References

- [1] http://www.crcns.org/.
- [2] http://www.opensourcebrain.org.
- [3] http://www.kaggle.com.
- [4] Jennifer Carpenter. May the best analyst win. Science (New York, N.Y.), 331(6018):698-699, February 2011. PMID: 21311005.
- [5] Renaud Jolivet, Felix Schrmann, Thomas Berger, Richard Naud, Wulfram Gerstner, and Arnd Roth. The quantitative single-neuron modeling competition. *Biological Cybernetics*, 99(4):417–426, November 2008.
- [6] J J Hopfield and C D Brody. What is a moment? "Cortical" sensory integration over a brief interval. Proceedings of the National Academy of Sciences of the United States of America, 97(25):13919–13924, December 2000. PMID: 11095747.
- [7] http://www.diademchallenge.org.
- [8] http://www.the-dream-project.org/.
- [9] Kent Beck. Test Driven Development: By Example. Addison Wesley, 2003.
- [10] http://neuroml.org.
- [11] Padraig Gleeson, Sharon Crook, Robert C Cannon, Michael L Hines, Guy O Billings, Matteo Farinella, Thomas M Morse, Andrew P Davison, Subhasis Ray, Upinder S Bhalla, Simon R Barnes, Yoana D Dimitrova, and R Angus Silver. NeuroML: a language for describing data driven models of neurons and networks with a high degree of biological detail. *PLoS computational biology*, 6(6):e1000815, June 2010. PMID: 20585541.
- [12] http://www.neuron.yale.edu/neuron.
- [13] Karthik Ram. Git can facilitate greater reproducibility and increased transparency in science. Source code for biology and medicine, 8(1):7, 2013. PMID: 23448176.
- [14] http://www.djangoproject.com.
- [15] http://github.com/cyrus-/sciunit.
- [16] http://www.r-project.org/.
- [17] http://www.mathworks.com/products/matlab/.
- [18] http://opensourcebrain.org/projects/ca1pyramidalcell.
- [19] http://www.scidash.org.
- [20] www.sagenb.org.
- [21] http://github.com/rgerkin/neurounit.
- [22] http://www.neuroconstruct.org.
- [23] Padraig Gleeson, Volker Steuber, and R Angus Silver. neuroConstruct: a tool for modeling networks of neurons in 3D space. *Neuron*, 54(2):219–235, April 2007. PMID: 17442244.
- [24] http://senselab.med.yale.edu/modeldb.

- [25] Michael L Hines, Thomas Morse, Michele Migliore, Nicholas T Carnevale, and Gordon M Shepherd. ModelDB: a database to support computational neuroscience. *Journal of computational neuroscience*, 17(1):7–11, August 2004. PMID: 15218350.
- [26] http://github.com/rgerkin/neuroConstruct.
- [27] http://neuralensemble.org.
- [28] http://www.neuroelectro.org/.
- [29] SJ Tripathy, J Saviskaya, RC Gerkin, and NN Urban. NeuroElectro: a database describing the electrophysiology properties of different neuron types. *Neuroinformatics Meeting*, 2012.
- [30] http://bitbucket.org/rgerkin/neuroelectro_org.
- [31] http://github.com/rgerkin/scidash.
- [32] http://sed-ml.org/.
- [33] M Hucka, A Finney, H M Sauro, H Bolouri, J C Doyle, H Kitano, A P Arkin, B J Bornstein, D Bray, A Cornish-Bowden, A A Cuellar, S Dronov, E D Gilles, M Ginkel, V Gor, I I Goryanin, W J Hedley, T C Hodgman, J-H Hofmeyr, P J Hunter, N S Juty, J L Kasberger, A Kremling, U Kummer, N Le Novre, L M Loew, D Lucio, P Mendes, E Minch, E D Mjolsness, Y Nakayama, M R Nelson, P F Nielsen, T Sakurada, J C Schaff, B E Shapiro, T S Shimizu, H D Spence, J Stelling, K Takahashi, M Tomita, J Wagner, J Wang, and SBML Forum. The systems biology markup language (SBML): a medium for representation and exchange of biochemical network models. Bioinformatics (Oxford, England), 19(4):524–531, March 2003. PMID: 12611808.
