Stephen M Plaza, PhD, PMP

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Objective: I am looking for a part-time consulting position. I have technical expertise in variety of areas: software/hardware systems, advanced algorithms and datascience, bioinformatics, and semi-conductors. My experiences in leading interdisciplinary, international teams and my diverse background in fields from datascience to transistor optimization allows me to tackle unique and challenging problems in both research and production settings.

Education

Certificate in Budget and Finance,	December 2012
Certificate in Project Management,	August 2011
Georgetown University	
Ph.D. in Computer Science and Engineering,	May 2008
University of Michigan, Ann Arbor	
B.S.E. Computer Engineering,	April 2003
University of Michigan, Ann Arbor	
(GPA: 3.9–Summa Cum Laude)	

Work Experience

Janelia Farm Research Campus, *2010 to present*
Howard Hughes Medical Institute

Overview: I lead an elite scientific team in the quest to unlock the mysteries of neural connenctivity in the fly brain. My role was first as a **bioinformatics specialist** and later as a **project manager** (2012-current).

Roles and responsibilities:
- Technical lead: provide guidance to software developers and researchers in the areas of machine learning, software design, and so-called Big Data.
- Project manager: manage a large interdisciplinary team of over 20 people with a multi-million 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 a publication in the prestigious *Nature* journal
- Designed and managed the creation of a software and analysis pipeline that achieved cutting-edge results in neuronal reconstruction
- Stayed within project budget

Synopsys Implementation Group/Advanced Technology Group *2008 to 2010*

Overview: Research and development of electronic design automation (EDA) solutions for the optimization of computer chips as a ***Senior Engineer***.

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

Areas of 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 datastructures

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

Professional Activities

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

Active reviewer for TCAD

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

Project Management Institute Washington DC member (PMI-WDC)

Software Examples

[NeuroProof](): Lead Author -- Toolkit for Graph-based Image Segmentation and Analysis

[DVID](): Contributor (implemented graph database interface) – Distributed, versioned, image-oriented, datastore

[Gala](): Contributor -- Python tool for segmenting nD images

[Buildem](): Contributor -- CMake and other scripts to help build software within FlyEM (strategy applicable to other software packages)

[Raveler](): Contributor -- Software for annotating and editing large, segmented image data

Notable Publications

Neural Connectomics

"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

"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

"Protecting Integrated Circuits from Piracy with Test-Aware Logic Locking", Stephen M. Plaza, Igor L. Markov, *ICCAD*, 2014.

"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.*