

NOTABLE COMPUTING BOOKS AND ARTICLES—2013

Computing Reviews is happy to bring you the second annual list of notable items published in computing—this time for 2013. This year, we reached out to many in the computing community for nominations: our reviewers, *CR* category editors, the editors in chief of journals we cover, and computer scientists in both industry and academia.

We received a total of 108 nominations, but excluded those that were self-nominations or published outside of the 2013 calendar year. Therefore, you will find 94 items on our list, with numerous publishers represented.

As we continue to improve our methods for collecting nominations and involve more of your peers in the computing community, we hope to bring you even more definitive lists in the coming years!

We welcome your feedback, and encourage you to email us with any questions (editorial@computingreviews.com).

Angela Condon
Managing Editor
Computing Reviews

C. Computer Systems Organization

- AFEK, Y.; ALON, N.; BAR-JOSEPH, Z.; CORNEJO, A.; HAEUPLER, B.; AND KUHN, F. Beeping a maximal independent set. *Distributed Computing* **26**, 4 (Aug. 2013), 195–208.
- DOHLER, M., RATTI, C., PARASZCZAK, J., AND FALCONER, G. (Eds.) Smart Cities. *IEEE Communications Magazine* **51**, 6 (June 2013), 70–141.
- HERLIHY, M.; KOZLOV, D.; AND RAJSBAUM, S. *Distributed computing through combinatorial topology*. Morgan Kaufmann.
 - KORMANYOS, C. M. *Real-time C++: efficient object-oriented and template microcontroller programming*. Springer.
 - KUROSE, J. F.; AND ROSS, K. W. *Computer networking: a top-down approach (6th ed.)*. Pearson.
- LIAO, W.; PAPADOPOULOS, F.; PSOUNIS, K.; AND PSOMAS, C. Modeling BitTorrent-like systems with many classes of users. *ACM Transactions on Modeling and Computer Simulation* **23**, 2 (May 2013), Article No. 13.
- LIU, V.; PARKS, A.; TALLA, V.; GOLLAKOTA, S.; WETHERALL, D.; AND SMITH, J. R. Ambient backscatter: wireless communication out of thin air. In *Proc. of the ACM SIGCOMM 2013 Conference*, ACM, 2013, 39–50.
- ROSENSWEIG, E.; MENASCHE, D.; AND KUROSE, J. On the steady-state of cache networks. In *Proc. of the 32nd Annual IEEE International Conference on Computer Communications*, IEEE, 1–9.

- SUBRAMANIAM, S.; STEELY, S. C.; HASENPLAUGH, W.; JALEEL, A.; BECKMANN, C.; FOSSUM, T.; AND EMER, J. Using in-flight chains to build a scalable cache coherence protocol. *ACM Transactions on Architecture and Code Optimization* **10**, 4 (Dec. 2013), Article No. 28.
- WU, C.-H.; AND IRWIN, J. D. *Introduction to computer network and cybersecurity*. CRC Press.

D. Software

- BARNES, J. *Ada 2012 rationale (LNCS 8338)*. Springer.
 - FELLEISEN, M.; CONRAD, M. D. B.; VAN HORN, D.; BICE, F.; DE MAIO, R.; FLORENCE, S.; MIMI LIN, F.-Y.; LINDEMAN, S.; NUSSBAUM, N.; PETERSON, E.; AND PLESSNER, R. *Realm of Racket: learn to program, one game at a time!* No Starch Press.
- LANDWEHR, C. A building code for building code: putting what we know works to work. In *Proc. of the 29th Annual Computer Security Applications Conference*, ACM, 2013, 139–147.
- LOCHBIHLER, A. Making the Java memory model safe. *ACM Transactions on Programming Languages and Systems* **35**, 4 (Dec. 2013), Article No. 12.
- McMILLAN, C.; POSHYVANYK, D.; GRECHANIK, M.; XIE, Q.; AND FU, C. Portfolio: searching for relevant functions and their usages in millions of lines of code. *ACM Transactions on Software Engineering and Methodology* **22**, 4 (Oct. 2013), Article No. 37.
- MÜNCH, J.; AND SCHMID, K. (Eds.) *Perspectives on the future of software engineering: essays in honor of Dieter Rombach*. Springer.

