Sal Aguinaga

Contact Information

Department of Computer Science and Engineering
University of Notre Dame
384K Nieuwland Science Hall
Notre Dame, Indiana 46556 USA

Voice: +1 574 339-4087
Email: saguinag@nd.edu
Web: www.nd.edu/~saguinag

Research Interests

Information networks, applied graph theory, knowledge discovery and data mining, machine learning, mobile computing, signal processing, and computational neuroscience.

Education

University of Notre Dame, Notre Dame, Indiana, USA

Ph.D., Computer Science (expected in August 2017)

- Area: Information Networks
- Thesis: "Generative Network Models From Hyperedge Replacement Graph Grammars"
- Advisor: Tim Weninger

M.S., Computer Science, August 2016

Northern Illinois University, DeKalb, IL 60115 USA

B.S., Electrical Engineering, May 1995

- Area: Digital Signal Processing, Speech Recognition

Professional Experience

2011—present:	***Graduate student***, Computer Science and Engineering, Weninger Lab
2013–2014:	***Mobile design consultant***, mobile app development; aBitofAlchemy Responsibilities: design mobile apps using computer vision on color changes in chemical reactions
2008–2011:	***Principal design engineer***, Dhar Lab, hardware, software and system development; **Northwestern University**; Responsibilities: managing both product and small team of developers; software development of a C++ desktop app for audiology testing including the development of a research-grade audio amplifier and microphone calibration systems
2006-2008:	***Senior design engineer***, Mobile phone board-level hardware, **Motorola** Responsibilities: next generation phone platform design, validation, and prototyping (consumer market); chip-set validation, board design and signal integrity simulation
2003-2006:	***Research technologist***, Electrophysiology, Dallos Lab, **Northwestern University** Responsibilities: electrophysiology recordings from cell-line and animal models
1997-2003:	***Hardware design engineer***, Telecomm (VoIP and modem design); **3Com** Responsibilities: enterprise level VoIP system architecture design; intercommunication infrastructure (both, wired and optical) and application card design, validation, and prototyping
1995-1997:	***Junior hardware engineer***, Memory and hard-drives interfaces, **VisionTek** Responsibilities: design, validation & shipment of mobile & desktop accessories

Teaching and Student Mentoring

2013	Course Instructor: "Mobile Application Projects", Spring semester, Course level: Undergraduate and graduate Topics: Mobile computing targeting iOS and Android platforms; University of Notre Dame
2012,'13	Student Mentor: Summer Research Experience for Undergraduates in mobile computing 2016 Summer Research Experience for Teachers, Data Science
2012	Teacher Assistant: Undergraduate Operating Systems
2014	Teacher Assistant: Graduate and Undergraduate Database Concepts
2015	Teacher Assistant: Undergraduate Fundamentals of Computing II (C++)

Service

Subreviewer:	AAAI-16 Thirtieth AAAI Conference on Artificial Intelligence WWW2016 25th International World Wide Web Conference
Conference Volunteer:	22nd ACM SIGKDD Conference of Knowledge Discovery and Data Mining. San Francisco, CA, 2016

Professional Memberships and Awards

2011—	Association for Computing Machinery (ACM)
2012—	Institute of Electrical and Electronics Engineers (IEEE)
2016:	Heidelberg Laureate Forum Young Scientist selected to attend the with US delegation Heidelberg, Germany
2016:	**Travel Award** ACM SIGKDD (KDD2016)
2016:	**Travel Award** ACM SIGIR (CIKM2016)
2014:	2nd Place Schurz Communications Innovation Prize, University of Notre Dame, Data Mining

Publications

Computer Science Papers *(in reverse chronological order)*

Nigam, Aastha, **Salvador Aguinaga**, and Nitesh V. Chawla, "Connecting the Dots to Infer Followers' Topical Interest on Twitter", The 3rd International Conference on Behavioral, Economic, and Socio-Cultural Computing, 2016 (accepted to appear in BESC 2016)

Aguinaga, Salvador, Rodrigo Palacios, David Chiang, and Tim Weninger Growing Graphs with Hyperedge Replacement Graph Grammars. "International Conference on Information and Knowledge Management," (CIKM), Indianapolis, IN, October 2016.

Aguinaga, Salvador, and Tim Weninger. "The Infinity Mirror Test for Analyzing the Robustness of Graph Generators." arXiv preprint arXiv:1606.04412, 12th International Workshop on Mining and Learning with Graphs, San Francisco, CA (2016)

Aguinaga, Salvador, Aditya Nambiar, Zuozhu Liu, and Tim Weninger. "Concept hierarchies and human navigation." In *Big Data (Big Data), 2015 IEEE International Conference* on, pp. 38-45. IEEE, 2015.

Aguinaga, Salvador, and Christian Poellabauer. "Stealthy health sensing to objectively characterize motor movement disorders." *Procedia Computer Science* 19 (2013): 1182-1189.

Aguinaga, Salvador, & Poellabauer, C. (2012, May). Method for privacy-protecting display and exchange of emergency information on Mobile devices. In *Collaboration Technologies and Systems (CTS), 2012 International Conference* on (pp. 596-599). IEEE.

