NOTABLE COMPUTING BOOKS AND ARTICLES—2014

Computing Reviews is happy to bring you the 19th annual list of notable items published in computing—this time for 2014. 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. In addition, we included proceedings papers that were recognized as "Best Papers" at their respective conferences, as well as the most downloaded journal papers from some of the top journals covered in *CR*.

We received a total of 102 nominations, but excluded those that were self-nominations or published outside of the 2014 calendar year. Therefore, you will find 87 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

A. General Literature

- Downey, R. (Ed.) *Turing's legacy: developments from Turing's ideas in logic*. Cambridge University Press.
- Hodges, A. *Alan Turing: the enigma: the book that inspired the film "The Imitation Game"*. Princeton University Press.
- Issacson, W. *The innovators: how a group of hackers, geniuses, and geeks created the digital revolution*. Simon & Schuster.
- Munroe, R. *What if?: Serious scientific answers to absurd hypothetical questions*. Houghton Mifflin Harcourt.

B. Hardware

Poza, M.; Domínguez, C.; Heras, J.; and Rubio, J. A certified reduction strategy for homological image processing. *ACM Transactions on Computational Logic* **15**, 3 (July 2014), Article No. 23.

C. Computer Systems Organization

Andrews, J. G.; Buzzi, S.; Choi, W.; Hanly, S. V.; Lozano, A.; Soong, A. C. K.; Zhang, J. C. What will 5G be? *IEEE Journal on Selected Areas in Communications* **32**, 6 (June 2014), 1065–1082.

- Bahga, A.; and Madisetti, V. *Cloud computing: a hands-on approach*. Vijay Madisetti. CreateSpace.

Farooqia, M. Z.; Tabassuma,S. M.; Rehmania, M. H.; and Saleem, Y. A survey on network coding: from traditional wireless networks to emerging cognitive radio networks. *Journal of Network and Computer Applications*. **46** (Nov. 2014), 66–181.

Liu, E.; and Theodoropoulos, G. Space-time matching algorithms for interest management in distributed virtual environments. *ACM Transactions on Modeling and Computer Simulation* **24**, 3 (May 2014), Article No. 15.

- Srikant, R.; and Ying, L. *Communication networks. an optimization, control, and stochastic networks perspective*. Cambridge University Press.

Walton, N. Concave switching in single and multihop networks. In *Proc. of the 2014 ACM International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS)*, ACM, 2014, 139–151.

- Yang, G.-Z. (Ed.) *Body sensor networks (2nd ed.)*. Springer.

Zamir, R. *Lattice coding for signals and networks: a structured coding approach to quantization, modulation, and multiuser information theory*. Cambridge University Press.

D. Software

Barnes, J. *Programming in Ada 2012*. Cambridge University Press.

Baumann, A.; Peinado, M.; and Hunt, G. Shielding applications from an untrusted cloud with Haven. In *Proc. of the 11th USENIX Symposium on Operating Systems*

Design and Implementation (OSDI), USENIX, 2014, 267–283.

CRUZ-FILIPE, L.; LANESE, I.; MARTINS, F.; RAVARA, A.; AND THUDICHUM VASCONCELOS, V. The stream-based service-centred calculus: a foundation for service-oriented programming. *Formal Aspects of Computing* **26**, 5 (Sept. 2014), 865–918.

DE LARA, J.; GUERRA, E.; AND CUADRADO, J. S. When and how to use multilevel modeling. *ACM Transactions on Software Engineering and Methodology* **24**, 2 (Dec. 2014), Article No. 12.

DOBRESCU, M.; AND ARGYRAKI, K. Software dataplane verification. In *Proc. of the 11th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, USENIX, 2014, 101–114.

- DONCASTER P. *The UX five-second rules: guidelines for user experience design's simplest testing technique*. Morgan Kaufmann.

DREBES, A.; HEYDEMANN, K.; DRACH, N.; POP, A.; AND COHEN, A. Topology-aware and dependence-aware scheduling and memory allocation for task-parallel languages. *ACM Transactions on Architecture and Code Optimization* **11**, 3 (Oct. 2014), Article No. 30.

- GONZALEZ, T.; DIAZ-HERRERA, J.; AND TUCKER, A. *Computing handbook, third edition: computer science and software engineering (3rd ed.)*. CRC Press.
- HUDSON, S. *JavaScript creativity: exploring the modern capabilities of JavaScript and HTML5*. Apress.
- LOPES, C. V.; *Exercises in programming style*. CRC Press.
- MEYER, B. *Agile! The good, the hype, and the ugly*. Springer.