- [34] Nikolaus Kriegeskorte, Marieke Mur, and Peter Bandettini. Representational similarity analysis connecting the branches of systems neuroscience. Frontiers in systems neuroscience, 2:4, 2008. PMID: 19104670.
- [35] TJ McCabe. A complexity measure. IEEE Transactions on Software Engineering, 2(4):308–320, 1976.
- [36] Michael Schmidt and Hod Lipson. Distilling free-form natural laws from experimental data. *Science* (New York, N.Y.), 324(5923):81–85, April 2009. PMID: 19342586.
- [37] http://nipy.org/nibabel.
- [38] http://neurohdf.readthedocs.org.
- [39] Cladius Ptolemy. The Almagest. 150.
- [40] Johannes Kepler. The Rudolphine Tables. 1627.
- [41] Nicolas Copernicus. De revolutionibus orbium coelestium. 1543.
- [42] Johannes Kepler. Astronomia Nova. 1609.
- [43] Galileo Galilei. Siderius Nuncius. 1610.
- [44] Isaac Newton. Philosophiae Naturalis Principia Mathematica. 1687.
- [45] Urbain Le Verrier. Lettre de m. le verrier m. faye sur la thorie de mercure et sur le mouvement du prihlie de cette plante. Comptes rendus hebdomadaires des sances de l'Acadmie des sciences (Paris), 49:379–383, 1859.
- [46] Albert Einstein. The foundation of the general theory of relativity. Annalen der Physik, 49(7):769–822,
- [47] http://www.google-melange.com/gsoc/homepage/google/gsoc2013.

- [48] S Hohensee, W Bleiss, and C Duch. Correlative electron and confocal microscopy assessment of synapse location in the central nervous system of an insect. *Journal of Neuroscience Methods*, 168:64–70, 2008.
- [49] M Meseke, JF Evers, and C Duch. Developmental changes in dendritic shape and synapse location tune single neuron computations to changing behavioral functions. *Journal of Neurophysiology*, 102:41–58, 2009.
- [50] MA Herrera-Valdez. Membranes with the same complements of ion channes but different excitabilities. *PloS ONE*, 7(4):e34636, 2012.
- [51] S Ryglewski, K Lance, RB Levine, and C Duch. Cav2 channels mediate low and high voltage-activated calcium currents in drosophila motoneurons. *Journal of Physiology*, 590(4):809–825, 2013.
- [52] MA Herrera-Valdez, EC McKiernan, SD Berger, S Ryglewski, C Duch, and S Crook. Relating ion channel expression, bifurcation structure and diverse firing patterns in a model of an identified motor neuron. *Journal of Computational Neuroscience*, 34(2):211–229, 2013.
- [53] AB Jennings, SM Crook, C Duch, and S Ryglewski. Mathematical models of octopaminergic dorsl unpaired median neurons. *Society for Neuroscience Abstracts*, (536.20), 2007.
- [54] MA Herrera-Valdez, SD Berger, C Duch, and SM Crook. Predicting changes in neuronal excitability type in response to genetic manipulations of k+ channels. *BMC Neuroscience*, 10((Suppl 1)):P301, 2009.
- [55] SD Berger, MA Herrera-Valdez, C Duch, and SM Crook. Passive current transfer in wildtype and genetically modified drosophila motoneuron dendrites. *BMC Neuroscience*, 10((Suppl 1)):P346, 2009.
- [56] MA Herrera-Valdez, SD Berger, C Duch, and SM Crook. Differential contribution of voltage-dependent potassium channels to neuronal excitability. BMC Neuroscience, 11((Suppl 1)):P159, 2009.
- [57] A Smith, M Cruz-Aponte, EC McKiernan, MA Herrera-Valdez, SM Crook, and MA Herrera-Valdez. Differential contributin of a-type potassium currents in shaping neuronal responses to synaptic input. *BMC Neuroscience*, 12((Suppl 1)):P147, 2011.
- [58] SD Berger, SM Baer, and SM Crook. Estimation of electrical properties of dendrites with branches using a continuum modeling formulation. *Society for Neuroscience Abstracts*, page 340.01, 2012.
