

MAHDI CHERAGHCHI-BASHI-ASTANEH

Office	Home
<p><i>Address:</i> EPFL I&C - IIF - ALGO BC 148 (Bâtiment BC), Station 14 CH-1015, Lausanne Switzerland</p> <p><i>Phone:</i> +41(21)693-1316</p> <p><i>Fax:</i> +41(21)693-7510</p> <p><i>Email:</i> mahdi.cheraghchi@epfl.ch</p>	<p><i>Address:</i> Chemin du Bois-de-Vaux 3 Apartment No. 19 CH-1007, Lausanne Switzerland</p> <p><i>Cell Phone:</i> +41(78)632-8645</p> <p><i>Web:</i> http://algo.epfl.ch/~mahdi</p>

Research Interests

Theoretical Computer Science, and in particular:

- Interconnections between coding theory and theoretical computer science,
- Derandomization and explicit construction of combinatorial objects,
- Pseudorandomness and extractor theory,
- PCP theory and hardness of approximation.

Education

- **Swiss Federal Institute of Technology (EPFL)**, Lausanne, Switzerland. (November 2005 – July 2010)
Ph.D. in Computer Science.
Dissertation Title: *Applications of Derandomization Theory in Coding*.
Supervisor: Amin Shokrollahi, Professor.
- **Swiss Federal Institute of Technology (EPFL)**, Lausanne, Switzerland. (October 2004 – July 2005)
M.Sc. in Computer Science.
Dissertation Title: *Locally Testable Codes*. (available online in ECCS thesis archive.)
Supervisor: Amin Shokrollahi, Professor.
GPA: 5.94 / 6.00 .
- **Sharif University of Technology**, Tehran, Iran. (September 2000 – July 2004)
B.Sc. in Software Engineering and B.Sc. in Computer Hardware Engineering.
B.Sc. Dissertation: *Human Face Localization in Still Color Images*.
Dissertation Advisor: Mansour Jamzad, Associate Professor.
GPA: 19.06 / 20.00 — Ranked First by the Education Bureau.

Honors, Awards and Distinctions

- (February 2005) Best B.Sc. Graduate Award in Computer Engineering, Sharif University of Technology.
- (May 2004, May 2003) Second (resp. Third) Place, Nationwide Examination for Graduate Admissions in Computer Science, Iran.
- (August 2000) Ranked 115 Among Over 300'000 in the Nationwide Examination for Undergraduate Admissions in the Public Universities, Iran.

Work Experience

- (August–October 2009) Internship at Royal Institute of Technology (KTH), Sweden. Research on Hardness of Approximation under supervision of Prof. Johan Håstad.

Research Papers

(all publications are available online at <http://mahdi.ch/writings>)

- [1] M. Cheraghchi, J. Håstad, M. Isaksson, O. Svensson. *Approximating Constraint Satisfaction Problems with Linear Threshold Predicates*. In Proceedings of the 13th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), 2010 (to appear).
- [2] M. Cheraghchi. *Improved Constructions for Non-adaptive Threshold Group Testing*. In Proceedings of the 37th International Colloquium on Automata, Languages and Programming (ICALP), 2010.
- [3] M. Cheraghchi, A. Karbasi, S. Mohajer, V. Saligrama. *Graph-Constrained Group Testing*. In Proceedings of IEEE International Symposium on Information Theory (ISIT), 2010 (*nominated for the best student paper award*). arXiv: cs.DM/1001.1445).
- [4] M. Cheraghchi, A. Hormati, A. Karbasi, M. Vetterli. *Compressed Sensing with Probabilistic Measurements: A Group Testing Solution*. In Proceedings of 47th Allerton Conference on Communication, Control and Computing, 2009.
- [5] M. Cheraghchi. *Noise-Resilient Group Testing: Limitations and Constructions*. In Proceedings of 17th International Symposium on Fundamentals of Computation Theory (FCT), 2009.
- [6] M. Cheraghchi. *Capacity Achieving Codes from Randomness Conductors*. In Proceedings of IEEE International Symposium on Information Theory (ISIT), 2009.
- [7] M. Cheraghchi, F. Didier, A. Shokrollahi. *Invertible Extractors and Wiretap Protocols*. In Proceedings of IEEE International Symposium on Information Theory (ISIT), 2009.
- [8] E. Ardestanizadeh, M. Cheraghchi, A. Shokrollahi. *Bit Precision Analysis for Compressed Sensing*. In Proceedings of IEEE International Symposium on Information Theory (ISIT), 2009.
- [9] M. Cheraghchi, A. Shokrollahi. *Almost-Uniform Sampling of Points on High-Dimensional Algebraic Varieties*. In Proceedings of 26th International Symposium on Theoretical Aspects of Computer Science (STACS), 2009.
- [10] M. Cheraghchi, A. Shokrollahi, A. Wigderson. *Computational Hardness and Explicit Constructions of Error Correcting Codes*. In Proceedings of 44th Allerton Conference on Communication, Control and Computing, 2006.
- [11] M. Cheraghchi. *On Matrix Rigidity and the Complexity of Linear Forms*. ECCC TR05-070, 2005.

