

# Curriculum Vitae

Amos Korman

## In Brief

I am a permanent researcher in CNRS located at LIAFA in the University of Paris Diderot. I received a Masters degree in Mathematics from Stanford University. In 2006, I received a Ph.D. degree in Computer Science from the Weizmann Institute of Science under the guidance of Prof. David Peleg. My thesis *“Static and Dynamic Labeling Schemes”* won the Dean’s Prize for Ph.D. Students.

My main research interests include various fundamental aspects of Distributed Computing mostly in the context of Graph Algorithms and Network Communication Protocols. In particular, I am interested in abstract models that aim to improve our understanding of the notion of Locality, which is inherent to distributed computing. For example, one of my current goals is to provide models of computation and structural results that may serve as initial steps towards constructing a rigorous computational complexity theory for the Locality research subfield.

In addition, recently, I have become particularly intrigued with understanding computational aspects of distributed computing phenomenas that occure in nature. Specifically, in this respect, I am interested in appying ideas and techniques from theoretical distributed computing studies to improve our understanding of complex biological systems.

## Education and Positions

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|------------------------|---|
| Nov 2011 –             | Permanent researcher at CNRS and Universite Paris Diderot - Paris 7, Paris, France.   |
| Nov 2007 – Nov 2011    | Researcher at CNRS and Universite Paris Diderot - Paris 7, Paris, France.   |
| Dec. 2005 – Nov. 2007  | Postdoc at the Information Systems Group, Faculty of IE&M,<br>The Technion, Haifa, Israel.<br>Supported in part at the Technion by an Aly Kaufman fellowship.   |
| April 2002 – Dec. 2005 | Ph.D. in Computer Science.<br>The Weizmann Institute of Science, Rehovot, Israel.<br>Thesis Advisor: Prof. David Peleg.<br>Thesis Topic: <i>“Static and Dynamic Labeling Schemes”</i> .<br>Won the Dean’s Prize for Ph.D. Students.<br>Ph.D. Thesis approved on May 8, 2006 |
| Feb. 2000 – April 2002 | M.Sc. in Computer Science.<br>The Weizmann Institute of Science, Rehovot, Israel.<br>Advisor: Prof. David Peleg.  |
| 1998 – 1999            | M.Sc. in Mathematics.<br>Stanford University, Stanford, California, U.S.A.  |

1998	Indian classical music studies under Pandit Nayan Ghosh, Mumbai, India .
1995 – 1997	B.Sc. in Mathematics Hebrew University, Jerusalem, Israel. Was on the Dean’s list in 1995, 1997. Graduated with exceptional honors: Magna Cum Lauda.

## Publications

### Journal papers

1. **Distributed Verification and Hardness of Distributed Approximation.**  
A. Das Sarma, S. Holzer, L. Kor, A. Korman, D. Nanongkai, G. Pandurangan, D. Peleg and R. Wattenhofer. In *SIAM Journal on Computing (SICOMP)*, to appear.
2. **New Bounds for the Controller Problem.**  
Y. Emek and A. Korman.  
*Distributed Computing (DC)*, 24(3-4), (2011), 177–186.
3. **Online Computation with Advice.**  
Y. Emek, P. Fraigniaud, A. Korman and A. Rosen.  
*Theoretical Computer Science (TCS)*, 412(24), (2011), 2642–2656.
4. **On the Additive Constant of the k-Server Work Function Algorithm.**  
Y. Emek, P. Fraigniaud, A. Korman and A. Rosen.  
*Information Processing Letters (IPL)* 110(24), (2010), 1120–1123.
5. **Local MST Computation with Short Advice.**  
P. Fraigniaud, A. Korman and E. Lebhar.  
*Theory of Computing Systems (ToCS)* 47(4), (2010), 920–933.
6. **Labeling Schemes for Vertex Connectivity.**  
A. Korman.  
*ACM Transactions on Algorithms (TALG)* 6(2), (2010).
7. **Proof Labeling Schemes.**  
A. Korman, S. Kutten and D. Peleg.  
*Distributed Computing (DC)* 22(4), (2010), 215–233.
8. **Constructing Labeling Schemes through Universal Matrices.**  
A. Korman, D. Peleg and Y. Rodeh.  
*Algorithmica* 57(4), (2010), 641–652.
9. **A Note on Models for Graph Representations.**  
A. Korman and S. Kutten.  
*Theoretical Computer Science (TCS)* 410(14), (2009), 1401–1412.

