: Harvard Business Plan Template

Business Plan Template

Five Important Tips
Before You Start!

1. The business plan should tell a compelling story about your business, explaining who, what, when, where, how and why.
2. Your plan should be focused and clear. It's not about the number of pages or style of the cover.
3. The plan should define specific business objectives and goals with general parameters to guide the organization.
4. Writing a business plan should force logic and discipline into a business.
5. A good business plan is a living document. It should be updated regularly.

SBA
U.S. Small Business Administration

U.S. Small Business Administration
Small Business Training Network
www.sba.gov/training

Part#5: Clemson Business Plan Evaluation Template

Investment Selection Criteria
Ranking by Business Angels & Venture Capitalists

Coach

Venture Financing: Process and Selection Criteria

The five sets of things venture capital investors look for in a start-up, in order of importance, are[1]:

1. a large, rapidly expanding market
2. people / management that can get the job done
3. a brilliant idea of technology that can be commercialized
4. a strategy that has a strong sustainable competitive advantage
5. a reasonable price per share

Free Micro-course
Venture Financing
10 hyper-slides

Venture Financing
Key Documentation To Be Prepared by the Entrepreneur

Portfolio Diversification
The One Investment Strategy That Keeps Your Financial Dreams Alive.
www.WealthDaily.com/Investor_Rpt

venture capital loan
Get access to 4300+ VC investors - $900 billion in active Funds
VCgate.com/Venture_Capital.htm

CFA Institute & Oxford
Partnership Programme in Private Equity
www.sbs.ox.ac.uk/pe

Summary of Investment Criteria[2]
(in Rough Order of Importance)

Selected Investment Criteria	Ranking by Business Angels	Ranking by Venture Capitalists
People or entrepreneur		
Enthusiasm of the entrepreneur(s)	1	3
Trustworthiness of the entrepreneur(s)	2	1
Expertise of the entrepreneur(s)	4	2
Investor liked entrepreneur(s) upon meeting	5	9
Track record of the entrepreneur(s)	10	8

Ads by Google

green venture capital
Get access to 4300+ VC investors - $900 billion in active Funds
VCgate.com/Venture_Capit

Portfolio Diversification
The One Investment Strategy That Keeps Your Financial Dreams Alive.
www.WealthDaily.com/Inves

Asset Management System
Comprehensive Software for Capital Markets. Learn more!
Comarch.com/IT_Asset_Ma

Venturepreneur
Smart & Fast
Ten3 Mini-Course
100 Slides
1. High-growth Business
2. New Business Model
3. New-to-the-world Product
4. Venture Financing
5. Entrepreneurial Leader
Click here

Market or product

Part#6: PhD

How to write/present survey papers:
    Best method
How to write/present research papers:
    Good method
Evaluation of scientists:
    Publish or Perish (h+g)
Evaluation of universities:
    WeboMetricsTop20K or ShanghaiTop500 (6)

On Strategic and Tactical Issues Related to PhD Research with Special Emphasis on Generation of New Ideas and Writing of Papers in Computer Science and Engineering: An Analysis

Veljko Milutinovic

Table of Contents

1. Introduction
2. The Major Strategic Issues
3. About Generation of New Ideas
4. Examples from Turing Awards (10)
5. Examples from Nobel Prizes (10)
6. Examples from the UCLA List of Top500 CS Researchers
7. Numerical Values from Google Scholar
8. Examples from University of Belgrade (10)
9. Experiences with PhD Students
10. Conclusions

Introduction: General Strategy

Stage #1
1. Problem selection and collection of 20-40 research papers
2. Analysis and description (7S+F1infrastructure+F2algorithm)
3. Classification criteria and classification tree/cube
4. Ideas for future research, along the lines of 10 methodological paths
5. Survey paper, in Serbian
6. Survey paper, in English, for an IEEE or an ACM conference
7. Survey paper for a journal (ACM, IEEE, SCI)
8. Springer book 50-125
9. .ppt equivalent (preconference tutorials + teaching for Bologna credit)
10. Doing an implementation and living through the incubation period

Stage #2
11. Doing a research paper (1 of 10) along the lines of 10 method paths
12. Publishing (SRB.con + ENG.con + ACM/IEEE/SCI.journal)

Stage #3
13. Writing an EU project proposal, with appendices from the above
14. Approaching the US companies, with knowledge from the above

Stage #4
15. If the project was successful, prepare a business plan for a startup
16. Work on turning the EU project prototype into a market product

Ten Idea Generation Methods*

Mendeleyevization: Inductor versus Catalyst (M1 vs M2)

Definition:

If one of the classification class includes no examples,
it first has to be checked why is that so.
If it is so because it makes no sense, an appropriate explanation is in place.
If it is so because the technology or the applications are not yet ready
for such an approach, one can act in the same way as the famous chemists Mendeleyev:
Empty positions in any classification are potential avenues leading to new inventions.
We refer to such an approach as: Mendeleyevization.

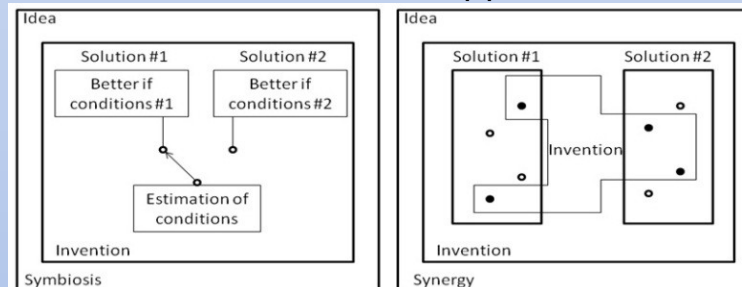A: Mendeleyevization (Inductor versus Catalyst) – M1 vs M2

Examples:

As far as M1/M2, the famous classification of computer systems by Mike Flynn
(SISD, SIMD, MISD, MIMD) initially included no examples of the MISD type.
Later on, a DFT machine (generated using the M1 method)
was categorized as an MISD machine [Milutinovic86A],
as well as one pipelined machine (generated using the M2 method),
namely [Milutinovic87C];
the DFT served as an **inductor**, and pipeline as a **catalyst**.
Other popular examples are related to various signal processors and process accelerators.

Hybridization: Symbiosis versus Synergy (H1 vs H2)

Definition:

Sometimes two classification classes can be combined,
in order to obtain a hybrid solution (hybridization).
Hybrid solutions can be **symbiotic** (measuring the conditions in the environment
and switching from one approach to the other, so that each approach is active all the time,
while the conditions are such that it provides better performance compared to the other approach)
or **synergistic** (creating a new approach, which, for each particular solution element
takes the better solution element of two different approaches).

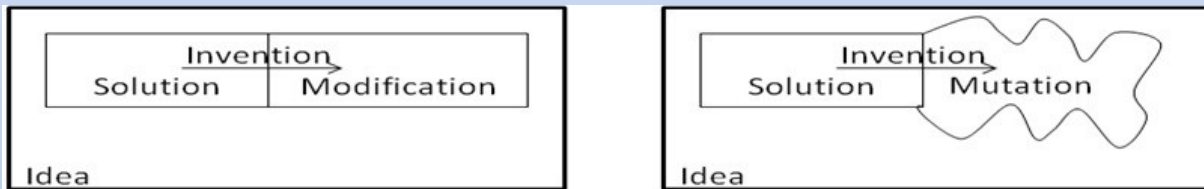B: Hybridization (Symbiosis versus Synergy) – H1 vs H2

Examples:

As far as H1/H2, the essence of [Milutinovic85] is that two algorithms are combined into one
on the either-one-or-the-other basis (using the H1 method),
and on a combine-inherent-details basis (using the H2 method) in [Milutinovic87B].
Other popular examples include hybrid computers
or computers that use special purpose accelerators,
when appropriate data/process patterns are located.

