STEPHEN PLAZA

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OBJECTIVE

I am looking for consulting positions involving large, interdisciplinary science and research management. I have technical expertise in variety of areas: software/hardware systems, advanced algorithms and data science, bioinformatics, and semi-conductors. My experiences in leading and managing interdisciplinary, international teams and my diverse technical background allow me to tackle unique and challenging problems in both research and production settings.

EXPERIENCE

Software and Project Manager JANELIA RESEARCH CAMPUS, HHMI
2012-CURRENT

Overview: I lead an elite scientific team in the quest to unlock the mysteries of neural connectivity in the fly brain.

Roles and responsibilities:

- Technical lead: provide guidance to software developers and researchers in the areas of machine learning, software design, and “Big Data” problems.
- Direct supervisor of six researchers (all beyond post-doc experience)
- Project manager: manage a large interdisciplinary team of over 20 people with a multimillion dollar budget; set project team goals; manage budget; and perform stakeholder management.
- Researcher: examine strategies to automatically segment massive amounts of microscopic images using machine learning and devise strategies to efficiently verify this segmentation.

Major Accomplishments:

- Publications of original research
- Helped create software ecosystem for EM reconstruction services
- Helped manage Fly EM project to achieve publications in prestigious journals such as Nature
- Designed and managed the creation of a software and analysis pipeline that achieved cutting-edge results in neuronal reconstruction

CONSULTANT (PLAZA CONSULTING LLC) JOHNS HOPKINS, APPLIED PHYSICS LAB
2015-2016

Provide advice for the IARPA MICrONS project with a focus on how to extract neural connectivity information from electron microscopic images.

BIOINFORMATICS SPECIALIST JANELIA RESEARCH CAMPUS, HHMI
2010-2012

Conducted research in machine learning and algorithms to improve the efficiency of extracting neural connectivity information from electron microscopy images.

SENIOR ENGINEER ADVANCED TECHNOLOGY GROUP AND IMPLEMENTATION GROUP, SYNOPSYS
2008-2010

Overview: Research and development of electronic design automation (EDA) solutions for the optimization of computer chips.

Roles and responsibilities:

- Researched and developed strategies to optimize circuits to speedup mathematical transformations (as part of the Advanced Technology Group)
- Explored novel algorithms to improve physical chip design
- Researched strategies to improve runtime of logic synthesis algorithms
- Developed multi-threaded software solutions
- Software documentation and presentations

Major Accomplishments:

- Patent and paper publication for work in logic synthesis (2011)
- Achieved significant runtime reduction in logic synthesis algorithms
- Self-initiated a tutorial presentation on multi-core programming

EDUCATION

GEORGETOWN UNIVERSITY
CERTIFICATE OF BUDGET AND FINANCE (DECEMBER 2012)
CERTIFICATE OF PROJECT MANAGEMENT (AUGUST 2011)

UNIVERSITY OF MICHIGAN, ANN ARBOR
PH.D. IN COMPUTER SCIENCE AND ENGINEERING (MAY 2008)
B.S.E. COMPUTER ENGINEERING (APRIL 2003) (GPA: 3.9 SUMMA CUM LAUDE)

TECHNICAL EXPERTISE

Proficiency in C/C++, Python, multi-threaded programming

Proficiency in computer architecture, computer chip design, computer algorithms, image segmentation, machine learning, graph-based data structures

Experience with Go language, web programming, design of RESTful interfaces, interacting with SQL databases, Matlab, and interactive GUI programming (VTK, Qt)

PROFESSIONAL ACTIVITIES

Project Management Profession (PMP): 2013-present

Co-organized DVID Workshop and Hackathon, Janelia 2016

Co-organized EM Connectomics Workshop and Hackathon, Janelia 2015

Technical Program Committee member: International Workshop on Enabling Science from Big Image Data 2014; GLSVLSI 2011

Conference/Journal Peer Reviews: DAC, TCAD, TODAES, TC

SELECTED OPEN-SOURCE SOFTWARE

Neuroproof: Lead Author – Toolkit for Graph-based Image Segmentation and Analysis

DVIDSparkServices: Lead Author – Apache Spark framework for large-scale, 3D image processing including an image segmentation algorithm

