

# Papers I Love

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# 1 Computer Science

## 1.1 Algorithms

### 1.1.1 Analysis

1. Recursive Algorithms in Computer Science Courses: Fibonacci Numbers and Binomial Coefficients  
<http://venus.cs.qc.edu/~waxman/cs211%20spring%202009/why%20is%20recursive%20fibonacci%20so%20slow.pdf>
2. Binomial Coefficient Computation: Recursion or Iteration?  
<http://delab.csd.auth.gr/papers/SBI02m.pdf>
3. Binomial Coefficient Computation: Recursion or Iteration?  
<http://delab.csd.auth.gr/papers/SBI02m.pdf>

### 1.1.2 Compression

1. A Universal Algorithm for Sequential Data Compression  
<http://citeseer.ist.psu.edu/viewdoc/download?doi=10.1.1.118.8921>
2. Data Compression Using Long Common Strings  
<http://www.cs.brandeis.edu/~dilant/cs175/%5BSiyong-Dong%5D.pdf>

### 1.1.3 Hash

1. SHA-1 and the Strict Avalanche Criterion  
<https://arxiv.org/pdf/1609.00616.pdf>

#### 1.1.4 Data Structures

1. Lists and why they are useful  
<https://academic.oup.com/comjnl/article-pdf/7/4/278/1013051/7-4-278.pdf>
2. Hashed and Hierarchical Timing Wheels: Data Structures for the Efficient Implementation of a Timer Facility  
<https://web.archive.org/web/20130319034954/https://www.cs.columbia.edu/~nahum/w6998/papers/sosp87-timing-wheels.pdf>
3. Bitlist New Full-Text Index for Low Space Cost and Efficient Keyword Search  
<http://www.vldb.org/pvldb/vol6/p1522-rao.pdf>

#### 1.1.5 Elections + Consensus

1. Elections in a Distributed Computing System  
<http://academic.research.microsoft.com/Publication/716253/elections-in-a-distributed-computing-system>  
<http://homepage.cs.uiowa.edu/~ghosh/Bully.pdf>
2. The Part-Time Parliament  
<http://research.microsoft.com/en-us/um/people/lamport/pubs/lamport-paxos.pdf>
3. In Search of an Understandable Consensus Algorithm  
<https://ramcloud.atlassian.net/wiki/download/attachments/6586375/raft.pdf>

#### 1.1.6 Computer Graphics

1. Algorithm for computer control of a digital plotter by J. E. Bresenham  
[https://www.cse.iitb.ac.in/~paragc/teaching/2013/cs475/papers/bresenham\\_line.pdf](https://www.cse.iitb.ac.in/~paragc/teaching/2013/cs475/papers/bresenham_line.pdf)
2. Bresenham's Algorithm  
<http://graphics.idav.ucdavis.edu/education/GraphicsNotes/Bresenhams-Algorithm.pdf>
3. Simplex noise demystified  
<http://webstaff.itn.liu.se/~stegu/simplexnoise/simplexnoise.pdf>

### 1.2 Architectures

#### 1.2.1 Computer Architecture

1. Quantifying the Cost of Context Switch  
<http://www.cs.rochester.edu/u/cli/research/switch.pdf>
2. What Every Programmer Should Know About Memory  
<https://people.freebsd.org/~lstewart/articles/cpumemory.pdf>

### 1.2.2 Multi Tenancy

1. Enabling Multi-Tenancy an Industrial Experience Report  
<http://swerl.tudelft.nl/twiki/pub/Main/TechnicalReports/TUD-SERG-2010-030.pdf>
2. Multi-Tenant SaaS Applications: Maintenance Dream or Nightmare  
<http://swerl.tudelft.nl/twiki/pub/Main/TechnicalReports/TUD-SERG-2010-031.pdf>
3. Towards an Elastic and Autonomic Multitenant Database  
<http://research.microsoft.com/en-us/um/people/srikanth/netdb11/netdb11papers/netdb11-final8.pdf>

### 1.2.3 REST

1. Architectural Styles and the Design of Network-Based Software Architectures  
<http://academic.research.microsoft.com/Publication/1309313/architectural-styles-and-the-design-of-network-based-software-architectures>  
<http://www.ics.uci.edu/~fielding/pubs/dissertation/top.htm>

### 1.2.4 SEDA

1. An Architecture for Highly Concurrent, Well-Conditioned Internet Services  
<http://academic.research.microsoft.com/Publication/112151/seda-an-architecture-for-well-conditioned-scalable-internet-services>  
<http://www.eecs.harvard.edu/~mdw/papers/mdw-phdthesis.pdf>