Transdisciplinarization: Modifications versus Mutations (T1 vs T2)

Definition:

Often times, good new ideas get generated if algorithms, procedures,
ways of thinking, re ported from one field to another field,
along the lines of transdisciplinary research methodologies (transdisciplinarization).

C: Transdisciplinarization (Modification versus Mutation) – T1 vs T2
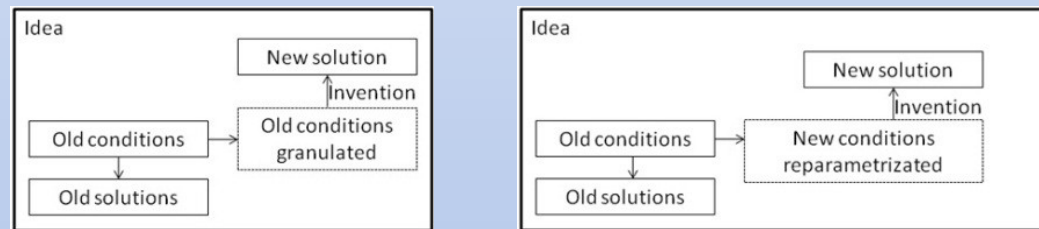
Examples:

As far as T1/T2, [Milutinovic86B] ports algorithms from Silicon to GaAs (using the T1 method),
and introduces appropriate modifications along the process,
while [Milutinovic87A] creates a proposal for a novel computer architecture
(using the T2 method),
along the analogies with a biological honeycomb.
Other popular examples include porting of the FFT
from seismic signal processing to speech signal processing
(**modification**),
or introduction of mathematical neural networks inspired by biological neural networks
(**mutation**).

Remodelling: Granularization versus Reparametrization (R1 vs R2)

Definition:

Sometimes it is simply the best to take a research direction different (even opposite)
compared to what others take (retrajectorization using remodeling).
The different (opposite) research direction makes sense either if a more detailed set of parameters is in place
(**granularization**, due to model changes because of application changes),
or because parameters of the environment have changed permanently
(**reparametrization**, due to model changes because of technology changes).
The two alternatives are referred to as granularization and reparametrization.

D: Remodeling (Granularization versus Reparametrization) – R1 vs R2

Examples:

As far as R1/R2, [Milutinovic88] offers a new algorithm (using the R1 method)
that makes sense if an environment is represented with a more detailed model,
while [Milutinovic89] offers a new solution in a changed environment (using the R2 method),
when a design has to be ported from Silicon to GaAs
(from the performance/price point of view, the best adder design for Silicon, the carry-lookahead adder,
is among the worst ones for GaAs, and the opposite: the worst adder for Silicon, the ripple-carry adder,
is among the best ones for GaAs; this is because GaAs gate delays depend on fan-out
and ripple-carry adders are characterized with only the minimal fan-out,
while the fan-out of the carry-lookahead adders depends on the word size, and can grow infinitely).
Other popular examples are related to concept modeling in AI based on graphical representation with icons
(in a model with fewer icons, one can make a conclusion which is different, and often times even opposite,
compared to a conclusion made from a model with a much larger number of icons);
also, when the environment changes (for example, the ratio of processing speed to communication speed
changes), a different type of supercomputing network becomes optimal.

Unorthodoxization: ViewFromAbove versus ViewFromInside (U1 vs U2)

Definition:

This category encompasses the approaches that are difficult to classify:
*Sometimes one sees something that others did not see for decades or centuries (**ViewFromAbove**)*
*or one gets stroked by an idea of a genius with no ground in existing research (**ViewFromInside**).*
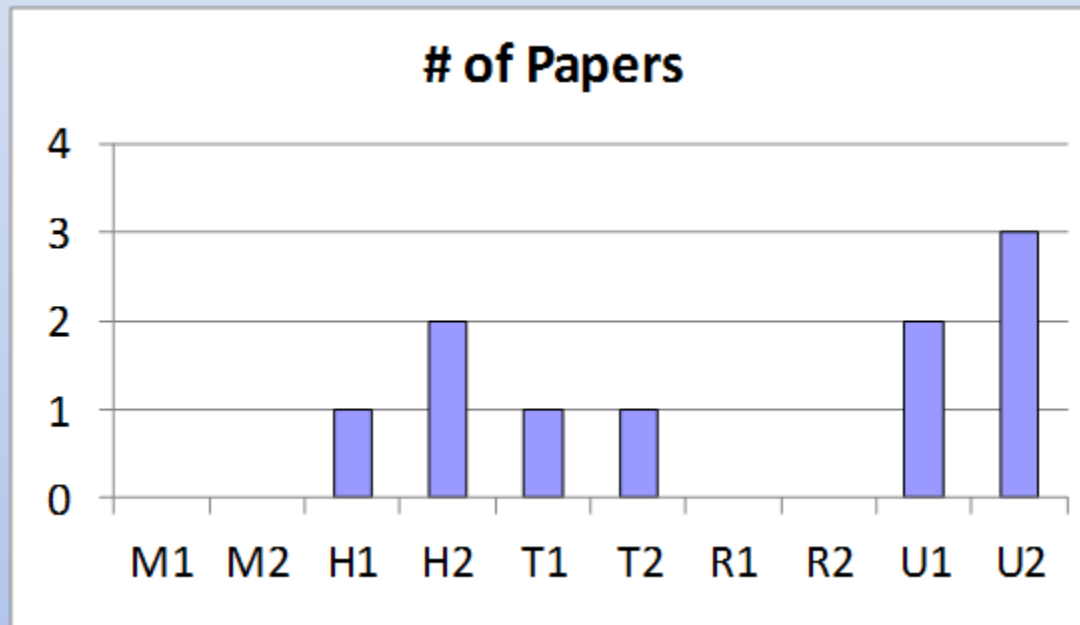

E: Unorthodoxization (ViewFromAbove versus ViewFromInside) – U1 vs U2

Examples:

As far as U1/U2, [Milutinovic2000] generated an innovation
after trying to make a holistic view (U1),
and [Milutinovic2001] introduces an idea after an effort is made
to understand the intrinsic details of the problem (U2).
Other popular examples include the contributions
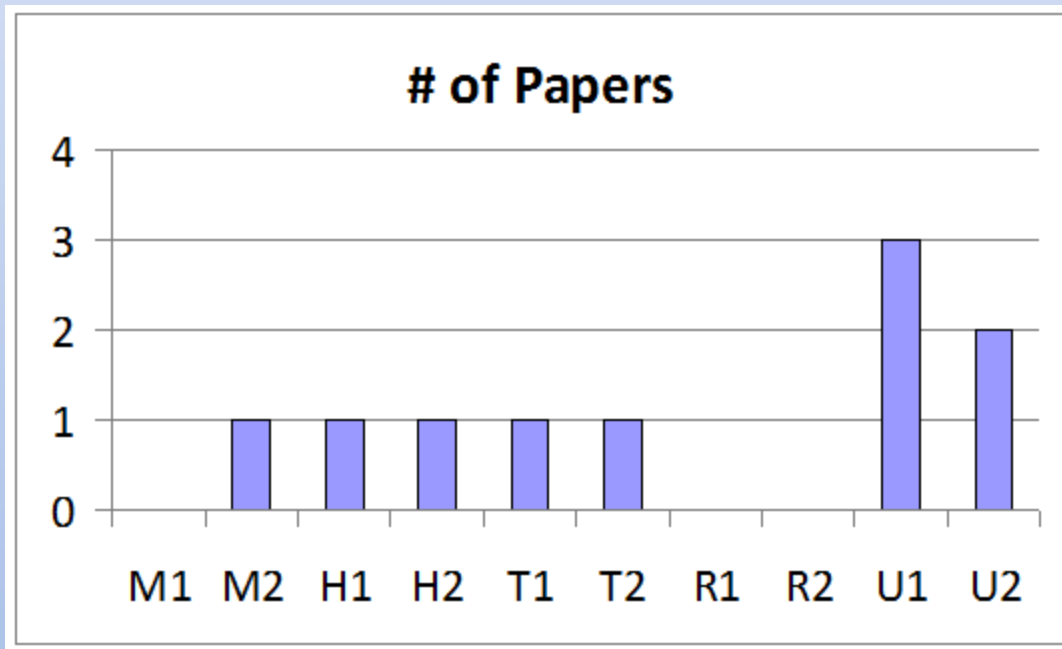of Nobel Laureates Martin Perl and Jerome Friedman.

