

Netbench: Framework for Evaluation of Packet Processing Algorithms

Introduction

New packet processing algorithms are often published in renowned proceedings and journals. In this situation, it may be surprising that there exists no common platform for researchers to evaluate and compare their algorithms using the same data sets.

The Netbench Framework aims to address the stated issues by providing common platform for implementation and evaluation of packet processing algorithms, specifically:

- IP lookup (longest prefix match),
- Packet classification,
- Regular expression matching.

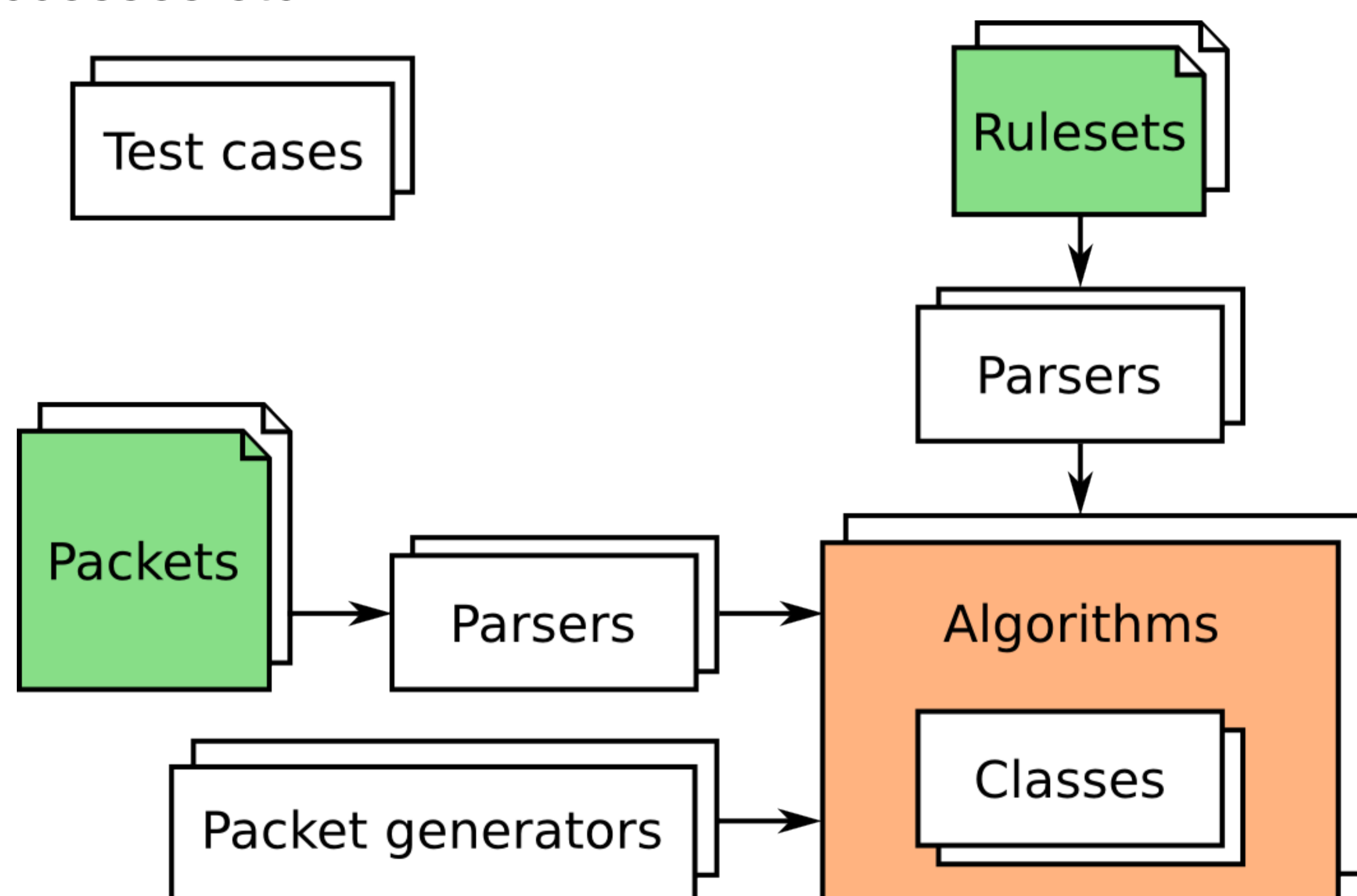
The goal of the Netbench is to serve as an independent platform for researchers seeking:

- easy way to implement their algorithms,
- comparison with implementation of other approaches,
- access to testing data sets (e.g. router and firewall tables).