ZIELIŃSKA, E.; MAZURCZYK, W.; AND SZCZYPIORSKI, K. Trends in stenography. *Communications of the ACM* **57**, 3 (Mar 2014), 86–95.

E. Data

BRAKERSKI, Z.; GENTRY, C.; AND VAIKUNTANATHAN, V. (Leveled) Fully homomorphic encryption without bootstrapping, *ACM Transactions on Computation Theory* **6**, 3 (July 2014), Article No. 13.

KAMP, P.-H. Please put OpenSSL out of its misery. *Queue* **12**, 3 (Mar. 2014), 20.

- LIMA, M. *The book of trees: visualizing branches of knowledge*. Princeton Architectural Press.

F. Theory of Computation

COOK, J.; ETESAMI, O.; MILLER, R.; AND TREVISAN, L. On the one-way function candidate proposed by Goldreich. *ACM Transactions on Computation Theory* **6**, 3 (July 2014), Article No. 14.

EMEK, Y.; FELDMAN, M.; GAMZU, I.; PAES LEME, R.; AND TENNENHOLTZ, M. Signaling schemes for revenue maximization. *ACM Transactions on Economics and Computation* **2**, 2 (June 2014), Article No. 5.

ROTHVOSS, T. The matching polytope has exponential extension complexity. In *Proc. of the 46th ACM Symposium on Theory of Computing (STOC)*, ACM, 2014, 263-272.

VALIANT, G.; AND VALIANT, P. An automatic inequality prover and instance optimal identity testing. In *Proc. of the 2014 55th Annual Symposium on Foundations of Computer Science (FOCS)*, IEEE, 2014, 51–60.

YIN TAT, L.; AND SIDFORD, A. Path-finding methods for linear programming: solving linear programs in $\tilde{O}(\sqrt{\text{rank}})$ iterations and faster algorithms for maximum flow. In *Proc. of the 55th Annual Symposium on Foundations of Computer Science (FOCS)*, IEEE, 2014, 424–433.

G. Mathematics Of Computing

FIGUERA, C.; BARQUERO-PEREZ, I.; ROJO-ALVAREZ, J.; MARTINEZ-RAMON, M.; GUERRERO-CURIESES, A.; AND CAAMANO, A. Spectrally adapted Mercer kernels for support vector nonuniform interpolation. *Signal Processing* **94** (Jan. 2014), 421–433.

GRIGORYEVA, L.; HENRIQUES, J.; LARGER, L.; AND ORTEGA, J.-P. Stochastic nonlinear time series forecasting using time-delay reservoir computers: performance and universality. *Neural Networks* **55** (July 2014), 59–71.

GUO, R.; AND XU, Y. Efficient solvers of discontinuous Galerkin discretization for the Cahn-Hilliard equations. *Journal of Scientific Computing* **58**, 2 (Feb. 2014), 380–408.

PEROTTO, S.; AND VENEZIANI, A. Coupled model and grid adaptivity in hierarchical reduction of elliptic problems. *Journal of Scientific Computing* **60**, 3 (Sept. 2014), 505–536.

YE, Y. Efficiency of the simplex and policy-iteration methods for Markov decision processes. In *Proc. of the SIAM Conference on Optimization*, SIAM, 2014.

ZHANG, G.; AND SHEN, Y. Exponential synchronization of delayed memristor-based chaotic neural networks via periodically intermittent control. *Neural Networks* **55** (July 2014), 1–10.

H. Information Systems

AMELOOT, T. J.; KETSMAN, B.; NEVEN, F.; AND ZINN, D. Weaker forms of monotonicity for declarative networking: a more fine-grained answer to the CALM-conjecture. In *Proc. of the 33rd ACM SIGMOD-SIGACT-SIGART*

Symposium on Principles of Database Systems (PODS), ACM, 2014, 64–75.

CHEN, C. L. P.; AND ZHANG, C.-Y. Data-intensive applications, challenges, techniques and technologies: a survey on big data. *Information Sciences* **275** (Aug. 2014), 314–347.

• ELLIS, B. *Real-time analytics: techniques to analyze and visualize streaming data*. Wiley.

GHINEA, G.; TIMMERER, C.; LIN, W.; AND GULLIVER, S. R. Mulsemedia: state of the art, perspectives, and challenges. *ACM Transactions on Multimedia Computing, Communications, and Applications* **11**, 1s (Oct. 2014), Article No. 17.