Examples from the Turing Award

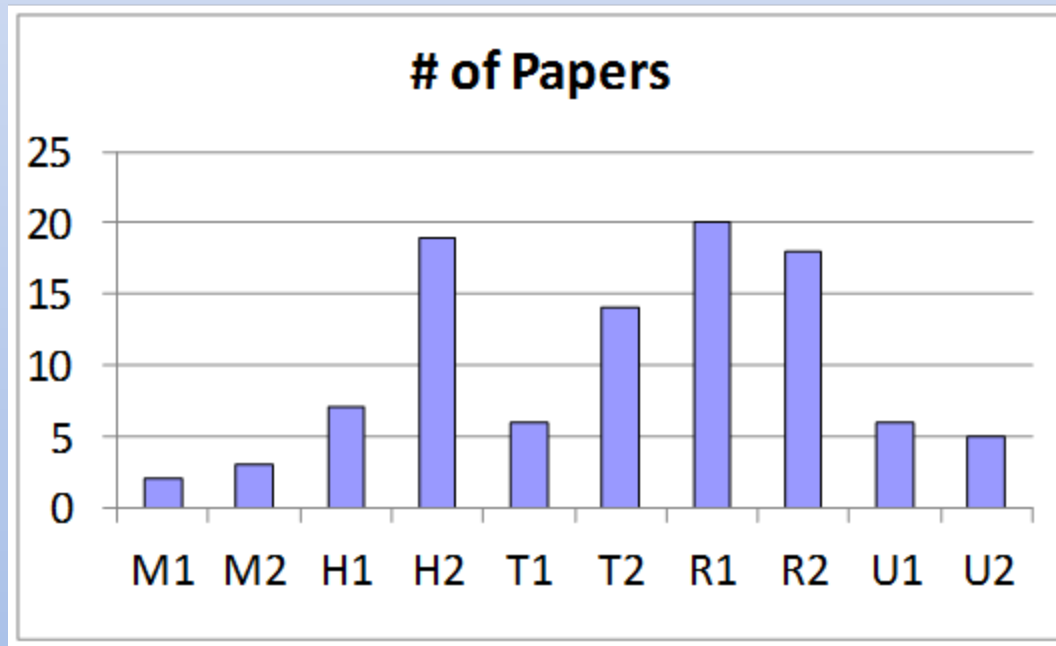**Number of Turing Awards based on the given innovation method**

Alan J. Perlis (1966), Maurice V. Wilkes (1967), Richard Hamming (1968),
Marvin Minsky (1969), James H. Wilkinson (1970), John McCarthy (1971),
Edsger W. Dijkstra (1972), Charles W. Bachman (1973),
Donald E. Knuth (1974), John Backus (1977)

Examples from
the Nobel Laureate Research

K. Arrow,
L. Cooper,
P. DeGennes,
J. Friedman,
S. Glashow,
H. Kroto,
E. Maskin,
M. Perl,
B. Richardson,
K. Wilson

Examples from the List of Top 500 Computer Scientists of the World

Experiences of PhD Students

Researcher	Research domain	Method
Drazen Draskovic	mutation algorithms for genetic search [Draskovic2012]	H1
Bojan Furlan	opinion mining for social networks [Furlan2011]	H1
Nemanja Kojic	data mining for wireless sensor networks [Kojic2012]	U1
Marko Misic	interconnection networks for multiprocessor systems [Misic2011]	R2
Milos Cvetanovic	system software for wireless sensor networks [Cvetanovic2008]	H1
Zaharije Radivojevic	application software for wireless sensor networks [Radivojevic2008]	H1
Zarko Stanisavljevic	computing infrastructure for distant education [Stanisavljevic2011]	H1
Zivojin Sustran	cache management for multiprocessor systems [Sustran2012]	T2
Djordje Djurdjevic	of computer graphics for mission applications [Djurdjevic2011]	R1
Sasa Stojanovic	hybrid computing for supercomputer architecture [Stojanovic2012]	H1

Classified References
Used in the Educational Process

- **M1: Mendeleyevization/Inductor**
  [Milutinovic86a] *Milutinovic, V., Fortes, J., Jamieson, L.,A Multiprocessor Architecture for Real-Time Computation of a Class of DFT Algorithm,IEEE Transactions on Acoustics, Speech, and signal Processing, Aol. ASSP-34, No. 5, October 1986, pp. 1301-1309.(impact factor 1.463/1992).*

- **M2: Mendeleyevization/Catalyst**
  [Milutinovic87c] *Milutinovic, V.,A Simulation Study of the Vertical-Migration Microprocessor Architecture,IEEE Transactions on Software Engineering, Vol. SE-13, No. 12, December 1987, pp. 1265-1277.*

- **H1: Hybridization/Symbiosis**
  [Milutinovic85] *Milutinovic, V.,A Microprocessor-Oriented Algorithm for Adaptive Equalization,IEEE Transactions on Communications, Vol COM-33, No 6, June 1985, pp. 522-526.(impact factor 1.512/2010).*

- **H2: Hybridization/Synergy**
  [Milutinovic87b] *Milutinovic, V., Lopez-Benitez, N., Hwang, K.,A GaAs-Based Microprocessor Architecture for Real-Time Applications,IEEE Transactions on Computer, VolC-36, No 6, June 1987, pp. 714-727.(impact factor 1.822/2010).*

- **T1: Transdisciplinarization/Modification**
  [Milutinovic86b] *Milutinovic, V.,GaAs Microprocessor Technology,IEEE Computer, Vol 19, No. 10, October 1986 (Invited, Guest Editor's Introduction), pp. 10-15.(impact factor 2.205/2010).*

- **T2: Transdisciplinarization/Mutation**
  [Milutinovic87a] *Milutinovic, D., Milutinovic, V., Soucek, B.,The Honeycomb Architecture,IEEE Computer, Vol. 20, No. 4, April 1987 (Open Channel), pp. 81-83.(impact factor 2.205/2010).*

- **R1: Remodeling/Granularization**
  [Milutinovic88] *Milutinovic, V., A Comparison of Suboptimal Detection Algorithms Applied to the Additive Mix of Orthogonal Sinusoidal Signals, IEEE Transactions on Communicatiions, Vol. COM-36, No. 5, May 1988, pp. 538-543.*

- **R2: Remodeling /Reparametrization**
  [Milutinovic89] *Milutinovic, V., Bettinger, M., Helbig, W.,Multiplier/Shifter Design Trade-offs in a 32-bit Microprocessor,IEEE Transactions on Computers, Vol. 38, No. 6, June 1989, pp. 847-880.(impact factor 1.822/2010).*

- **U1: Unorthodoxization/ViewFromAbove [Milutinovic2000]** *Milutinovic, V., Cvetkovic, D., Mirkovic, J., "Genetic Search Based on Multiple Mutation Approaches," IEEE Computer, 2000. (impact factor 1.822/2010).*

- **U2: Unorthodoxization/ViewFromInside [Milutinovic2001]** *Milutinovic, V., Ngom, P., Stojmenovic, I., "STRIP --- A Strip Based Neural Network Growth Algorithm for Learning Multiple-Valued Functions," IEEE Transactions on Computers, 2001. (impact factor 1.822/2010).*

A Short Course for PhD Students in Science and Engineering: "How to Write Papers for JCR Journals"

(A) survey papers

(B) research papers

Major Contributions
of the Two Paper Types

Major contributions of the two paper types are as follows:

a) For a survey paper:

    1) A novel classification of existing approaches to the problem,
        using a well thought set of classification criteria.