Netbench is implemented as Python library for rapid prototyping and easy insight into algorithm principles. It is available as open-source: www.fit.vutbr.cz/netbench

Design

Framework is designed to support experimental work, not the deployment in the network. Set of Python classes simplify common tasks, such as loading packets and data sets from files etc. Each test provides text output with the information about the memory consumed by algorithm's data structures, average/worst case number of memory accesses etc.

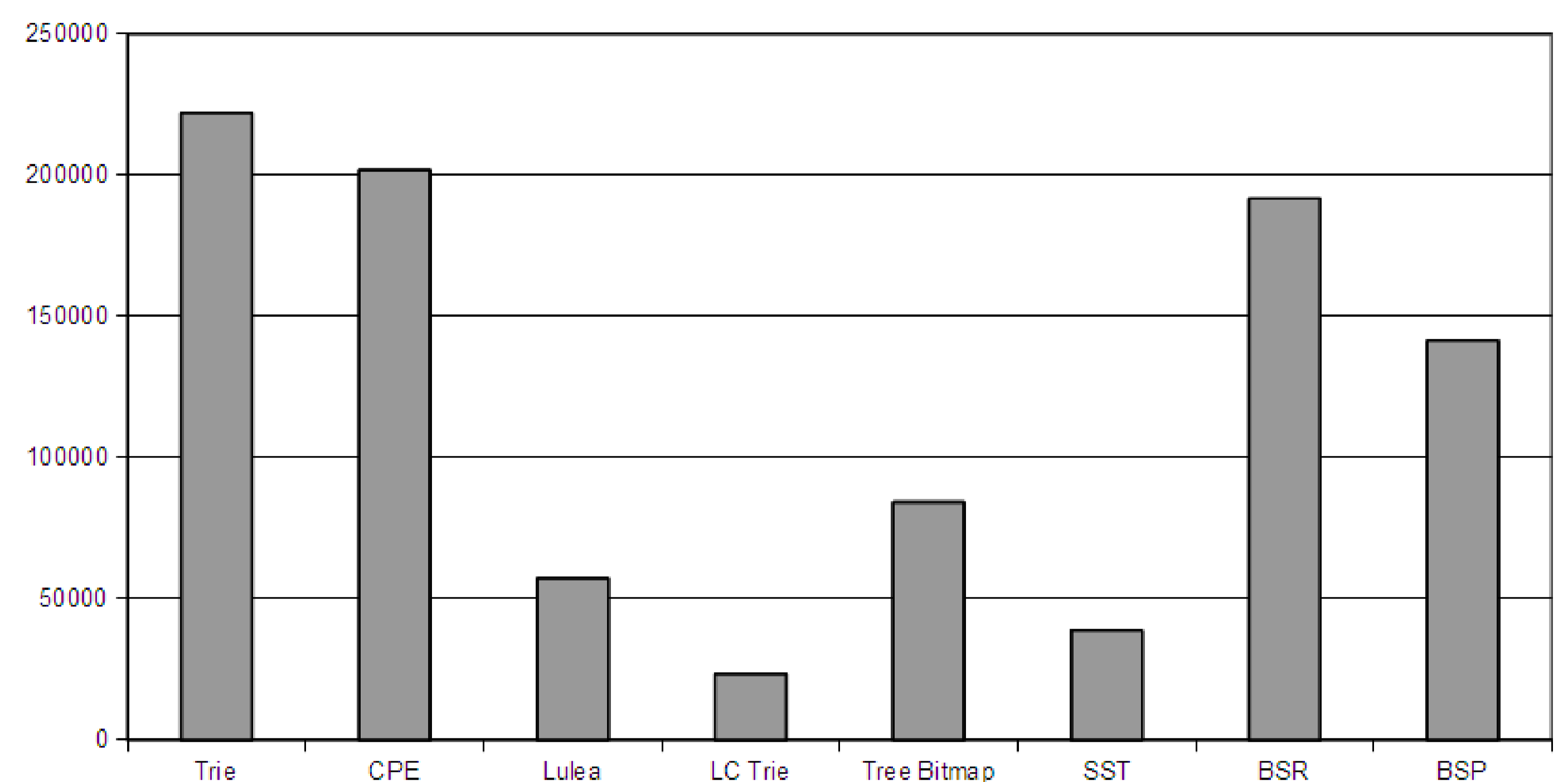


Algorithms & Data Sets

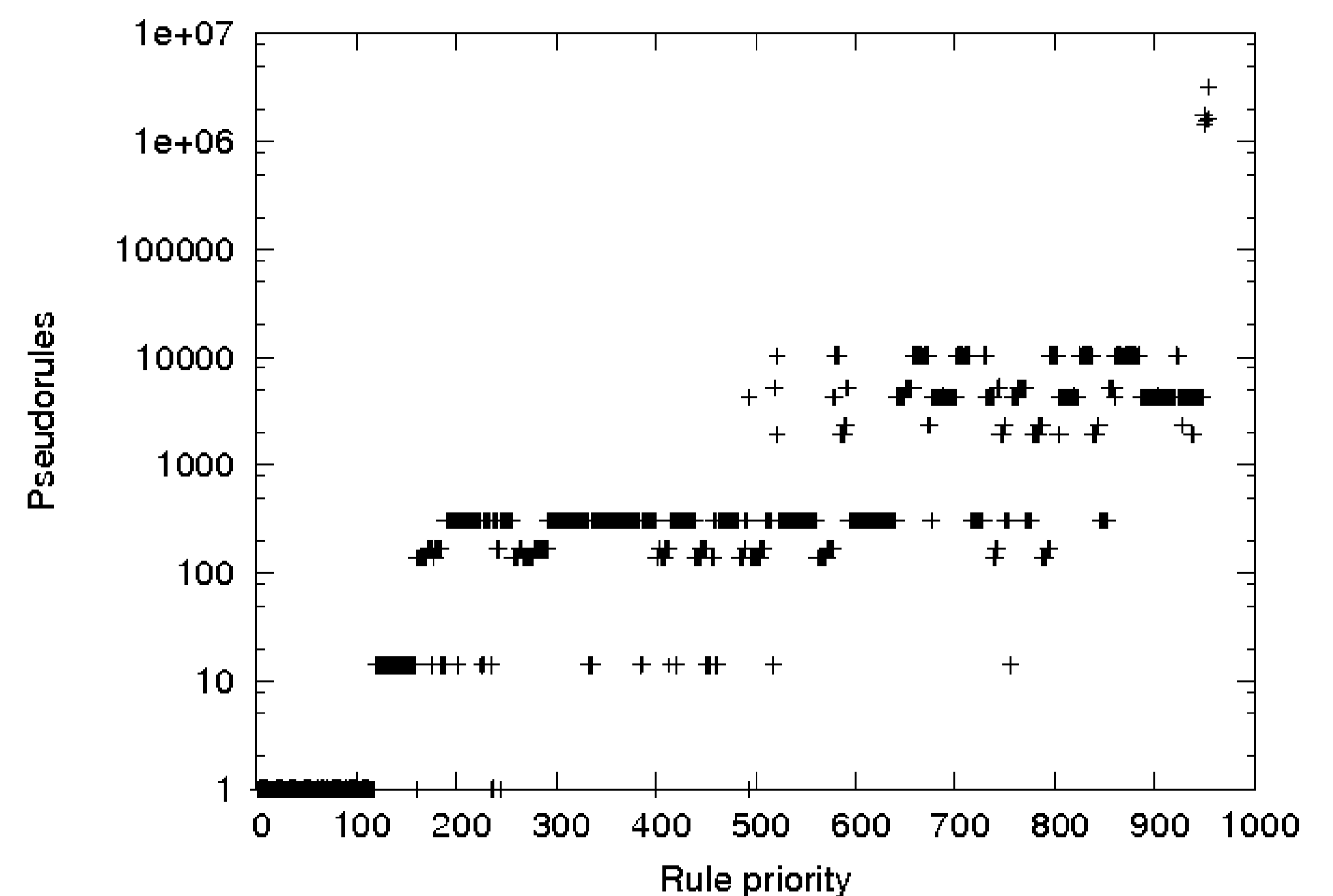
- 10 LPM, 4 classification and 7 RE matching algorithms
- IPv4 and IPv6 routing tables
- Classification rule sets generated by ClassBench
- Snort and Bro regular expressions