FiresideChat: Lead Author – A Firebase JavaScript chat application

DVID: Contributor (implemented graph database interface, C++ interface library) – Distributed, versioned, image-oriented, datastore

Gala: Contributor – Python tool for segmenting nD images

SELECTED RECENT TALKS

HIGH-RESOLUTION CIRCUIT RECONSTRUCTION, JANELIA 2016
“Large-scale EM Connectome Reconstruction in the Adult Fly Brain”

SIMONS FOUNDATION, NEW YORK 2016 (INVITED TALK)
“Toward an Affordable Connectome”

SPARK SUMMIT EAST, NEW YORK 2016
“Mapping Brain Connectivity through Large-scale Segmentation and Analysis”

RDA EUROPE WORKSHOP ON INFRASTRUCTURE TO UNDERSTANDING THE HUMAN BRAIN, PARIS 2015 (INVITED TALK)
“Large-scale EM Connectome Reconstruction in the Adult Fly Brain”

APPLIED NEUROSCIENCE SEMINAR, HOPKINS APL 2015 (INVITED TALK)
“Large-scale EM Connectome Reconstruction in the Adult Fly Brain”

WVU HPC DAY, MORGANTOWN, WV 2015 (INVITED TALK)
“Fly EM Infrastructure, DVID, and the Janelia Computation Environment”

ICCAD CONFERENCE, 2014
“"Protecting Integrated Circuits from Piracy with Test-Aware Logic Locking”

NOTABLE MANUSCRIPTS

Neural Connectomics
“Synaptic Circuits and Their Variations within Different Columns in the Visual System of Drosophila”, Takemura *et al*, *PNAS*, 2015.

"Toward large-scale connectome reconstructions", Stephen Plaza, Louis Scheffer, Dmitri Chklovskii, *Current Opinion in Neurobiology*, 2014.

"A Visual Motion Detection Circuit Suggested by Drosophila Connectomics", Takemura *et al*, *Nature*, 2013.

Machine Learning
“Large-scale Electron Microscopy Image Segmentation in Spark”, Stephen Plaza, Stuart Berg, *arXiv.org*, 2016.

“Fully-Automatic Synapse Prediction and Validation on a Large Data Set”, Gary Huang, Louis Scheffer, Stephen Plaza, *arXiv.org*, 2016.

"Small Sample Learning of Superpixel Classifiers for EM Segmentation", Toufiq Parag, Stephen Plaza, Louis Scheffer, *MICCAI*, 2014.

"Graph-based active learning of agglomeration (GALA): a Python library to segment 2D and 3D neuroimages", Juan Nunez-Iglesias, Ryan Kennedy, Stephen Plaza, Anirban Chakraborty, William Katz, *Frontiers in Neuroinformatics*, 2014.

"Minimizing Manual Image Segmentation Turn-Around Time for Neuronal Reconstruction by Embracing Uncertainty," Stephen Plaza, Louis Scheffer, Mathew Saunders, PLOS ONE, 2012.

Hardware
“Solving the Third-Shift Problem in IC Piracy with Test-aware Logic Locking”, Stephen M. Plaza, Igor L. Markov, *TCAD*, 2015.

"Multi-mode Redundancy Removal," Stephen M. Plaza, Prashant Saxena, Thomas Shiple, Pei-Hsin Ho, *ISQED, 2011.* **(Patent 2011012167, 2011)**.

"Low-latency SAT Solving on Multicore Processors with Priority Scheduling and XOR Partitioning" Stephen M. Plaza, Igor L. Markov, Valeria Bertacco, *International Workshop on Logic Synthesis (IWLS), Lake Tahoe, CA, June 2008.*

"Optimizing Non-Monotonic Interconnect using Functional Simulation and Logic Restructuring," Stephen M. Plaza, Igor L. Markov, and Valeria Bertacco, pp. 95-102,*ISPD, 2008.* **(Best Paper Award)**

"Architecting a Reliable CMP Switch Architecture," Kypros Constantinides, Stephen Plaza, Jason Blome, Bin Zhang, Valeria Bertacco, Scott Mahlke, Todd Austin, and Michael Orshansky, *Transactions on Architecture and Code Optimization (TACO), 2007.*