    2) Presentation of each approach using the same template
        and the same type of figures, so an easy comparison is possible.

    3) Some wisdom related to future research trends.

b) For a research paper:

    1) Introduction of a new original idea.

    2) Comparison of that idea with the best one from the open literature,
        using the previously built tools:
        For how much is it better and under what conditions?

    3) In addition to a performance oriented comparison,
        any research paper also has to include
        a complexity oriented comparison.

1. Survey Papers

Selection of the topic for a survey must satisfy
the following requirements:

1) The field is newly emerging.
2) Popularity of the field will grow over time.
3) A critical number of papers with new algorithms/approaches does exist (at least twenty to forty).
4) A survey paper does not exist.
5) The PhD student worked before in a related scientific field.
6) The PhD student is enthusiastic about the particular field of his/her tutorial paper.

1. Survey Papers

- With the binary (or n-ary) criteria, one can create either a tree-like classification
  or a cube-like classification,
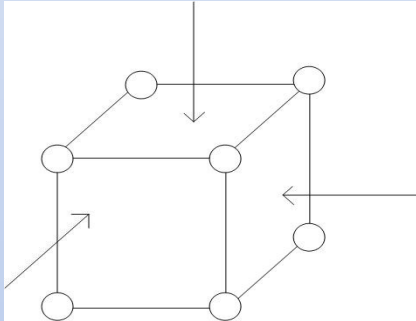 as indicated in Figures 1 and 2 [Vukasinovic2012].

FIGURE 1. A tree-like classification:
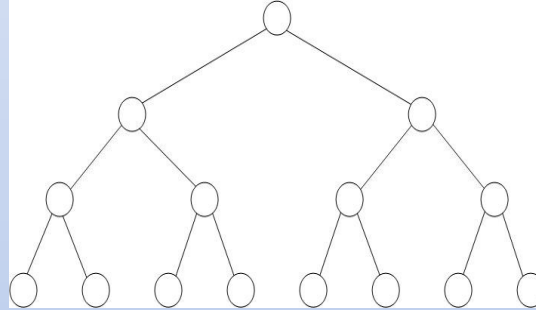Classes are only at the leaves of the tree.

FIGURE 2. A cube-like classification:
Classes can exist also at points inside the cube,
as pointed to by the three arrows.

- With a tree-like classification, one can classify only the approaches that entirely belong to a specific class.
  With a cube-like classification, one defines a space in which inner points include, to some extent,
  characteristics of all existing classes

- What is useful, is to prepare a figure which includes the following:
  - The classification criteria.
  - The classification
  - The technical mnemonics.
  - The symbolic mnemonics.
  - The number of selected examples per class.
  - The full list of references of selected examples.
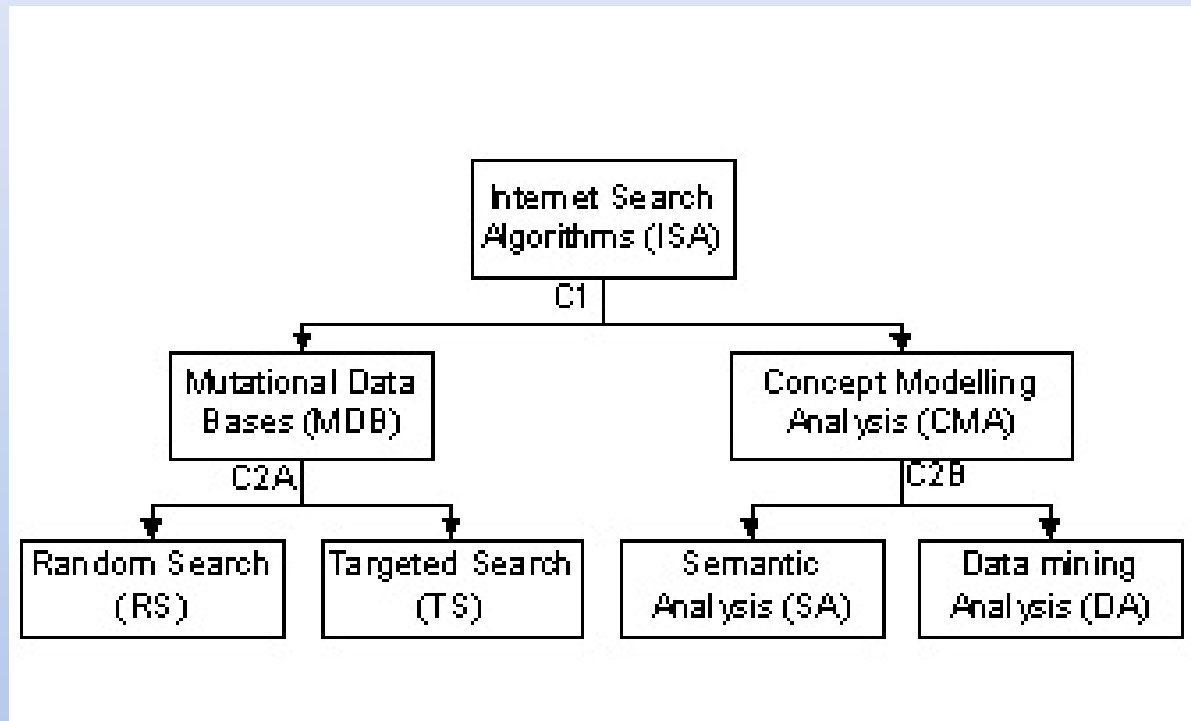 - The vector of relevant characteristics.

Figure 3. Classification of Internet Search Algorithms

Legend: C1 (criterion #1) = Retrieval-oriented vs Analysis-oriented
          C2A (criterion #2, in the MDB path) = Random Search vs Targeted Search
          C2B (criterion #2, in the CMA path) = Semantics-oriented vs Datamining-oriented

Technical Names	Random Search (RS or RS/MDB)	Targeted Search (TS or TS/MDB)	Semantic Analysis (SA or SA/CMA)	Data-mining Analysis (DA or DA/CMA)
Symbolic Names	Lion	Jaguar	Tiger	Panthera
Number of Surveyed Contributions	4	4	4	4
References	[Nikolic2011a] Nikolic, B., "Expert Systems," WUS Austria Educational Publishing and University of Belgrade, Classroom Textbook, June 2011.	[Milutinovic2000a] Milutinovic, V., Cvetkovic, D., Mirkovic, J., "Genetic Search Based on Multiple Mutation Approaches," IEEE Computer, November 2000, vol. 33, issue: 9, pp. 118-119.	[Nikolic2011b] Furlan, B., Sivacki, V., Jovanovic, D., Nikolic, B., "Comparable Evaluation of Contemporary Corpus-Based and Knowledge-Bases Semantic Similarity Measures of Short Text," JITA, vol. 1, no. 1, pp. 65-72, ISSN: 2232-962, June 2011.	[Milutinovic2000b] Milutinovic, V., Knezevic, P., Radunovic, B., Casselman, S., Schewel, J.,"Obelix Searches Internet Using Customer Data,"IEEE Computer, July 2000, vol. 33, issue: 7, pp. 104-107.
	[Nick2001] [ ] [ ]	[Simon2009] [Mirkovic1999] [Chen1997]	[Gordon2006] [Leroy2003] [Wang2006]	[Al-Dallal2009] [Hu2007] [Freitas2001]