- NANEVSKI, A.; BANERJEE, A.; AND GARG, D. Dependent type theory for verification of information flow and access control policies. *ACM Transactions on Programming Languages and Systems* **35**, 2 (July 2013), Article No. 6.
- PALLISTER, J.; HOLLIS, S. J.; AND BENNETT, J. Identifying compiler options to minimize energy consumption for embedded platforms. *The Computer Journal* (forthcoming).

E. Data

- GARG, S.; GENTRY, C.; AND HALEVI, S. Candidate multilinear maps from ideal lattices. In *Proc. of the 32nd Annual International Conference on the Theory and Applications of Cryptographic Techniques*, Springer, 2013, 1–17.
- PAGH, R. Compressed matrix multiplication. *ACM Transactions on Computation Theory* **5**, 3 (Sept. 2013), Article No. 9.

F. Theory of Computation

- ARTHAN, R.; MARTIN, U.; AND OLIVIA, P. A Hoare logic for linear systems. *Formal Aspects of Computing* **25**, 3 (May 2013), 345–363.
- BARENDREGT, H. P.; DEKKERS, W.; AND STATMAN, R. *Lambda calculus with types*. Cambridge University Press.
- BLUME, L.; EASLEY, D.; KLEINBERG, J.; KLEINBERG, R.; AND TARDOS, É. Network formation in the presence of contagious risk. *ACM Transactions on Economics and Computation* **1**, 2 (May 2013), Article No. 6.
- BODLAENDER, H. L.; AND JANSEN, B. M. P. Vertex cover kernelization revisited: upper and lower bounds for a refined parameter. *Theory of Computing Systems* **53**, 2 (Aug. 2013), 263–299.
- BOJANCZYK, M. Nominal monoids. *Theory of Computing Systems* **53**, 2 (Aug. 2013), 194–222.
- BORNAT R.; AND AHMJAD, H. Explanation of two non-blocking shared-variable communication algorithms. *Formal Aspects of Computing* **25**, 6 (Nov. 2013), 893–932.
- BÜRGISSER, P.; AND CUCKER, F. *Condition: the geometry of numerical algorithms*. Springer.
- BYRKA, J.; GRANDONI, F.; ROTHVOSS, T.; AND SANITÁ, L. Steiner tree approximation via iterative randomized rounding. *Journal of the ACM* **60**, 1 (Feb. 2013), Article No. 6.
- CHAZAL, F.; GUIBAS, L. J.; OUDOT, S. Y.; AND SKRABA, P. Persistence-based clustering in Riemannian manifolds. *Journal of the ACM* **60**, 6 (Nov. 2013), Article No. 41.
- CYGAN, M.; PILIPCZUK, M.; PILIPCZUK, M.; AND WOJTASZCZYK, J. O. On multiway cut parameterized above lower bounds. *ACM Transactions on Computation Theory* **5**, 1 (March 2013), Article No. 3.

- FRAIGNIAUD, P.; KORMAN, A.; AND PELEG, D. Towards a complexity theory for local distributed computing. *Journal of the ACM* **60**, 5 (Oct. 2013), Article No. 35.
- GUPTA, A.; HARDT, M.; ROTH, A.; AND ULLMAN, J. Privately releasing conjunctions and the statistical query barrier. *SIAM Journal on Computing* **42**, 4 (July 2013), 1494–1520.
- KOR, L.; KORMAN, A.; AND PELEG, D. Tight bounds for distributed minimum-weight spanning tree verification. *Theory of Computing Systems* **53**, 2 (Aug. 2013), 318–340.
- MAYFIELD, J. E. *The engine of complexity: evolution as computation*. Columbia University Press.
- PROCACCIA, A. D.; AND TENNENHOLTZ, M. Approximate mechanism design without money. *ACM Transactions on Economics and Computation* **1**, 4 (Dec. 2013), Article No. 18.
- RAZ, R. Tensor-rank and lower bounds for arithmetic formulas. *Journal of the ACM* **60**, 6 (Nov. 2013), Article No. 40.
- ROSCOE, A.W.; AND HUANG, J. Checking noninterference in timed CSP. *Formal Aspects of Computing* **25**, 1 (Jan. 2013), 3–36.
- STRANNEGÅRD, C.; ENGSTRÖM, F.; NIZAMANI, A. R.; AND RIPS, L. Reasoning about truth in first-order logic. *Journal of Logic, Language and Information* **22**, 1 (Jan. 2013), 115–137.
- WILLIAMS, R. Improving exhaustive search implies super-polynomial lower bounds. *SIAM Journal on Computing* **42**, 3 (June 2013), 1218–1244.