- [59] SD Berger, SM Baer, and SM Crook. A continuum approach to model neurites/dendrites with emerging subtrees. *BMC Neuroscience*, 14((Suppl 1)):P73, 2013.
- [60] Marwan Abi-Antoun, Jonathan Aldrich, and Welsey Coelho. A Case Study in Re-engineering to Enforce Architectural Control Flow and Data Sharing. J. Systems & Software, 80(2):240–264, 2007.
- [61] Kevin Bierhoff and Jonathan Aldrich. Modular Typestate Checking of Aliased Objects. In Proc. Object-Oriented Programming, Systems, Languages, and Applications, 2007.
- [62] Marwan Abi-Antoun, Jonathan Aldrich, Nagi Nahas, Bradley Schmerl, and David Garlan. Differencing and Merging of Architectural Views. *Automated Software Engineering*, 15(8):35–74, 2008.
- [63] Marwan Abi-Antoun and Jonathan Aldrich. Ownership Domains in the Real World. In Intl. Workshop on Aliasing, Confinement and Ownership in Object-Oriented Programming (IWACO), pages 93–104, 2007.
- [64] Marwan Abi-Antoun and Jonathan Aldrich. Compile-Time Views of Execution Structure Based on Ownership. In Intl. Workshop on Aliasing, Confinement and Ownership in Object-Oriented Programming (IWACO), pages 81–92, 2007.
- [65] Marwan Abi-Antoun and Jonathan Aldrich. A Field Study in Static Extraction of Runtime Architectures. In Workshop on Program Analysis for Software Tools and Engineering (PASTE), pages 22–28, 2008.

- [66] Marwan Abi-Antoun and Jonathan Aldrich. Static Extraction of Sound Hierarchical Runtime Object Graphs. In Workshop on Types in Language Design and Implementation (TLDI), pages 51–64, 2009.
- [67] Marwan Abi-Antoun and Jonathan Aldrich. Static Extraction and Conformance Analysis of Hierarchical Runtime Architectural Structure using Annotations. In Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA), 2009.
- [68] Marwan Abi-Antoun and Jeffrey M. Barnes. Analyzing Security Architectures. In *Automated Software Engineering*, 2010.
- [69] Nels E. Beckman, Kevin Bierhoff, and Jonathan Aldrich. Verifying Correct Usage of Atomic Blocks and Typestate. Proc. Object-Oriented Programming, Systems, Languages, and Applications, 43(10):227–244, 2008.
- [70] Kevin Bierhoff, Nels E. Beckman, and Jonathan Aldrich. Practical API Protocol Checking with Access Permissions. In *Proc. European Conference on Object-Oriented Programming*, 2009.
- [71] Ciera Jaspan and Jonathan Aldrich. Checking Framework Interactions with Relationships. In European Conference on Object-Oriented Programming (ECOOP), 2009.
- [72] Jonathan Aldrich, Ronald Garcia, Mark Hahnenberg, Manuel Mohr, Karl Naden, Darpan Saini, Sven Stork, Joshua Sunshine, Éric Tanter, and Roger Wolff. Permission-Based Programming Languages (NIER Track). In *International Conference on Software Engineering (ICSE)*, 2011.
- [73] Joshua Sunshine, Karl Naden, Sven Stork, Jonathan Aldrich, and Éric Tanter. First-Class State Change in Plaid. In *Object-Oriented Programming*, Systems, Languages, and Applications (OOPSLA), 2011.
- [74] Karl Naden, Robert Bocchino, Kevin Bierhoff, and Jonathan Aldrich. A Type System for Borrowing Permissions. In *POPL*, 2012.
- [75] Hannes Mehnert and Jonathan Aldrich. Verification of snapshotable trees using access permissions and typestate. In *TOOLS*, 2012.
- [76] Jonathan Aldrich. ArchJava. http://www.archjava.org/, 2003.
- [77] Plural Project. Pluralism: Modular object protocol checking for Java, 2009. http://code.google.com/p/pluralism/.
- [78] PLAID Research Group. The Crystal Static Analysis Framework, 2009. http://code.google.com/p/crystalsaf.
- [79] Jonathan Aldrich. SASyLF proof assistant, 2009. http://www.cs.cmu.edu/~aldrich/SASyLF/.