10. **Labeling Schemes for Tree Representation.**  
R. Cohen, P. Fraigniaud, D. Ilcinkas, A. Korman and D. Peleg.  
*Algorithmica* 53(1), (2009), 1–15.
11. **Compact Separator Decompositions in Dynamic Trees and Applications to Labeling Schemes.**  
A. Korman and D. Peleg.  
*Distributed Computing (DC)* 21(2), (2008), 141–161.
12. **Label-Guided Graph Exploration by a Finite Automation.**  
R. Cohen, P. Fraigniaud, D. Ilcinkas, A. Korman and D. Peleg.  
*ACM Transactions on Algorithms (TALG)* 4(4), (2008).
13. **Labeling Schemes for Weighted Dynamic Trees.**  
A. Korman and D. Peleg.  
*Information and Computation (I&C)* 205, (2007), 1721–1740.
14. **Distributed Verification of Minimum Spanning Trees.**  
A. Korman and S. Kutten.  
*Distributed Computing (DC)* 20(4), (2007), 253–266.
15. **Dynamic Routing Schemes for Graphs with Low Local Density.**  
A. Korman and D. Peleg.  
*ACM Transactions on Algorithms (TALG)* 4(4), (2008).
16. **General Compact Labeling Schemes for Dynamic Trees.**  
A. Korman.  
*Distributed Computing (DC)* 20(3), (2007), 179–193.
17. **Labeling Schemes for Dynamic Tree Networks.**  
A. Korman, D. Peleg and Y. Rodeh.  
*Theory of Computing Systems (ToCS)* 37, (2004), 49–75.
18. **Labeling Schemes for Flow and Connectivity.**  
M. Katz, N. Katz, A. Korman and D. Peleg.  
*SIAM Journal on Computing (SIOMP)* 34, (2004), 23–40.

## Conference Proceedings

1. **Collaborative Search on the Plane without Communication.**  
O. Feinerman, A. Korman, Z. Lotker and J. S. Sereni. In *Proc. 31st Symp. on Principles of Distributed Computing (PODC)*, 2012, to appear.
2. **Notions of Connectivity in Overlay Networks.**  
Y. Emek, P. Fraigniaud, A. Korman, S. Kutten and D. Peleg. In *Proc. 19th International Colloquium on Structural Information and Communication Complexity (SIROCCO)*, 2012, to appear.
3. **Local Distributed Decision.**  
P. Fraigniaud, A. Korman and D. Peleg. In *Proc. 52nd Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, 2011, pages 708–717.