Yue, T. Janiw, A., Huus, A., **Aguiñaga, S.**, Archer, M., Hoefle, K., and Riek, L.D. "Creating Human-Robot Rapport with Mobile Sculpture".In *Proceedings of the 7th ACM International Conference on Human-Robot Interaction (HRI), 2012*

Aguiñaga, S. and Riek, L.D. "Advances in Robotics and Computer Vision for Assistive Technology". In *Proceedings of the 27th Annual International Technology and Persons with Disabilities Conference (CSUN),* 2012

Neuroscience Papers

Homma, Kazuaki, Katharine K. Miller, Charles T. Anderson, Soma Sengupta, Guo-Guang Du, **Salvador Aguiñaga**, MaryAnn Cheatham, Peter Dallos, and Jing Zheng. "Interaction between CFTR and prestin (SLC26A5)." *Biochimica et Biophysica Acta (BBA)-Biomembranes* 1798, no. 6 (2010): 1029-1040.

Gao, Jiangang, Xiang Wang, Xudong Wu, **Sal Aguinaga**, Kristin Huynh, Shuping Jia, Keiji Matsuda et al. "Prestin-based outer hair cell electromotility in knockin mice does not appear to adjust the operating point of a cilia-based amplifier." *Proceedings of the National Academy of Sciences* 104, no. 30 (2007): 12542-12547.

Zheng, Jing, Guo-Guang Du, Keiji Matsuda, Alex Orem, **Sal Aguiñaga**, Levente Deák, Enrique Navarrete, Laird D. Madison, and Peter Dallos. "The C-terminus of prestin influences nonlinear capacitance and plasma membrane targeting." *Journal of cell science* 118, no. 13 (2005): 2987-2996.

Deák, Levente, Jing Zheng, Alex Orem, Guo–Guang Du, **Salvador Aguiñaga**, Keiji Matsuda, and Peter Dallos. "Effects of cyclic nucleotides on the function of prestin." *The Journal of physiology* 563, no. 2 (2005): 483-496.

Kural, C., **S. Aguinaga**, J. Zhen, P. Dallos, and P. R. Selvin. "FRET studies on prestin, a new type of molecular motor." In *BIOPHYSICAL JOURNAL*, vol. 86, no. 1, pp. 101A-101A. 9650 ROCKVILLE PIKE, BETHESDA, MD 20814-3998 USA: BIOPHYSICAL SOCIETY, 2004.

Chemistry Papers

Rogers, Robin D., Andrew H. Bond, and **Salvador Aguinaga**. "Synthesis and crystallographic characterization of [Cd (OH2) 2 (μ-Br) 4 (Cd (2-hydroxyethyl sulfide)(μ-Br)) 2] n." *Journal of crystallographic and spectroscopic research* 23, no. 11 (1993): 857-862.

Rogers, Robin D., Andrew H. Bond, **Salvador Aguinaga**, and Alain Reyes. "Polyethylene glycol complexation of Cd 2+. Structures of triethylene glycol complexes of CdCl 2, CdBr 2 and CdI 2." *Inorganica chimica acta* 212, no. 1 (1993): 225-231.

Rogers, Robin D., Andrew H. Bond, **Salvador Aguinaga**, and Alain Reyes. "Complexation chemistry of bismuth (III) halides with crown ethers and polyethylene glycols. Structural manifestations of a stereochemically active lone pair." *Journal of the American Chemical Society* 114, no. 8 (1992): 2967-2977.

Rogers, R. D., A. H. Bond, and **S. Aguinaga**. "Alcoholysis of Bi (NO3) 3.5 H2O by polyethylene glycols. Comparison with bismuth (III) nitrate crown ether complexation." *Journal of the American Chemical Society* 114, no. 8 (1992): 2960-2967.

Patents

US 7522614 B1: **Aguinaga, Salvador**, D. D. Dipert, R. Dynarski, G. T. Jankauskas, and M. A. K. Schwan, B. Fitzpatrick, Multi-service access platform for telecommunications and data networks, 3Com Corporation; 4/29/2009

US 6977821 B2: **Aguinaga, Salvador,** D. Dipert, and M. Schwan; Backplane apparatus and board for use therewith, 3Com Corporation; 12/20/2005

Service

Sub-reviewer: AAAI-16 Thirtieth AAAI Conference on Artificial Intelligence
WWW2016 25th International World Wide Web Conference

Volunteer: 22nd ACM SIGKDD Conference of Knowledge Discovery and Data Mining, San Francisco, CA, 2016

Technical Skills

Program Languages

C/C++:	Tens of thousands lines of code (tools implemented)
ObjectiveC:	iOS and Mac platforms, tens of thousands lines of code (app dev)
Java:	Android mobile platforms, thousands of lines of code (app dev)
Python:	Research tools, Numpy, SciPy, scikit-learn, pandas, NetworkX, iGraph, & others
R:	Data summarization, graph computation, visualization)
Databases:	MySQL server level and for mobile (Parse, MySQL,SQLite, and CoreData)
Matlab:	Apps and research tool development (Octave)

Hardware Engineering

Board-level:	Digital and analog circuit design of telecommunications and mobile phone hardware
EDA:	Cadence and Mentor graphics EDA tools for circuit board design and high-speed signal integrity analysis

Online Profiles

Navigate to the links below for more a snapshot of online presence and a full list of publications:

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