-ability#1
...
-ability#N

TABLE A: SUMMARY OF THE APPROACHES THAT LED TO THE CLASSIFICATION PROPOSED IN THIS PAPER

Survey Papers

When presenting each particular example, one can use the template presented next:

1) Seven Ws about the survey example (Who, What, When, Where, Why, for Whom, hoW).
2) Essence (it is extremely difficult to give entire essence in only one sentence).
3) Structure (at this place, one can insert a call to a figure, like in [Draskovic2012]).
4) Some relevant details.
5) Example (here one can call a figure that explains an example using a pseudo-code, like in [Draskovic2012]; ideally, the same application case should be used for all surveyed examples).
6) Pros and cons.
7) Author's opinion of this example and its potentials.

For short surveys, each template element is a sentence.
For long surveys, each template element is a paragraph.
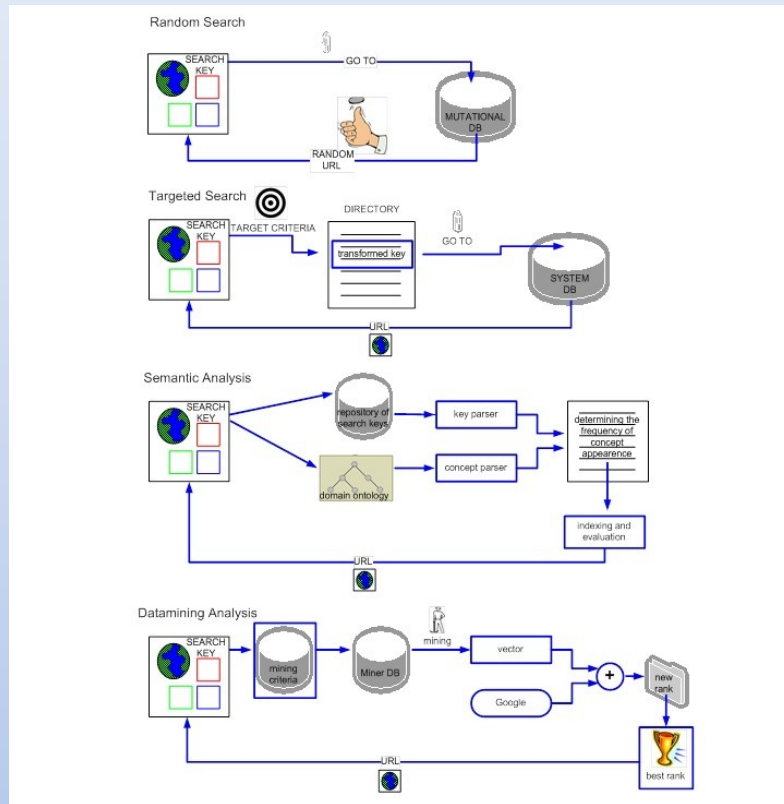For books, each template element can be a page, or more.

FIGURE 4: Generalized Structure of the Search Classes
Legend:
DB = Database;
URL = Type of URI that is used to describe
        the location of a specific document;


```
PseudoCode
      Procedure#X;
      Procedure#Y;
      Procedure#Z;

      . . .
EndPseudoCode
```

FIGURE 5: PseudoCode
that demonstrates behavior of an example,
in the case of a specific application;
it is advised that the same application is used
with all examples.

2. Research Papers

The major purpose of the research paper is to describe an innovation
and to demonstrate that, under certain conditions,
it has a better performance and/or complexity,
compared to the best one from the open literature.
The major steps in the process are:

1) To create an invention.

2) To perform a rigorous analysis,
   to demonstrate that the invented solution is better
   than the best one from the open literature under a specific set of conditions,
   and to show what these conditions are
   and for how much is it better.

3) To write the paper using a methodologically correct template.

Research Papers

As far as the presentation of the research results, the students are told that each research paper should contain the following twelve sections:

1) Introduction
2) Problem statement
3) Existing solutions
4) The proposed solution
5) Details
6) Axioms, conditions, and assumptions of the analysis to follow
7) Mathematical analysis
8) Simulation analysis to show performance
9) Implementation analysis to show complexity
10) Conclusion
11) Acknowledgments
12) Annotated references

1. Introduction

The minimum introductory text

should contain the following three paragraphs:

a) About the general field of this research.

b) About the specific field of this research.

c) About the viewpoint of this research, as well as the goals of this research.

2. Problem Statement

The following elements are obligatory:

a) Problem definition.
b) Why is the problem important.
c) Why will the importance of the problem grow over time.

3. Existing Solutions

Existing solutions and their drawbacks,
looking from the viewpoint defined in the introduction,
and having in mind the goals defined in the introduction.
Elements of this section are:

- – A brief classification of the best solution from the open literature.

- – Short description of each relevant solution.

- – A detailed criticism of each presented solution,
  especially in domains in which the proposed solution
  is expected to be better.

4. The Proposed Solution

The proposed solution and its essence,
and why is it supposed to be better
compared to the best solution from the open literature;
elements of this section are:

a) Philosophical essence of the proposed solution.

b) Why the proposed solution
   is without drawbacks of existing solution(s).

c) What is the best methodology
   to prove the superiority of the proposed solution,
   and under what conditions that holds.

5. Details

This section should contain details of the best one among the existing approaches and of the proposed solution. The relevant details should be grouped into categories. For example:

a)   Hardware details.

b)   System software details

c)   Application software details.

6. Axioms, Conditions, and Assumptions of the Analysis to Follow

a) Axioms refer to axiomatic standpoints.

b) Conditions refer to realistic specifiers of the environment.

c) Assumptions refer to simplifications that make the analysis easier, without jeopardizing on the quality of the final result.

7. Mathematical Analysis

a) Axioms, conditions, and assumptions
   are described mathematically.

b) Closed or open form formulae are derived
   for the major performance measures.

c) Closed or open form formulae are derived
   for the major complexity measures.

8. Simulation Analysis to Show Performance

a) Simulator, logical structure

   and user interface are described.

b) Simulation experiments are described.

c) Simulation results are discussed.

9. Implementation Analysis to Show Complexity

a) Implementation strategy is discussed for the chosen technology.

b) Implementation details and complexity are presented.

c) If a prototype is implemented, show some characteristic measurement.
   If a prototype is not implemented, give some implementation guidelines.

10. Conclusion

a) Summary of what was done
   and to what extent are the initial goals achieved.

b) To whom is that of benefit.

c) Newly open problem for further research.

11. Acknowledgments

a) To all those who patiently listened to your ideas
   and especially to those who volunteered to share with you
   some of their own ideas for further benefit of your research.
   Also, it is obligatory to cite the relevant work
   of all those who volunteered the improvement ideas.

b) To all those who helped provide the infrastructure for your research.
   If this is related to one or more research project, list them.

c) To all those who suffered by taking everyday life responsibilities from you,
   so you could dedicate more of your time to research.