4. **Distributed Verification and Hardness of Distributed Approximation.**  
A. Das Sarma, S. Holzer, L. Kor, A. Korman, D. Nanongkai, G. Pandurangan, D. Peleg and R. Wattenhofer. In *Proc. 43rd ACM Symposium on Theory of Computing (STOC)*, 2011, pages 363–372.  
(Invited for STOC 2011’s special issue in SICOMP.)
5. **Fast and Compact Self-Stabilizing Verification, Computation, and Fault Detection of an MST.**  
A. Korman, S. Kutten, and T. Masuzawa. In *Proc. 30th Symp. on Principles of Distributed Computing (PODC)*, 2011, pages 311–320.  
(Invited for PODC 2011’s special issue in DC.)
6. **Toward more Localized Local Algorithms: Removing Assumptions concerning Global Knowledge.**  
A. Korman, J. S. Sereni, and L. Viennot. In *Proc. 30th Symp. on Principles of Distributed Computing (PODC)*, 2011, pages 49–58.  
(Invited for PODC 2011’s special issue in DC.)
7. **Tight Bounds For Distributed MST Verification.**  
L. Kor, A. Korman and D. Peleg.  
In *28th International Symposium on Theoretical Aspects of Computer (STACS)*, 2011, pages 69–80.  
(Invited for STACS 2011’s special issue in ToCS.)
8. **Approximating the Statistics of various Properties in Randomly Weighted Graphs.**  
Y. Emek , A. Korman and Y. Shavitt.  
In *Proc. 22nd ACM-SIAM Symp. on Discrete Algorithms (SODA)*, 2011, pages 1455–1467.
9. **An optimal ancestry scheme and small universal posets.**  
P. Fraigniaud and A. Korman.  
*Proc. 42nd ACM Symp. on Theory of Computing (STOC)*, 2010, pages 611–620.
10. **Efficient Threshold Detection in a Distributed Environment.**  
Y. Emek and A. Korman.  
*Proc. 29th Symp. on Principles of Distributed Computing (PODC)*, 2010, pages 183–191.
11. **Compact Ancestry Labeling Schemes for XML Trees.**  
P. Fraigniaud and A. Korman.  
*Proc. 21st ACM-SIAM Symp. on Discrete Algorithms (SODA)*, 2010, pages 458–467.
12. **Online Computation with Advice.**  
Y. Emek, P. Fraigniaud, A. Korman and A. Rosen.  
*Proc. 36th Int. Colloq. on Automata, Languages and Prog. (ICALP(A))*, 2009, pages 427–438.  
(Selected for ICALP 2009’s special issue in TCS.)
13. **New Bounds for the Controller Problem.**  
Y. Emek and A. Korman.  
*Proc. 23’th Int. Symposium on Distributed Computing (DISC)*, 2009, pages 22–34.  
(Selected for DISC 2009’s special issue in DC.)
14. **On Randomized Representations of Graphs Using Short Labels.**  
P. Fraigniaud and A. Korman.  
*Proc. 21st Ann. ACM Symp. on Parallelism in Alg. and Architectures (SPAA)*, 2009, pages 131–137.

15. **On the Additive Constant of the k-Server Work Function Algorithm.**  
Y. Emek, P. Fraigniaud, A. Korman and A. Rosen.  
*Proc. 7th Workshop on Approximation and Online Algorithms (WAOA)*, 2009, pages 128–134.
16. **Compact Routing Schemes for Dynamic Trees in the Fixed Port Model.**  
A.Korman.  
*Proc. 10th Int. Conf. on Distributed Computing and Networking (ICDCN)*, 2009, pages 218–229.  
**Won the 2009 ICDCN best paper award.**
17. **Improved Compact Routing Schemes for Dynamic Trees.**  
A.Korman.  
*Proc. 27th Symp. on Principles of Distributed Computing (PODC)*, 2008, pages 185–194.
18. **Compact Separator Decompositions in Dynamic Trees and Applications to Labeling Schemes.**  
A.Korman and D. Peleg.  
*Proc. 21st Int. Symp. on Distributed Computing (DISC)*, 2007, pages 313–327.  
(Selected for DISC 2007’s special issue in DC.)
19. **Controller and Estimator for Dynamic Networks.**  
A. Korman and S. Kutten.  
*Proc. 26th Symp. on Principles of Distributed Computing (PODC)*, 2007, pages 175–184.
20. **Labeling Schemes for Vertex Connectivity.**  
A. Korman.  
*Proc. 34th Int. Colloq. on Automata, Languages and Prog. (ICALP(A))*, 2007, pages 102–109.
21. **Labeling Schemes with Queries.**  
A. Korman and S. Kutten.  
*Proc. 14th Int. Colloq. on Structural Info. and Comm. Complexity (SIROCCO)*, 2007, pages 109–123.  
(Selected for SIROCCO 2007’s special issue in TCS.)
22. **Local MST Computation with Short Advice.**  
P. Fraigniaud, A. Korman and E. Lebhar.  
*Proc. 19th Ann. ACM Symp. on Parallelism in Alg. and Architectures (SPAA)*, 2007, pages 154–160.  
(Selected for SPAA 2007’s special issue in ToCS).
23. **Constructing Labeling Schemes through Universal Matrices..**  
A. Korman, D. Peleg and Y. Rodeh.  
*Proc. 17th Int. Symp. on Algorithms and Computation (ISAAC)*, 2006, pages 409–418.
24. **On Distributed Verification.**  
A. Korman and S. Kutten.  
*Proc. 7th Int. Conf. on Distributed Computing and Networking (ICDCN)*, 2006, pages 100–114.  
(Invited paper).
25. **Distributed Verification of Minimum Spanning Trees.**  
A. Korman and S. Kutten.  
*Proc. 25th Symp. on Principles of Distributed Computing (PODC)*, 2006, pages 26–34.  
(Selected for PODC 2006’s special issue in DC).

