# ContextFree Wars: The RedisGraph Strikes Back

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**Figure 1: Episode IV: A New Hope**

## ABSTRACT

A long time ago in a galaxy far far away...

## 1 INTRODUCTION

CFPQ is a way to use grammars.
CFPQ is widely spread and gain popularity.
Application for real-world data analysis is a problem.
All-pairs is a classical problem/ What about single-source?
Full-stack support of CFPQ.
The following contribution.

(1) Single-source matrix-based CFPQ algorithm
(2) Evaluateion of thw versions of this algorithm.
(3) RedisGraph extending to provide full-stack support of CFPQ.

## 2 PRELIMINARIES

Coomon definitions which will be used in this paper.

### 2.1 Graphs

labelled digraph, matrices, ...

### 2.2 Languages

Grammars, normal form, ...

### 2.3 Matrix-Based Algorithm

Description

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## 3 MATRIX-BASED SINGLE-SOURCE CFPQ ALGORITHM

New algo description.

### 3.1 Implementation Details

Algo implementation details: python, graphBLAS, smthng else? Two version.

### 3.2 Algorithm Evaluation

And comparison. With combinators, GLL (.NET version).
Tables.
Results.

## 4 REDISGRAPH EXTENDING

### 4.1 Cypher

parser extending, proposal, ....

### 4.2 RedisGraph

CFPQ to matrix expressions, etc.
Limits, restrictions, etc.

### 4.3 Evaluation

Small basic evalustion on real-world graph (geo?). In order to show, that performance is reasonable.

## 5 CONCLUSION

Conclusion
Future research
Formal translation of Cypher to linear algebra. In order to formalize limita and restrictions.
Experiments on unified evaluation of RPQ and CFPQ (tensors?)
More applications.