Salvador Aguinaga

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Professional Summary

- Ph.D. in computer science with experience processing large collections of text using natural language understanding, knowledge representation, and logical reasoning AI techniques.
- Managed team of developers building one of the core products for fast similarity search (using graph algorithms), data mining, machine learning methods for classification and feature extraction.
- Pro-actively bringing NLP methods for information extraction, topic modeling (gensim, spaCy, nltk, and Stanford NLP), parsing, and relationship extraction to production.

Education

University of Notre Dame **May, 2018**

Ph.D. in Computer Science

Dissertation Title: *Generating Networks by Learning Hyperedge Replacement Grammars*

Advisor: Tim Weninger

University of Notre Dame **August 2017**

M.S. in Computer Science

Northern Illinois University **May 1995**

B.S. in Electrical Engineering

Professional Experience

Kyndi San Mateo, CA

Cognitive Memory Lead Engineer 2017 –

I work on graph engine indexing, natural language understanding, knowledge representation, concept graphs, logical reasoning, linguistic analysis, and statistical machine learning around models for text and documents.

Argonne National Lab Lemont, IL

Graduate Researcher 08/2017 to 09/2017

Machine learning models design of recurrent neural networks to learn patterns for large-scale computing applications. I left Argonne to work at Kyndi.

University of Notre Dame Notre Dame, IN

Research Assistant 2011 to 2018

The Weninger Lab; Department of Computer Science and Engineering

ABitofAlchemy Mishawaka, IN

Mobile Design Consultant 2013 to 2014

Mobile app development; worked on design mobile apps in computer vision for color detection of chemical compounds

Northwestern University Evanston, IL

Staff Design Engineer 2008 to 2011

Dhar Lab, I worked on hardware and software system development; managed both the product and a 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.

Motorola Libertyville, IL

Senior design engineer 2006 to 2008

Mobile phone board-level hardware; worked on next generation phone platform design, validation and prototyping (consumer market); chip-set validation, board design and signal integrity simulation

Northwestern University Evanston, IL

Research tech 2003 to 2006

Dallos Lab, Conducted independent research experiments involving in vitro electrophysiology techniques including patch-clamping, cell-line maintenance, and data analysis

3Com (Acquired by HPE) Rolling Meadows, IL

Hardware Design Engineer 1997 to 2003

Telecomm (VoIP and modem design); Worked on enterprise level VoIP system architecture design; intercommunication infrastructure (both, wired and optical) and application card design, validation, and prototyping

VisionTek Product LLC Gurnee, IL

Jr. Hardware Engineer 1995 to 1997

Design, prototyping, and testing computer memory cards and hard-drive peripherals

Teaching and Student Mentoring

Mobile Application Projects Spring semester 2013

Co-teacher of record; undergraduate and graduate level; mobile computing: targeting iOS and Android platforms

Summer Research Experience for Undergraduates in mobile computing Summer 2013

Research Experience for Teachers, Data Science Summer 2016

Publications

Computer Science Papers *(in reverse order by date)*

S Aguinaga, D Chiang, and T Weninger, Learning Hyperedge Replacement Grammars for Graph Generation, IEEE Transactions on Pattern Analysis and Machine Intelligence, 2018

C Pennycuff, S Aguinaga, and T Weninger, A Temporal Tree Decomposition for Generating Temporal Graphs, Mining and Learning with Graphs Workshop at KDD 2017

A Nigam, S Aguinaga, and NV Chawla, Connecting the Dots to Infer Followers' Topical Interest on Twitter, Behavioral, Economic and Socio-cultural Computing (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, S., and 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., Aguinaga, 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

Aguinaga, 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

Contributions to Neuroscience Papers

Homma, Kazuaki, Katharine K. Miller, Charles T. Anderson, Soma Sengupta, Guo-Guang Du, **Salvador Aguinaga**, 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 Aguinaga**, 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 Society, vol. 86, no. 1, pp. 101A-101A. 9650 Rockville Pike, Bethesda, MD 20814-3998 USA: Biophysical Society, 2004.

Contributions to 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 4/29/2009

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;

US 6977821 B2 12/20/2005

Aguinaga, Salvador, D. Dipert, and M. Schwan; Backplane apparatus and board for use therewith, 3Com Corporation;

Service

Graduate Student Board Member 2016-2017
Department of Computer Science and Engineering

AAAI-16 Thirtieth AAAI Conference on Artificial Intelligence 2016-2017

25th International World Wide Web Conference 2016

Reviewer IEEE Transactions on Knowledge and Data Engineering (TKDE) 2017

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

Professional Memberships and Awards

Association for Computing Machinery (ACM) Current

Institute of Electrical and Electronics Engineers (IEEE)	Current
Young Scientist 4th Annual Heidelberg Laureate Forum Selected and funded to attend as part of the US delegation, Heidelberg, Germany	2016
Travel Award ACM SIGKDD (KDD2016)	2016
Travel Award ACM SIGIR (CIKM2016)	2016
2nd Place Schurz Communications Innovation Prize, Data Mining	2014

Technical Skills

Programming Language Experience

C/C++: Embedded, desktop, and research development, worked with Graphlab, graph-boost lib (basic not an expert)

ObjectiveC: iOS app development for mobile computing (3 years)

Java: Android mobile platforms, basic knowledge for mobile app development.

Python: Research development using Spark, NLP,Numpy, SciPy, Scikit-learn, NLTK, Pandas, NetworkX, iGraph, spacy, and familiarity with PyTorch & TensorFlow

R: Data science, statistics, and data visualization (not an expert)

Databases: MySQL,SQLite, CoreData, & Mongodb

Matlab/Octave: Apps and research tool development

Circuits and Hardware Engineering

Board-level: Digital and analog circuit design, including board layout; electronic equipment for testing and validation, e.g., oscilloscopes, signal analyzers, and others

EDA: Cadence and Mentor graphics (SPICE) for circuit board-level design, circuit simulation of timing and noise analysis, and high-speed signal integrity