12. Annotated References

The references are more useful if listed in groups.
Each topic requires different grouping.
The grouping that seems most appropriate
for this paper includes:

a) References related to methodology.

b) References related to examples.
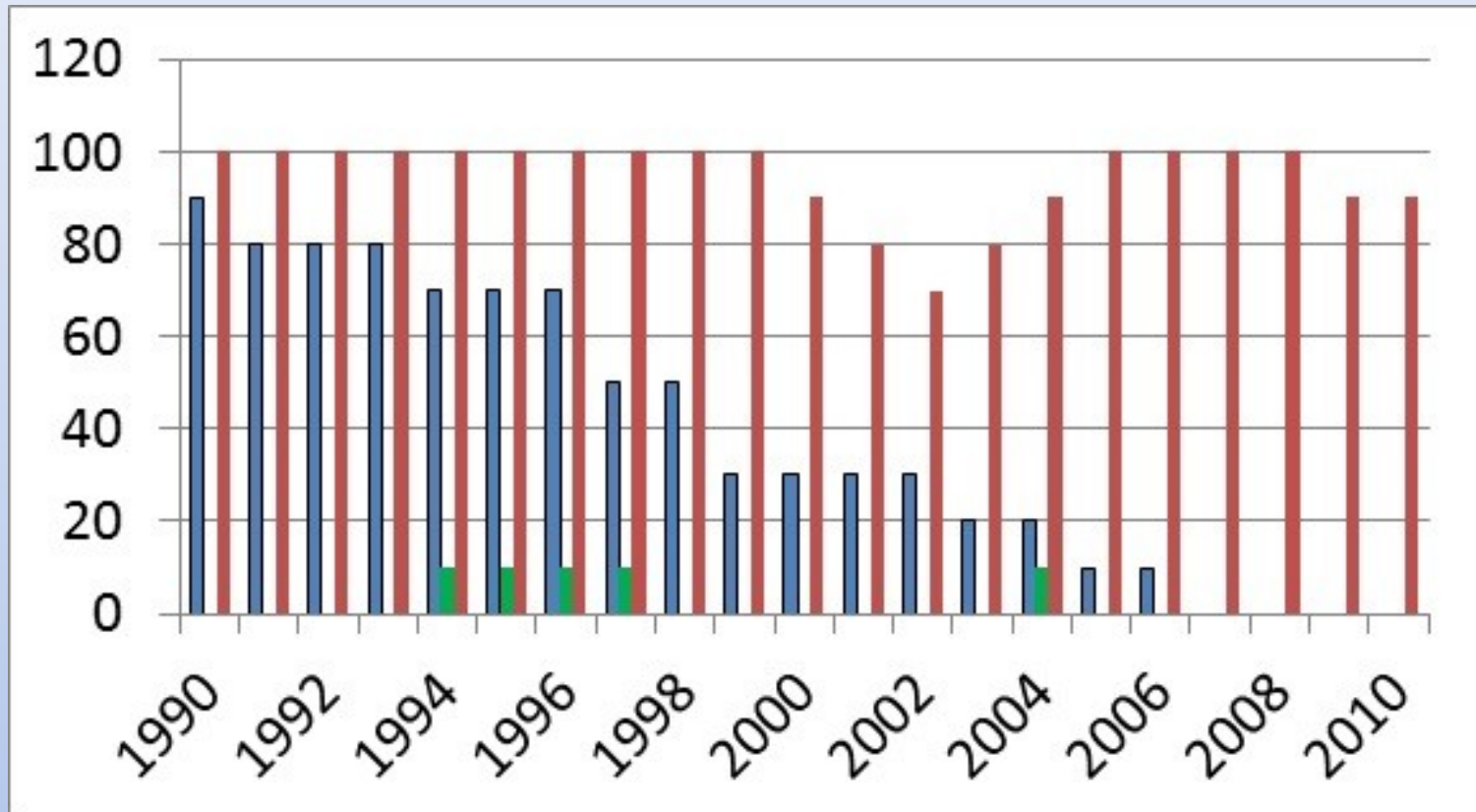
c) References related to success of past students.

Figure 6: Success rates of paper submissions: (A) Normalized percentage of class with permission to submit.
(B) Normalized paper acceptance rate of those permitted to submit.
(C) Among the student with accepted papers, how many enrolled a PhD program later.

Explanation: Curve A is almost monotonically decreasing due to the fact that the class was not formal in the beginning
and only the best students opted to take informal lectures. After the class became formal, the student body became larger,
and consequently, not all of them were extraordinary. Curve B had ups and downs, with peeks separated about twelve years apart,
which could be a consequence of the motivation ups and downs of the teacher. Curve C is at hundred percent,
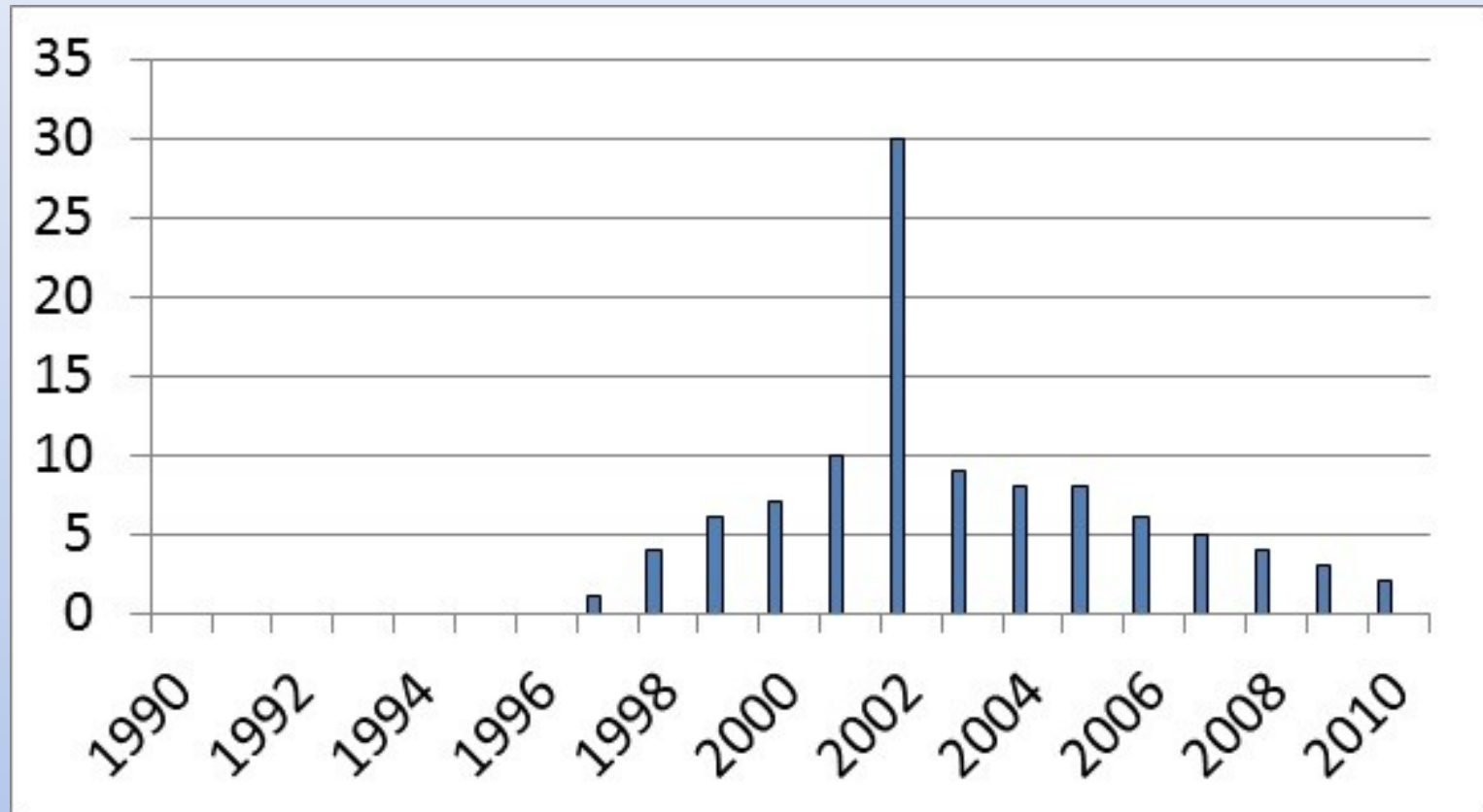except in years characterized with an industry boom.