Use Cases

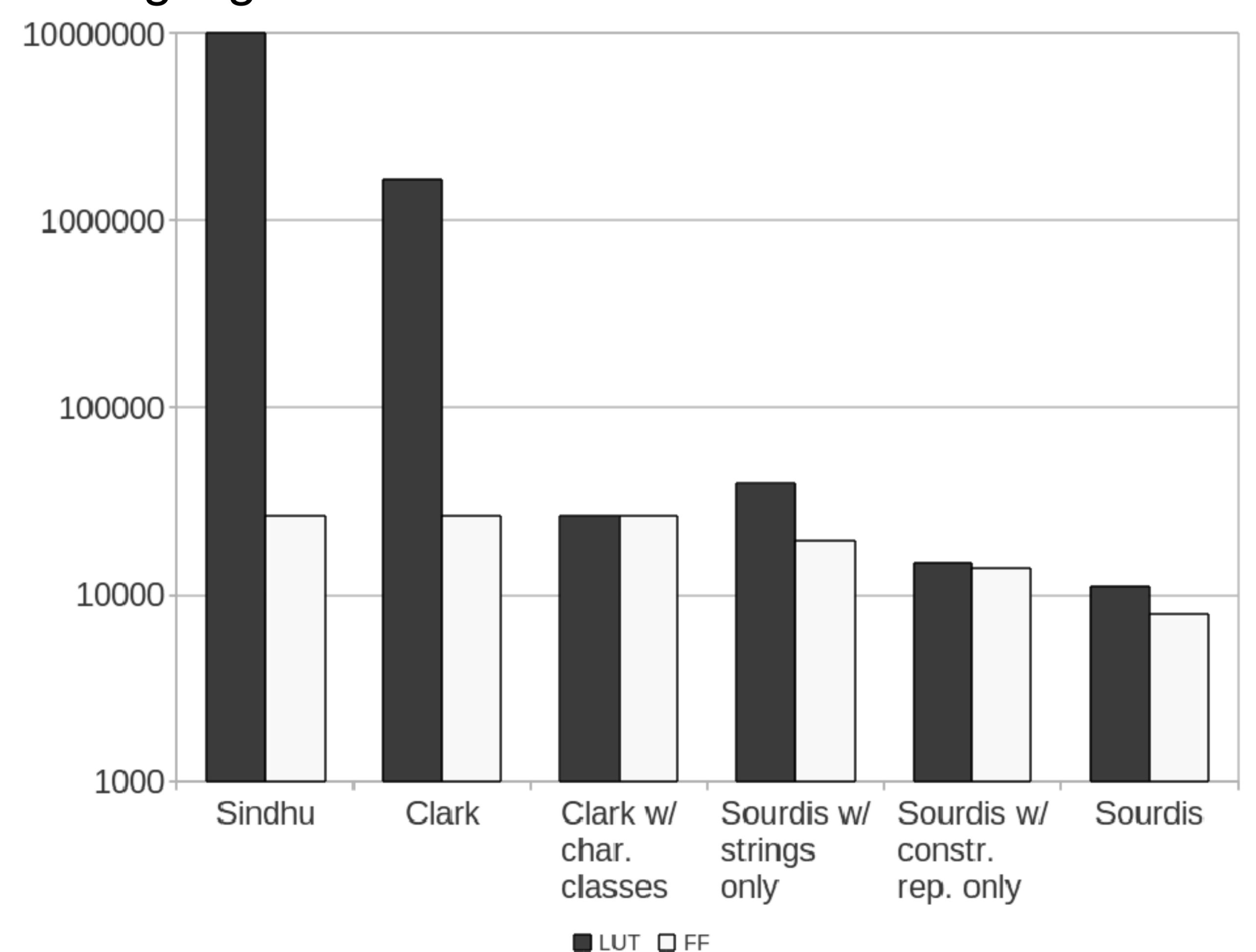
Use case 1: Compare memory of LPM algorithms



Use case 2: Analyze classification rule set



Use case 3: Measure FPGA logic resources for RE matching algorithms



We invite researchers to participate!