G. Mathematics of Computing

- AGGARWAL, C. C. *Outlier analysis*. Springer.
 - BARENBOIM, L.; AND ELKIN, M. *Distributed graph coloring: fundamentals and recent developments*. Morgan & Claypool.
- BORNDÖRFER, R.; LÖBEL, A.; REUTHER, M.; SCHLECHTE, T.; AND WEIDER, S. Rapid branching. *Public Transport* **5**, 1–2 (Sept. 2013), 3–23.
- CORLESS, R. M.; AND FILLION, N. *A graduate introduction to numerical methods and backward error analysis*. Springer.
- LANGER, A.; OSHER, S.; AND SCHONLIEB, C.-B. Bregmanized domain decomposition for image restoration. *Journal of Scientific Computing* **54**, 2–3 (Feb. 2013), 549–576.
- SPIELMAN, D. A.; AND TENG, S.-H. A local clustering algorithm for massive graphs and its application to nearly linear time graph partitioning. *SIAM Journal on Computing* **42**, 1 (Jan. 2013), 1–26.
- SUCHARD, M.; SIMPSON, S.; ZORYCH, I.; RYAN, P.; AND MADIGAN, D. Massive parallelization of serial inference

- algorithms for a complex generalized linear model. *ACM Transactions on Modeling and Computer Simulation* **23**, 1 (Jan. 2013), Article No. 10.
- LEE-St. JOHN, A.; AND SIDMAN, J. Combinatorics and the rigidity of CAD systems. *Computer-Aided Design* **45**, 2 (Feb. 2013), 473–482.
- THE UNIVALENT FOUNDATIONS PROGRAM. *Homotopy type theory: univalent foundations of mathematics*. <http://homotopytypetheory.org/book>.
-
- ## H. Information Systems
-
- ANTHONY, L.; KIM, Y.; AND FINDLATER, L. Analyzing user-generated YouTube videos to understand touchscreen use by people with motor impairments. In *Proc. of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 2013, 1223–1232.
- BRAMBILLA, M.; CERI, S.; AND HALEVY, A. (Eds.) Special Issue: Structured and Crowd-Sourced Data on the Web. *The VLDB Journal* **22**, 5 (Oct. 2013).
- CAO, J.; WU, Z.; MAO, B.; AND ZHANG, Y. Shilling attack detection utilizing semi-supervised learning method for collaborative recommender system. *World Wide Web* **16**, 5–6 (Nov. 2013), 729–748.
- CHEN, B.; ZHU, Y.; HU, J.; AND PRINCIPE, J. C. *System parameter identification: information criteria and algorithm*. Elsevier.
 - CORDEIRO, R. L. F.; FALOUTSOS, C.; AND JÚNIOR, C. T. *Data mining in large sets of complex data*. Springer.
- DHAR, V. Data science and prediction. *Communications of the ACM* **56**, 12 (Dec. 2013), 64–73.
- FEKETE, J.-D. Visual analytics infrastructures: from data management to exploration. *IEEE Computer* **46**, 7 (July 2013), 22–29.
- GUO, Q.; JIN, H.; LAGUN, D.; YUAN, S.; AND AGICHTEN, E. Mining touch interaction data on mobile devices to predict web search result relevance. In *Proc. of the 36th Annual ACM SIGIR Conference*, ACM, 2013, 153–162.
- KIRSH, D. Embodied cognition and the magical future of interaction design. *ACM Transactions on Computer-Human Interaction* **20**, 1 (April 2013), Article No. 3.
- LEE, K.; GRAY, A.; AND KIM, H. Dependence maps, a dimensionality reduction with dependence distance for high-dimensional data. *Data Mining and Knowledge Discovery* **26**, 3 (May 2013), 512–532.
- LEE, N. *Facebook nation: total information awareness*. Springer.