Figure 7: Citation analysis for the ten most referenced papers.
Explanation: It is clear that in some years the production was of a higher quality; that seems to be coinciding with years in which the world's top industry was giving donations to the department.
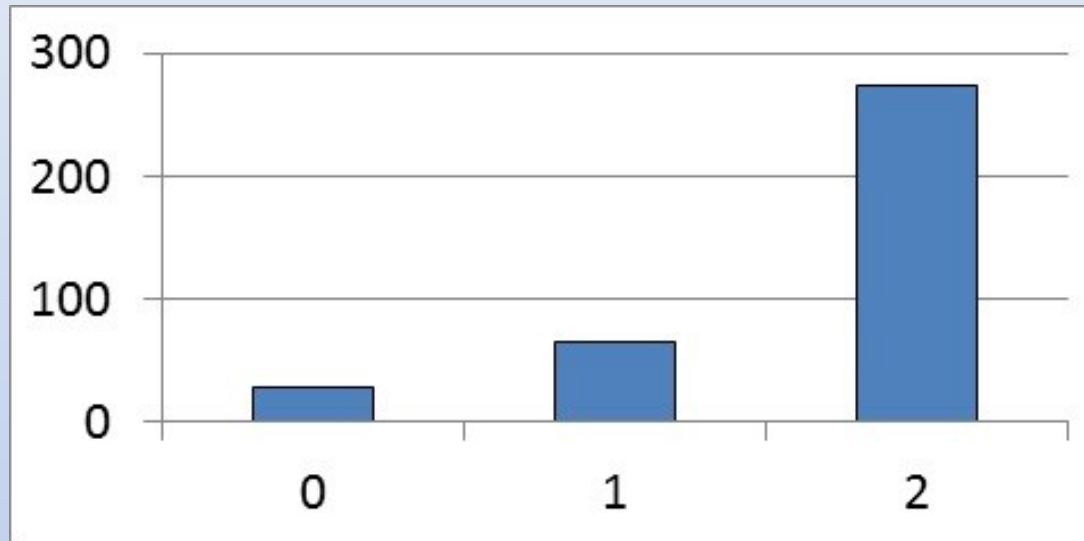The Y axis refers to the total number of citations for the top 10 papers

Figure 8: Impact of the existence of another survey paper.
Explanation: This figure gives a result which was absolutely unexpected.
The expectation was that existence of a survey would decrease citations of our survey,
but it happened absolutely the opposite. This means that the quality is more important
than the pre-existence of another survey paper on the same subject.
The paper with 2 preceded survey papers was the paper by Protic at al [Protic 1996].
The paper with one preceded survey was the paper by Tomasevic at al [Tomasevic1993].
The paper with no preceded survey was the paper by Jovanovic at al [Jovanovic1999].
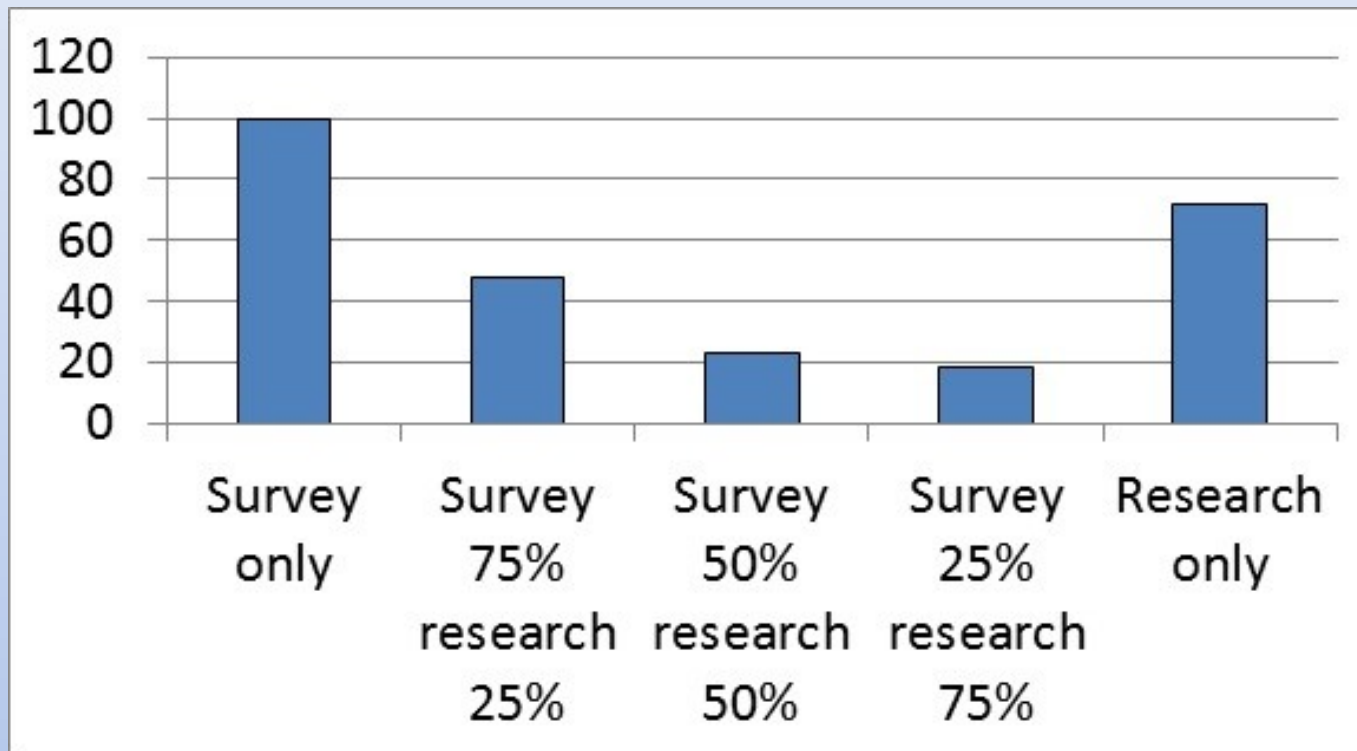
Figure 9: Survey papers versus research papers, what generates more citations?
Explanation: Surveys generate more,
unless an extraordinary research paper is generated in a popular field.

Appendix

One possible research plan
based on the methodology
presented in this paper is elaborated here,
week by week
(between two logical weeks,
one can have one or more physical weeks)

SURVEY PAPER

1. Read about the general subject, to worm up.

2. Collect 20 to 40 papers,
   on various approaches from the open literature.

3. For each example (covered by one or more papers),
   write the main 7 sentences, as explained in this paper.
   Explain why the chosen template enables easy comparison,
   and therefore represents a contribution to science.

4. Decide about classification criteria generate a classification,
   sort the found examples by classes,
   and form Figure #1, as explained in this paper.
   Explain why the proposed classification represents
   a contribution to science.

5. For each example, generate two figures
   (for example, one block scheme of the structure,
   and one pseudo code presentation of the algorithm).
   Choose the presentation form which indicates
   the essence of the class that the example belongs to.

6. If the generated classification
   includes a class without examples
   (which is highly desirable,
   since that points to possible new research avenues),
   define the research strategy of interest for those
   who decide to take that avenue.
   Form a section with appropriate discussions.