• GIANNAKOPOULOS, T.; AND PIKRAKIS, A. *Introduction to audio analysis: a MATLAB approach*. Academic Press.

HARA, K.; SUN, J.; MOORE, R.; JACOBS, D.; AND FROEHLICH, J. Tohme: detecting curb ramps in Google street view using crowdsourcing, computer vision, and machine learning. In *Proc. of the 27th annual ACM symposium on User Interface Software and Technology (UIST)*, ACM, 2014, 189–204.

HU, H.; WEN, Y.; CHUA, T.-S.; AND LI, X. Toward scalable systems for big data analytics: a technology tutorial. *IEEE Access* **2** (June 2014), 652–687.

KAMBATLA, K.; KOLLIAS, G.; KUMAR, V.; AND GRAMA, A. Trends in big data analytics. *Journal of Parallel and Distributed Computing* **74**, 7 (July 2014), 2561–3573.

KREMPL, G.; ŽLIOBAITE, I.; BRZEZIŃSKI, D.; HÜLLERMEIER, E.; LAST, M.; LEMAIRE, V.; NOACK, T.; SHAKER, A.; SIEVI, S.; SPILIOPOULOU, M.; AND STEFANOWSKI, J. Open challenges for data stream mining research. *ACM SIGKDD Explorations Newsletter—Special issue on big data* **16**, 1 (Sept. 2014), 1–10.

LI, A. Q.; AHMED, A.; RAVI, S.; AND SSC MOLA, A. J. Reducing the sampling complexity of topic models. In *Proc. of the 20th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, ACM, 2014, 891–900.

MITZENMACHER, M.; PAGH, R.; AND PHAM, N. Efficient estimation for high similarities using odd sketches. In *Proc. of the 23rd International World Wide Web Conference (WWW)*, ACM, 2014, 109–118.

• MÖLLER, S.; AND RAAKE, A. *Quality of experience: advanced concepts, applications and methods*. Springer.

NAZMUL HAQUE NAHIN, A.F.M.; ALAM J. M.; MAHMUD, H.; AND HASAN, K. Identifying emotion by keystroke dynamics and text pattern analysis *Behaviour & Information Technology* **33**, 9 (July 2014), 987–996.

• OLSON, J. S.; AND KELLOGG, W. A. *Ways of knowing in HCI*. Springer.

OTTAVIANO, G.; AND VENTURINI, R. Partitioned Elias-Fano indexes. In *Proc. of the 37th International SIGIR Conference on Research & Development in Information Retrieval (SIGIR)*, ACM, 2014, 273–282.

• RUDDER, C. *Dataclysm: Who We Are (When We Think No One's Looking)*. Crown Publishing Group.

SONG, W.; LIU, Y.; AND LI, J. Mining high utility itemsets by dynamically pruning the tree structure. *Applied Intelligence* **40**, 1 (Jan. 2014), 29–43.

TEW, C.; GIRAUD-CARRIER, C.; TANNER, K.; AND BURTON, S. Behavior-based clustering and analysis of interestingness measures for association rule mining. *Data Mining and Knowledge Discovery* **28**, 4 (July 2014), 1004–1045.

WALMSLEY, W. S.; SNELGROVE, W. X.; AND TRUONG. K. N. Disambiguation of imprecise input with one-dimensional rotational text entry. *ACM Transactions on Computer-Human Interaction* **21**, 1 (Feb. 2014), Article No. 4.

WU, X.; ZHU, X.; WU, G.-Q.; DING, W. Data mining with big data. *IEEE Transactions on Knowledge and Data Engineering* **26**, 1 (Jan. 2014), 97–107.

ZHANG, C.; KUMAR, A.; AND RÉ, C. Materialization optimizations for feature selection workloads. In *Proc. of the 2014 ACM SIGMOD International Conference on Management of Data (SIGMOD)*, ACM, 2014, 265–276.

I. Computing Methodologies

BAREINBOIM, E.; TIAN, J.; AND PEARL, J. Recovering from selection bias in causal and statistical inference. In *Proc. of the 28th AAAI Conference on Artificial Intelligence*, AAAI, 2014, 2410–2416.

BEER, R. The cognitive domain of a glider in the game of life. *Artificial Life* **20**, 2 (Spring 2014), 183–206.

CHANDRAKER, M. What camera motion reveals about shape with unknown BRDF. In *Proc. of the 2014 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2014, 2179–2186.

CHARLESWORTH, A. The comprehensibility theorem and the foundations of artificial intelligence. *Minds and Machines* **24**, 4 (Nov. 2014), 439–476.