- LI, B.; CHEN, L.; ZHU, X.; AND ZHANG, C. Noisy but non-malicious user detection in social recommender systems. *World Wide Web* **16**, 5–6 (Nov. 2013), 677–699.
- LIU, G.; CHOUDHARY, S.; ZHANG, J.; AND MAGENENAT-THALMANN, N. Let's keep in touch online: a Facebook aware virtual human interface. *The Visual Computer* **29**, 9 (Sept. 2013), 871–881.
- LIU, X.; AND IFTIKHAR, N. Ontology-based big dimension modeling in data warehouse schema design. In *Business information systems (LNBIP 157)*. Edited by Abramowicz, W. Springer, 2013, 75–87.
- LUCCHESI, C.; ORLANDO, S.; PEREGO, R.; SILVESTRI, F.; AND TOLOMEI, G. Discovering tasks from search engine query logs. *ACM Transactions on Information Systems* **31**, 3 (July 2013), Article No. 14.
- RADINSKY, K.; SVORE, K. M.; DUMAIS, S. T.; SHOKOUHI, M.; TEEVAN, J.; BOCHAROV, A.; AND HORVITZ, E. Behavioral dynamics on the web: learning, modeling, and prediction. *ACM Transactions on Information Systems* **31**, 3 (July 2013), Article No. 16.
- STEFANI, C.; BUSAYARAT, C.; LOMBARDO, J.; DE LUCA, L.; AND VÉRON, P. A web platform for the consultation of spatialized and semantically enriched iconographic sources on cultural heritage buildings. *ACM Journal on Computing and Cultural Heritage* **6**, 3 (July 2013), Article No. 13.
- STEINMETZ, R. (Ed.) Special Sections on the 20th Anniversary of the ACM International Conference on Multimedia and Best Papers of ACM Multimedia 2012. *ACM Transactions on Multimedia Computing, Communications, and Applications* **9**, 1s (Oct. 2013).
-
- ## I. Computing Methodologies
-
- BEDE, B. *Mathematics of fuzzy sets and fuzzy logic*. Springer.
- CHERIE, M.; MOGHADDAM, R. F.; ARABNEJAD, E.; AND ZHONG, G. Manifold learning for the shape-based recognition of historical Arabic documents. In *Handbook of statistics: machine learning: theory and applications (volume 31)*. Edited by Govindaraju, V.; Rao, C. R. Elsevier, 2013, 471–491.
- CHERIE, M.; MOGHADDAM, R. F.; AND HEDJAM, R. A learning framework for the optimization and automation of document binarization methods. *Computer Vision and Image Understanding* **117**, 3 (March 2013), 269–280.
- GRIGORAS, C.; AND SMITH, J. M. Digital imaging: enhancement and authentication. In *Encyclopedia of forensic sciences (2nd ed.)*. Edited by Siegel, J. A.; Saukko, P. J. Academic Press, 2013, 303–314.
- GWAK, J.; AND SIM, K. M. An augmented EDA with dynamic diversity control and local neighborhood search for coevolution of optimal negotiation strategies. *Applied Intelligence* **38**, 4 (June 2013), 600–619.
- HAN, M.-F.; LIAO, S.-H.; CHANG, J.-Y.; AND LIN, C.-T. Dynamic group-based differential evolution using

self-adaptive strategy for global optimization problems. *Applied Intelligence* **39**, 1 (July 2013), 41–56.

INGER, Y.; FARBMAN, Z.; AND LISCHINSKI, D. Locally adaptive products for all-frequency relighting. *Computer Graphics Forum* **32**, 2 (May 2013), 73–82.

MARAGOS, P. Representations for morphological image operators and analogies with linear operators. In *Advances in imaging and electron physics (volume 177)*. Edited by Hawkes, P. W. Academic Press, 2013, 45–188.