Some Research Talks

- “Noise-Resilient Group Testing: Limitations and Constructions” at EPFL (01/2009); Institute for Advanced Study, Princeton (01/2009); MIT CSAIL (01/2009); UC Berkeley (01/2009).
- “Invertible Extractors and Wiretap Protocols” at Princeton University (01/2009); UC San Diego (01/2009).
- “Computational Hardness and Explicit Constructions of Error Correcting Codes” at EPFL (02/2007).

Teaching Experience

- (2005 – 2009) Teaching Assistant, Swiss Federal Institute of Technology, Lausanne. Courses: Linear Algebra (Winter 2005), Undergraduate algorithms (Summer 2006, Winter 2007, Fall 2009), Graduate algorithms (Winter 2006, Summer 2007), Coding theory (Summer 2009).
- (2001 – 2003) Teaching Assistant, Department of Computer Engineering, Sharif University of Technology. Courses: Design and Implementation of the Programming Languages (Fall 2003), Microprocessors (Spring 2003), Data Structures and Algorithms (Spring 2003), Structured C Programming (Fall 2002), Computer Programming in Pascal (Fall 2001, Spring 2002).

Service

Served as external reviewer for journals: Information Processing Letters (IPL), IEEE Journal on Selected Areas in Communications (JSAC), SIAM Journal on Computing (SICOMP), Discrete Applied Mathematics, IEEE Transactions on Information Theory; and conferences: IMA Conf. on Cryptography and Coding (2007), Turbo (2008), ISIT (2007, 2008, 2009, 2010).

Standardized Scores

- TOEFL (November 10, 2003): Listening: 24/30, Structure and Grammar: 29/30 (Essay Writing: 6.0/6.0), Reading: 26/30. Total: 263/300.
- GRE General Test (November 7, 2003): Verbal: 320/800 (10%), Quantitative: 800/800 (92%), Analytical Writing: 4.0/6.0 (28%).
- GRE Computer Science Subject Test (November 8, 2003): 850 (92%).

Computer Skills

- Operating Systems: UNIX family, Microsoft Windows.
- Programming Languages/Environments:
 - Proficient in C++, C, Java, Object Pascal (Delphi Language), and Pascal.
 - Familiar with PHP, Javascript, HTML, SQL, Matlab.
- Digital Typography: Proficient in \LaTeX .

References

1. Amin Shokrollahi, Professor, School of Computer and Communication Sciences (IC) and Faculty of Basic Sciences (FSB), Swiss Federal Institute of Technology, Lausanne, Switzerland.
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2. Johan Håstad, Professor, School of Computer Science and Communication (CSC), Royal Institute of Technology (KTH), Stockholm, Sweden.
email: johanh@csc.kth.se, phone: +46(8)790-6289.
3. Venkatesh Saligrama, Associate Professor, Department of Electrical and Computer Engineering, Boston University, MA 02215, USA.
email: srv@bu.edu, phone: +1(617)353-1040.
4. Venkatesan Guruswami, Associate Professor, Computer Science Department, Carnegie Mellon University, PA 15213, USA.
email: venkatg@cs.cmu.edu, phone: +1(412)268-7656.
5. Monika Henzinger, Professor, Laboratory for Theoretical and Applied Algorithms, University of Vienna, Austria.
email: monika.henzinger@univie.ac.at, phone: +43-1-4277-39615.