DAVIS, A.; RUBINSTEIN, M.; WADHWA, N.; MYSORE, G.; DURAND, F.; AND FREEMAN, W. T. The visual microphone: passive recovery of sound from video. *ACM Transactions on Graphics* **33**, 4 (July 2014), Article No. 79.

HOWARD, G.; BULL, L.; DE LACY COSTELLO, B.; GALE, E.; AND ADAMATZKY, A. Evolving Spiking Networks with Variable Resistive Memories. *Evolutionary Computation* **22**, 1 (Spring 2014), 79–103.

• IKEUCHI, K. *Computer vision: a reference guide*. Springer.

KHUSHABA, R. N.; TAKRURI, M.; MIRO, J. V.; AND KODAGODA, S. Towards limb position invariant myoelectric pattern recognition using time-dependent spectral features. *Neural Networks* **55** (July 2014), 42–58.

LIBERTI, L.; LAVOR, C.; MACULAN, N.; AND MUCHERINO, A. Euclidean distance geometry and applications. *SIAM Review*, **56**, 1 (Feb. 2014), 3–69.

• PARTRIDGE, D. *What makes you clever : the puzzle of intelligence*. World Scientific Publishing.

RIDEL, B.; REUTER, P.; LAVIOLE, J.; MELLADO, N.; COUTURE, N.; AND GRANIER, X. The revealing flashlight: interactive spatial augmented reality for detail exploration of cultural heritage artifacts. *Journal on Computing and Cultural Heritage* **7**, 2 (June 2014), Article No. 6.

• RIOLO, R.; MOORE, J. H.; AND KOTANCHEK, M. (Eds.) *Genetic programming theory and practice XI*. Springer.

TANG, J.; MENG, Z.; NsǴUYEN, X.; MEI, Q.; AND ZHANG, M. Understanding the limiting factors of topic modeling via posterior contraction analysis. In *Proc. of the 31st International Conference on Machine Learning*, JMLR: Workshop and Conference Proceedings, 2014, 190–198.

ZHU, F.; WANG, Y.; XIANG, S.; FAN, B.; AND PAN, C. Structured sparse method for hyperspectral unmixing. *ISPRS Journal of Photogrammetry and Remote Sensing* **88** (Feb. 2014), 101–118.

J. Computer Applications

• CARTER, K. *Actionable intelligence: a guide to delivering business results with big data fast!*. Wiley.

CHIERICHETTI, F.; KLEINBERG, J.; AND PANCONESI, A. How to schedule a cascade in an arbitrary graph. *SIAM Journal of Computing* **43**, 6 (Dec. 2014), 1906–1920.

KAVELAR, A.; ZAMBANINI, S.; AND KAMPEL, M. Reading the legends of Roman Republican coins. *Journal on Computing and Cultural Heritage* 7, 1 (Feb. 2014), Article No. 5.

LEPP, A.; BARKLEY, J. E.; AND KARPINSKI, A. C. The relationship between cell phone use, academic performance, anxiety, and satisfaction with life in college students. *Computers in Human Behavior* **31** (Feb. 2014), 343–350.

LYON, E.; KNAPP, R. B.; AND OUZOUNIAN,G. Compositional and performance mapping in computer chamber music: a case study. *Computer Music Journal* **38**, 3 (Fall 2014), 64–75.

• MAILLE, P.; AND TUFFIN, B. *Telecommunication network economics: from theory to applications*. Cambridge University Press.

ROBICHAU, B. *Healthcare information privacy and security: regulatory compliance and data security in the age of electronic health records*. Apress.

STUBBS, E. *Big Data, Big innovation: enabling competitive differentiation through business analytics*. Wiley.

VON DER LINDEN, W.; DOSE, V.; AND VON TOUSSAINT, U. *Bayesian probability theory*. Cambridge University Press.

K. Computing Milieux

BERGHEL, H. The future of digital money laundering. *Computer* **47**, 8 (Aug. 2014), 70–75.

EMBAR, M.; MCHUGH, L. F.; and WESSELMAN, W. Printer watermark obfuscation. In *Proc. of the 3rd Annual Conference on Research in Information Technology (RIIT)*, ACM, 2014, 15–20.

• GREENWALD, G. *No place to hide: Edward Snowden, the NSA, and the U.S. surveillance state*. Metropolitan Books.

• ZETTER K. *Countdown to zero day: Stuxnet and the launch of the world's first digital weapon*. Crown Publishing Group.

SYMBOLS

• Book