### 1.2.5 Servers

1. Flash an Efficient and Portable Web Server  
[https://www.usenix.org/event/usenix99/full\\_papers/pai/pai.pdf](https://www.usenix.org/event/usenix99/full_papers/pai/pai.pdf)

### 1.2.6 Other Architectures

1. The Monad Manifesto  
<http://www.jsnover.com/Docs/MonadManifesto.pdf>
2. The Hla Tutorial  
<http://www.pitch.se/hlatutorial>

### 1.2.7 Patterns

1. Active Object: An Object Behavioral Pattern for Concurrent Programming  
<http://www.cs.wustl.edu/~schmidt/PDF/Act-Obj.pdf>

2. Plop Half-Sync/half-Async: An Architectural Pattern for Efficient and Well-Structured Concurrent I/o  
<http://www.cs.wustl.edu/~schmidt/PDF/PLoP-95.pdf>
3. EASTL – Electronic Arts Standard Template Library <http://www.open-std.org/jtc1/sc22/wg21/docs/papers/2007/n2271.html>

### 1.2.8 Overlay Networks

1. Architectures for an Event Notification Service Scalable to Wide-Area Networks  
<http://academic.research.microsoft.com/Publication/314658/architectures-for-an-event-notification-service-scalable-to-wide-area-networks>  
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### 1.2.9 Distributed Systems

1. Time, Clocks and the Ordering of Events in a Distributed System  
<http://academic.research.microsoft.com/Publication/775212/time-clocks-and-the-ordering-of-events-in-a-distributed-system>  
<http://research.microsoft.com/en-us/um/people/lamport/pubs/pubs.html#time-clocks>  
<http://research.microsoft.com/en-us/um/people/lamport/pubs/time-clocks.pdf>
2. Paxos Made Simple  
<https://www.microsoft.com/en-us/research/publication/paxos-made-simple/>
3. Distributed Snapshots: Determining Global States of Distributed Systems  
<http://academic.research.microsoft.com/Publication/803548/distributed-snapshots-determining-global-states-of-distributed-systems>  
<http://research.microsoft.com/en-us/um/people/lamport/pubs/pubs.html#chandy>  
<http://research.microsoft.com/en-us/um/people/lamport/pubs/chandy.pdf>
4. Your Coffee Shop Doesn't Use Two-Phase Commit  
[http://www.enterpriseintegrationpatterns.com/docs/IEEE\\_Software\\_Design\\_2PC.pdf](http://www.enterpriseintegrationpatterns.com/docs/IEEE_Software_Design_2PC.pdf)
5. Life Beyond Distributed Transactions: An Apostate's Opinion  
<http://www-db.cs.wisc.edu/cidr/cidr2007/papers/cidr07p15.pdf>
6. Conflict-free Replicated Data Types  
<https://hal.inria.fr/inria-00609399/document>

### 1.2.10 Process Algebra

1. A Brief History of Process Algebra  
<http://alexandria.tue.nl/extra1/wskrap/publichtml/200402.pdf>

2. Some of My Favourite Results in Classic Process Algebra (Version of September 9, 2003)  
[https://www.researchgate.net/publication/228785318\\_Some\\_of\\_My\\_Favourite\\_Results\\_in\\_Classic\\_Process\\_Algebra\\_Version\\_of\\_September\\_9\\_2003](https://www.researchgate.net/publication/228785318_Some_of_My_Favourite_Results_in_Classic_Process_Algebra_Version_of_September_9_2003)
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1. Design of a Scalable Event Notification Service Interface and Architecture  
<http://academic.research.microsoft.com/Publication/312680/design-of-a-scalable-event-notification-service-interface-and-architecture>  
<http://www.inf.usi.ch/carzaniga/papers/CU-CS-863-98.pdf>
2. Fast Forwarding for Content-Based Networking  
<http://academic.research.microsoft.com/Publication/7217/fast-forwarding-for-content-based-networking>  
<http://www.inf.usi.ch/carzaniga/papers/cucs-922-01-r1.pdf>
3. Real-Time Modelling of Dds for Event-Driven Applications  
<http://www.ctr.unican.es/publications/hpt-jjg-2012a.pdf>

#### **1.2.12 Resiliency**

1. Adaptive Overload Control for Busy Internet Servers  
<http://academic.research.microsoft.com/Publication/634136/adaptive-overload-control-for-busy-internet-servers>  
<http://www.eecs.harvard.edu/~mdw/papers/control-usits03.pdf>

### **1.3 Programming**

#### **1.3.1 Language Analysis**

1. Evaluating the Design of the R Language  
<http://r.cs.purdue.edu/pub/ecoop12.pdf>
2. A Modest Proposal: C++ Resyntaxed  
<http://users.monash.edu/~damian/papers/HTML/ModestProposal.html>
3. Meta-Compilation for C++  
<http://www.computing.surrey.ac.uk/research/dsrg/fog/FogThesis.pdf>

