Instituto Tecnológico de Costa Rica
Área Académica de Ingeniería en Computadores

Proyecto de Diseño en Ingeniería en Computadores

Requirements Specification

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February 20, 2018

1 Introduction

1.1 Purpose

The purpose of this research is to explore the design of Application-Specific Instruction Set Processors (ASIPs) for error-tolerant applications.

1.2 Scope

This research concerns both application selection and application optmization. For this, ASIP configurations using specific approximated instructions for the selected applications are expected to be delivered.

This project is expected to help make approximated computing a more solid tendency.

This research is not merely concerned about

This research is restricted to

1.3 Product overview

1.3.1 Product perspective

The system will consist of a studied and selected application where one of its sections or just a instruction is replaced for a approximated version to improve execution time, area, and power consumption while keeping an acceptable error threshold.

Besides specific contrains of the selected application itself, the desired error threshold will be the only constrain of the system.

The system will have the following interfaces

1.3.2 Product functions

The ASIPs that will be integrated to an specific application will have the following characteristics:

- Adjustable error threshold:
- Adjustable resource consumption:
- Scalable:

1.3.3 User characteristics

Since approximated computing is still in its infancy, a lot of research and testing is still needed, so the users of the developed ASIPs are the same research groups of which this project is a part of. The research group members posses, in general, these characteristics:

- Technical knowledge:
- Access to specialized tools:

1.3.4 Limitations

The following limitations are considered for the ASIPs developed:

- Performance gain:

1.4 Definitions

Table 1 contains the specific terms used in this document.

Table 1: Definitions

Term	Definition
ASIP	Application ..