26. **Dynamic Routing Schemes for General Graphs.**  
A. Korman and D. Peleg.  
*Proc. 33rd Int. Colloq. on Automata, Languages and Prog. (ICALP(A))*, 2006, pages 619–630.
27. **Labeling Schemes for Tree Representation”**  
R. Cohen, P. Fraigniaud, D. Ilcinkas, A. Korman and D. Peleg.  
*Proc. 7th Int. Workshop on Dist. Computing. (IWDC)*, 2005, pages 13–24.
28. **General Compact Labeling Schemes for Dynamic Trees.**  
A. Korman.  
*Proc. 19th Int. Symposium on Distributed Computing (DISC)*, 2005, pages 457–471.  
**Won the 2005 DISC best student paper award.**  
(Selected for DISC 2005’s special issue).
29. **Proof Labeling Schemes.**  
A. Korman S. Kutten and D. Peleg.  
*Proc. 24th Symp. on Principles of Distributed Computing (PODC)*, 2005, pages 9–18.
30. **Label-Guided Graph Exploration by a Finite Automation.**  
R. Cohen, P. Fraigniaud, D. Ilcinkas, A. Korman and D. Peleg.  
*Proc. 32nd Int. Colloq. on Automata, Languages and Prog. (ICALP(A))*, 2005, pages 335–346.
31. **Labeling Schemes for Weighted Dynamic Trees.**  
A. Korman and D. Peleg.  
*Proc. 30th Int. Colloq. on Automata, Languages and Prog. (ICALP(A))*, 2003, pages 369–383.
32. **Labeling Schemes for Dynamic Tree Networks.**  
A. Korman, D. Peleg and Y. Rodeh.  
*Proc. 19th Symp. on Theoretical Aspects of Computer Science (STACS)*, 2002, pages 76–87.  
(Selected for STACS 2002’s special issue.)
33. **Labeling Schemes for Flow and Connectivity.**  
M. Katz, N. Katz, A. Korman and D. Peleg.  
*Proc. 13th ACM-SIAM Symp. on Discrete Algorithms (SODA)*, 2002, pages 927–936.

## Awards and Fellowships

- Received the **Prime dexcellence scientifique (PES)** award, 2011.
- Won the ICDCN 2009’s **best paper** award.
- Supported in part at the Technion by an **Aly Kaufman** fellowship, 2006-2007.
- Won the **Dean’s Prize for Ph.D. Students** at the Weizmann Institute of Science.  
Prize received on 27 June, 2007.
- Received the **Vatat scholarship** for outstanding Ph.D. students 2002-2005.
- Won the DISC 2005’s **best student paper** award.

- Graduated at the Hebrew University with exceptional honors: **Magna Cum Lauda**.
- Was on the **Dean's list** in 1995, 1997.

## **Program Committee Membership**

- ICALP 2013
- ICDCS 2012
- PODC 2011
- ICDCN 2010
- IMAGINE 2009-2007
- DISC 2008
- PODC 2007 (Junior Program Committee)