#### **1.3.2 Process Theory**

1. A Brief History of Process Algebra  
<http://alexandria.tue.nl/extra1/wskrap/publichtml/200402.pdf>

### 1.3.3 Object Oriented

1. A Theory of Objects  
<http://academic.research.microsoft.com/Publication/1354440/a-theory-of-objects>  
[http://lucacardelli.name/Talks/1997-06%20A%20Theory%20of%20Object%20\(EC00P%20Tutorial\).pdf](http://lucacardelli.name/Talks/1997-06%20A%20Theory%20of%20Object%20(EC00P%20Tutorial).pdf)
2. Traits: Composable Units of Behaviour  
<http://scg.unibe.ch/archive/papers/Scha03aTraits.pdf>
3. Applying Traits to the Smalltalk Collection Hierarchy  
[http://www.researchgate.net/publication/2564879\\_Applying\\_Traits\\_to\\_the\\_Smalltalk\\_Collection\\_Hierarchy](http://www.researchgate.net/publication/2564879_Applying_Traits_to_the_Smalltalk_Collection_Hierarchy)
4. A Laboratory for Teaching Object-Oriented Thinking  
[http://www.inf.ed.ac.uk/teaching/courses/seoc/2007\\_2008/resources/CRC\\_00thinking.pdf](http://www.inf.ed.ac.uk/teaching/courses/seoc/2007_2008/resources/CRC_00thinking.pdf)

### 1.3.4 Generic Programming

1. Design Patterns for Generic Programming in C++  
<https://www.lrde.epita.fr/dload/papers/coots01.html>

### 1.3.5 Dynamic Dispatch

### 1.3.6 Functional Programming

1. The essence of functional programming  
<http://homepages.inf.ed.ac.uk/wadler/papers/essence/essence.ps.gz>
2. Monadic Parser Combinators  
<http://www.cs.nott.ac.uk/~pszgmh/monparsing.pdf>
1. Design and evaluation of C++ open multi-methods  
<https://parasol.tamu.edu/~yuriys/papers/OMM10.pdf>

## 1.4 Database

1. The Ubiquitous B-Tree  
<http://people.cs.aau.dk/~simas/aalg06/UbiquitBtree.pdf>
2. Generalized Search Trees for Database Systems  
<http://db.cs.berkeley.edu/papers/vldb95-gist.pdf>
3. Concurrency and Recovery in Generalized Search TreeS  
<http://db.cs.berkeley.edu/papers/sigmod97-gist.pdf>
4. Data Cube: A Relational Aggregation Operator Generalizing Group-By, Cross-Tab, and Sub-Totals  
<http://research.microsoft.com/pubs/69578/tr-95-22.pdf>

5. Query Optimization in Microsoft Sql Server PDW  
<http://academic.research.microsoft.com/Publication/56916436/query-optimization-in-microsoft-sql-server-pdw>
6. Druid: A Real-Time Analytical Data Store <http://static.druid.io/docs/druid.pdf>
7. Map-Reduce: Simplified Dataprocessing on Large Clusters  
<http://static.googleusercontent.com/media/research.google.com/en/us/archive/mapreduce-osdi04.pdf>
8. Google's Mapreduce Programming Model — Revisited  
<http://www.idt.mdh.se/kurser/cd5100/ht06/MapReduce/Ralf-Laemmel-paper/paper.pdf>
9. Cassandra - a Decentralized Structured Storage System  
<http://www.cs.cornell.edu/projects/ladis2009/papers/lakshman-ladis2009.pdf>
10. Bigtable: A Distributed Storage System for Structured Data  
<http://static.googleusercontent.com/media/research.google.com/en//archive/bigtable-osdi06.pdf>
11. Dynamo: Amazon's Highly Available Key-Value Store  
<https://s3.amazonaws.com/AllThingsDistributed/sosp/amazon-dynamo-sosp2007.pdf>
12. Solving Big Data Challenges for Enterprise Application Performance Management  
[http://vldb.org/pvldb/vol15/p1724\\_tilmanrabl\\_vldb2012.pdf](http://vldb.org/pvldb/vol15/p1724_tilmanrabl_vldb2012.pdf)

## 1.5 Data Fusion

1. A Generic Architecture for Fusion-Based Intrusion Detection Systems  
[https://rcdeboer.home.xs4all.nl/rcdb\\_thesis.pdf](https://rcdeboer.home.xs4all.nl/rcdb_thesis.pdf)