SCHWARTZ, C.; RUITERS, R.; WEINMANN, M.; AND KLEIN, R. WebGL-based streaming and presentation of objects with bidirectional texture functions. *ACM Journal on Computing and Cultural Heritage* **6**, 3 (July 2013), Article No. 11.

SPENCER, B.; AND JONES, M. W. Photon parameterisation for robust relaxation constraints. *Computer Graphics Forum* **32**, 2 (May 2013), 83–92.

- ŚWIĄTEK, J.; GRZECH, A.; ŚWIĄTEK, P.; AND TOMCZAK, J. M. (Eds.) *Advances in systems science: Proceedings of the International Conference on Systems Science 2013 (ICSS 2013)*. Springer.

TAMSTORF, R.; AND GRINSPUN, E. Discrete bending forces and their Jacobians. *Graphical Models* **75**, 6 (Nov. 2013), 362–370.

VELTEN, A.; WU, D.; JARABO, A.; MASIA, B.; BARSÌ, C.; JOSHI, C.; LAWSON, E.; BAWENDI, M.; GUTIERREZ, D.; AND RASKAR, R. Femto-photography: capturing and visualizing the propagation of light. *ACM Transactions on Graphics* **32**, 4 (July 2013), Article No. 44.

VIET, H. H.; DANG, V.-H.; LASKAR, M. N. U.; AND CHUNG, T. BA*: an online complete coverage algorithm for cleaning robots. *Applied Intelligence* **39**, 2 (Sept. 2013), 217–235.

WEN, J.; LI, S.; AND SUN, J. A new binarization method for non-uniform illuminated document images. *Pattern Recognition* **46**, 6 (June 2013), 1670–1690.

ZHANG, H.; ZHAO, K.; SONG, Y.-Z.; AND GUO, J. Text extraction from natural scene image: a survey. *Neurocomputing* **125**, 25 (Dec. 2013), 310–323.

J. Computer Applications

LEE-ST. JOHN, A.; AND SIDMAN, J. Combinatorics and the rigidity of CAD systems. *Computer-Aided Design* **45**, 2 (Feb. 2013), 473–482.

LOU, T.; TANG, J.; HOPCROFT, J.; FANG, Z.; AND DING, X. Learning to predict reciprocity and triadic closure in social networks. *ACM Transactions on Knowledge Discovery from Data* **7**, 2 (July 2013), Article No. 5.

NAGURNEY, A.; LI, D.; WOLF, T.; AND SABERI, S. A network economic game theory model of a service-oriented Internet with choices and quality competition. *Netnomics* **14**, 1–2 (Nov. 2013), 1–25.

K. Computing Milieux

BERGHEL, H. Through the PRISM darkly. *IEEE Computer Magazine* **46**, 7 (July 2013), 86–90.

- COOPER, S.; AND VAN LEEUWEN, J. *Alan Turing: his work and impact*. Elsevier.

CORTADA, J. W. “Carrying a bag”: memoirs of an IBM salesman, 1974–1981. *IEEE Annals of the History of Computing* **35**, 4 (Oct. 2013), 32–47.

- DE KOVEN, B. *The well-played game: a player’s philosophy*. MIT Press.

GUO, P. Teaching programming the way it works outside the classroom. *Communications of the ACM* **56**, 8 (Aug. 2013), 10–11.

HELMINEN, J.; IHANTOLA, P.; AND KARAVIRTA, V. Recording and analyzing in-browser programming sessions. In *Proc. of the 13th Koli Calling International Conference on Computing Education Research*, ACM, 2013, 13–22.

KULKARNI, C.; WEI, K. P.; LE, H.; CHIA, D.; PAPADOPOULOS, K.; CHENG, J.; KOLLER, D.; AND KLEMMER, S. R. Peer and self assessment in massive online classes. *ACM Transactions on Computer-Human Interaction* **20**, 6 (Dec. 2013), Article No. 33.

OFFUTT, J. Putting the engineering into software engineering education. *IEEE Software* **30**, 1 (Feb. 2013), 96.

- SITO, T. *Moving innovation: a history of computer animation*. MIT Press.

SYMBOLS

- Book