7. Define the research strategy for those
   who decide to analyze the hybrid approaches
   (those consisting of elements of two different classes).
   Hybrid approaches can be either a symbiosis
   (the two solutions used interchangeably, as the conditions dictate),
   or a synergy (the two solutions combined into one).
   Discuss possible new solutions or both types (symbiosis and synergy).
   Discuss other possible avenues leading to new inventions
   (transdisciplinarization and retrajectorization).

8. Add the preamble and the postambule,
   and create the list of annotated references.
   Form the final text of the paper.
   Generate a pearl of wisdom that sheds light
   on the essence of the paper,
   and increases the probability that the paper be referenced a lot.

9. Ask peers to review your paper,
   while you look for a suitable journal to publish it.

10. Submit the paper to a journal.

RESEARCH PAPER

1. For the best subset of ideas from the position paper,
   make appropriate simulator changes,
   and run the newly generated original solutions,
   comparatively with the best solution from the open literature.
   Create the tables and figures with results.

2. Write the paper.

3. Bounce the paper off the peers, and submit it to a journal.

State of the Art Tutorials

a. Advanced Knowledge Engineering

V. Milutinovic, B. Radenkovic, G. Rakocevic, et al,
Modern Approaches to DataMining

This presentation introduces the major algorithms of datamining,
gives examples, and prepares the audience for more specialized datamining-oriented presentations to follow.

A. Mihajlovic, et al,
Inputation Algorithms for DataMining

This presentation concentrates on various approaches to imputation for datamining, which resolves one of the major obstacles for efficient datamining: missing data. Examples are given related to medical mining.

A. Spasic, F. Maric, et al,
DataMining from Social Networks,

This presentation concentrates on various algorithms used for datamining from social networks, with emphasis on detection of the level of honesty, level of expertize, type of preferences, etc.

A. Kartelj, V. Filipovic, et al,
Personality Classification:
Computational Intelligence in Psychology and Social Networks,

This presentation concentrates on one important aspect of datamining from social networks, i.e. detection of human characteristics, esspecially the psychological characteristics.

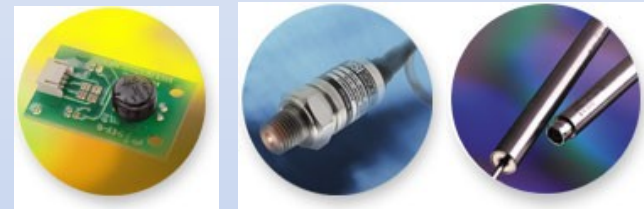B. Furlan, B. Nikolic, et al,
Intelligent Question Routing,

This presentation concentrates on a series of techniques that can be used to accelerate the datamining process in the context of social networks: The question routing techniques.

D. Draskovic, B. Nikolic, et al,
Mutation Approaches in Genetic Algorithms

If genetic algorithms are used for datamining, sophisticated mutation approaches are crucial, esspecially in mission critical applications, like business. This presentation gives a classification and examples.

V. Jelisavcic, B. Furlan, J. Protic, et al,
Topic Models and Advanced Algorithms
for Profiling of Knowledge in Scientific Papers,

If the type and quality of scientific papers have to be datamined, appropriate profiling techniques have to be used, so this presentation gives a classification thereof, followed by examples.

b. Wireless Sensor Networks (WSNs)

Z. Tafa, M. Pejanovic, G. Dimic, et al,
Advances in WSNs,

This is an introductory talk defining terms and concepts of importance for the topics to follow:
deployment approaches, routing algorithms, operating systems, programming languages,
and advanced applications.

N. Kojic, S. Vujicic, G. Rakocevic, D. Milicev, et al,
Datamining in wireless sensor networks (WSNs),

This presentation gives a detailed overview of various datamining algorithms for WSNs, divided into 16
different classification groups. Each group and each algorithms are presented via o/UML and pseudocode.

I. Vukasinovic, G. Rakocevic, et al,
Mobile Agents for WSNs,

The mobile agent technologies for WSNs, acting on the top of the operating systems for WSNs, are
presented using a comparative method. These technologies can make the datamining in WSNs much more
effective.

M. Knezevic, N. Mitic, et al,
Datamining in WSNs Based on Mobile Agents,

Using all the knowledge from the previous topics, this one introduces the major notions of the agents-
based datamining in WSNs, and gives an overview of the enabler technologies.

c. Computer Architecture

R. Radojicic, S. Gajin, et al,
Routing in Modern SuperComputers,

Various algorithms for routing in modern supercomputers are reviewed,
with special emphasis on those of interest for implementation of the issues presented in the previously elaborated talks.

Z. Sustran, M. Valero, et al,
Split Cache Design in Modern SuperComputers,

The concept of splitting along various locality types is presented, and it is shown how such an approach can bring speedups.
To illustrate the concept, various split cache design techniques are revisited.

M. Misic, M. Tomasevic,
GPU Computing and CUDA Programming,

This is a tutorial on programming of advanced GPU and CUDA architectures, with emphasis on tools and techniques.
Examples were chosen to serve as an introduction to the topics to follow.

S. Stojanovic, D. Bojic, O. Mencer, et al,
Hybrid SuperComputers

Seven different approaches to hybrid computing are presented,
with special emphasys on the Maxeler dataflow supercomputing approach: concepts and applications.

Z. Babovic, I. Mencer, et al,
DataFlow Supercomputers:
The World's Best PriceEnergyPerformance Today

Details of the Maxeler approach are presented, with programming examples and programming assignments.
Audience will have an opportunity to try a Maxeler simulator, and to login remotely to a Maxeler engine in Belgrade

G. Rakocevic, O. Mencer, M. Flynn, M. Valero, R. Trobec, P. Stenstrom, V. Milutinovic,
Benchmarking for SuperComputer Ranking.

Evidences are presented telling why and under what conditions the Maxeler engines
are superior in comparison to the Japanese K and other highly ranked machines of the Linpack based Top 500 list.

d. Knowledge Creation and Dissemination

V. Blagojevic, D. Bojic, M. Bojovic, S. Gajin, V. Milutinovic, et al,
How to Generate Ideas for PHD Research in Computer Science

A methodology is presented which defines 10 different approaches to generation of new scientific ideas.
Existing higly referenced papers are analyzed in this ligh, which is of importance for PHD students.

Z. Stanisavljevic, B. Nikolic, I. Tartalja, et al,
Multimedia Tools for Education

An almost exhaustive survey of existing multimedia tools for eLearning is presented
and the major examples are classified.
The presentation includes also the novelties like those related to all 5 senses.

H. Maurer, V. Milutinovic, M. Bojovic, A. Mihajlovic, V. Jelisavcic, Z. Ognjanovic
Digital Preservaition of National Herritage

A comparison of Wikipedia, Europeana, and the Forum approach is presented,
and the major axiomatic advances of the Forum approach are presented,
using examples from Austria Forum, Serbia Forum, and others.

.ppt Presentations: Condicios Since Qua Non

n/N

7

Semantic Breaks (One Line - One Thought)

Semantic Breaks: An Example (Bad)

Research Issues of Importance for Distributed Shared Memory

Hardware Issues (those to be fully implemented in hardware)

Software Issues (those to be fully implemented in software)

Hybrid Issues (those to be partially implemented in hardware and partially in software)

Semantic Breaks: An Example (Good)

**Research Issues of Importance
for Distributed Shared Memory**

Hardware Issues

(those to be fully implemented in hardware)

Software Issues

(those to be fully implemented in software)

Hybrid Issues

(those to be partially implemented in hardware
and partially in software)

Q&A

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