## 1.6 Artificial Intelligence

1. Computing Machinery and Intelligence  
<http://orium.pw/paper/turingai.pdf>

## 1.7 Text Mining

1. Text Mining Infrastructure in R  
<https://www.jstatsoft.org/article/view/v025i05>
2. Checkers Is Solved  
<http://www.eecs.wsu.edu/~holder/courses/CptS570/fall07/papers/Schaeffer07.pdf>



3. Mastering the Game of Go with Deep Neural Networks and Tree Search  
<https://gogameguru.com/i/2016/03/deepmind-mastering-go.pdf>

## 1.8 VIPs

1. Richard Bellman's contributions to computer science  
<http://www.sciencedirect.com/science/article/pii/0022247X86901460>

## 2 Mathematics

### 2.1 Geometry

1. An Elementary Course in Synthetic Projective Geometry

### 2.2 Linear Algebra

1. Basic Linear Algebra Subprograms for Fortran Usage  
<https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19780018835.pdf>
2. An Extended Set of FORTRAN Basic Linear Algebra Subprograms  
<http://www.ma.man.ac.uk/~sven/pubs/Level2BLAS-1-TOMS14-88.pdf>
3. FLAME: Formal Linear Algebra Methods Environment  
<http://tinyurl.com/ycxkmzw7>
4. The Five Greatest Applications of Markov Chains  
<http://langvillea.people.cofc.edu/MCapps7.pdf>
5. Linear Algebra for Computer Vision  
<http://buzzard.ups.edu/courses/2014spring/420projects/math420-UPS-spring-2014-wills-com.pdf>

### 2.3 Real Analysis

1. Coisas que o Luís precisa aprender  
<http://www.todasasconfiguracoes.com/wp-content/uploads/2012/04/luis.pdf>

### 2.4 Statistics

1. A Note on the Generation of Random Normal Deviates  
<http://projecteuclid.org/euclid.aoms/1177706645>
2. Tidy Data  
<http://vita.had.co.nz/papers/tidy-data.pdf>

3. A Tutorial on Principal Component Analysis - Derivation, Discussion and Singular Value Decomposition  
[https://www.cs.princeton.edu/picasso/mats/PCA-Tutorial-Intuition\\_jp.pdf](https://www.cs.princeton.edu/picasso/mats/PCA-Tutorial-Intuition_jp.pdf)
4. An introduction to ROC analysis  
<https://ccrma.stanford.edu/workshops/mir2009/references/ROCintro.pdf>
5. TEACHING SURVEY SAMPLING WITH THE ‘SAMPLING’ R PACKAGE [http://iase-web.org/documents/papers/icots8/ICOTS8\\_4J1\\_TILLE.pdf](http://iase-web.org/documents/papers/icots8/ICOTS8_4J1_TILLE.pdf)
6. Data Mining and Statistics: What’s the Connection  
<http://docs.salford-systems.com/dm-stat.pdf>

## 2.5 Differential Equations

1. Euler Methods, Explicit, Implicit, Symplectic  
[https://www.researchgate.net/publication/302468139\\_Euler\\_Methods\\_Explicit\\_Implicit\\_Symplectic](https://www.researchgate.net/publication/302468139_Euler_Methods_Explicit_Implicit_Symplectic)

## 2.6 Matrix Calculus

1. The Matrix Calculus You Need For Deep Learning  
<https://arxiv.org/abs/1802.01528>

## 2.7 Forecast

1. Forecasting Global Climate Change  
[https://faculty.wharton.upenn.edu/wp-content/uploads/2015/02/GlobalClimateChange-FWP-\(2\)\\_2.pdf](https://faculty.wharton.upenn.edu/wp-content/uploads/2015/02/GlobalClimateChange-FWP-(2)_2.pdf)

# 3 Science

## 3.1 Research

1. Why Most Published Research Findings Are False  
<http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0020124>

# 4 Physics

1. Seven Possible Alternative Interpretations of the ‘cosmological Red Shift’ Which Can do Away with the Dark Energy  
<http://www.vixra.org/pdf/1403.0005v1.pdf>

## 5 Economy

### 5.1 Political Economy

#### 5.1.1 Taxes

1. The Laffer Curve Past, Present, and Future  
[http://s3.amazonaws.com/thf\\_media/2004/pdf/bg1765.pdf](http://s3.amazonaws.com/thf_media/2004/pdf/bg1765.pdf)
2. Dynamic Revenue Estimation  
<https://ideas.repec.org/a/aea/jecper/v10y1996i1p141-57.html>
3. Dynamic Scoring an Introduction to the Issues  
[https://www.aeaweb.org/annual\\_mtg\\_papers/2005/0107\\_1430\\_1304.pdf](https://www.aeaweb.org/annual_mtg_papers/2005/0107_1430_1304.pdf)