

# PROFESSIONAL SUMMARY

ESWAR SIVARAMAN

This document is, in a way, a silent word of thanks for all the learning opportunities that I have enjoyed here at Oklahoma State University, in these past  $3\frac{1}{2}$  years as a Ph.D. student; it is also a summary, not of my expectations when I entered the door, but rather, of my aspirations when I leave.

I love mathematics and more generally, learning new ideas just for the pleasure of it. I pursue all my interests very tenaciously, and would like to start my own think-tank where one would be free to pursue whatever interests they have. It appears that I will need some gray hair before I can venture thus, and meantime, I would like the support of another establishment to pursue my research interests, some of which are summarised below:

**Ph.D. Research:** My current research is on business process modeling and the correctness issues that arise therein. This is especially relevant for the growing interest in *workflow management*, which aims for automated control and coordination of business processes, based on process models that are executed by a workflow management system. Most process models incorporate constructs to model behaviors like sequential control, concurrency, asynchronism, and choice. However, the ease of today's graphical modeling languages allows for the danger of introducing control flow anomalies and behavioral inconsistencies like deadlock, livelock, imperfect termination, multiple repetitions, etc. My research is aimed at bridging the gap between expressive modeling languages and effective implementation technologies by designing a Petri-net theoretic framework for formalizing business process models, analyzing the process's design for logical and syntactic correctness, and deriving measures of performance related to cost, quality, service, or speed.

**Neural Networks:** This is a subject that excites me very much, and given a choice, it will be the first subject that I will teach. I am looking forward to completing some earlier research in machine learning that has been put *on-hold*, while I focus on my dissertation requirements. There is much to be discovered here, as regards applications of neural networks to problems in optimization, quality control, plant layout, etc.

**Caustics:** This is the name that I have given to the science of discovering CAUSAL relationships in processes, using STATISTICS. It is an interesting idea that aims to discover cause & effect relationships, by comparing observed correlations in data with that implied by a graph-theoretic description of interactions between the variables.<sup>1</sup>

**Design of Experiments:** I am also interested in continuing my M.S. thesis research on orthogonal arrays and optimal design plans, and exploring applications of the Method of Symmetric Constructions, a technique I devised for building screening designs of any factor-level combination.

In all the years that I have worked as a teaching assistant and in interacting with students, I have observed that everyone is brilliant, but, not everyone is aware of it. To this end, I would very much like to teach, and stimulate in others the enthusiasm that I have for learning. After all, *learning* is finding out what you already know, *doing* is demonstrating that you know it, and *teaching* is reminding others that they know just as well as you.<sup>2</sup>

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<sup>1</sup> *Cause and Correlation in Biology*, Bill Shipley(2000); *Causality, Prediction, and Search*, Peter Spirtes et al.(2001)

<sup>2</sup> *Illusions: The Adventures of a Reluctant Messiah*, Richard Bach (1977)