Detection of street signs in videos in a robot swarm

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Project: S17-IO-3022,June 10, 2017

Extracting and identifying traffic signals from the videos captured by Robot swarms to help in recognizing the pattern and benchmarking the performance of the setup.

Keywords: Cloud, I524

Report: https://github.com/cloudmesh/sp17-i524/tree/master/project/S17-IO-3022/report/report.pdf
Code: https://github.com/cloudmesh/sp17-i524/tree/master/project/S17-IO-3022/code

1. INTRODUCTION

For test purpose we created some mobile videos of traffic in a simulated traffic setup. All saved video files are uploaded on the Hadoop HDFS [1]. Batch processing is enabled on the input video files to search for key images, namely the red, green and yellow signals in the images using the OpenCV [2] library's Template matching functionality. Hadoop Map reduce [1] is used for processing and analysis of the images in the videos and getting a count of the how many red or green or yellow signals are encountered.

collectd [3] is used for benchmarking of the setup with Apache Hadoop using various sized data sets and number of nodes.

2. TECHNOLOGY USED

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Technology Name	Purpose
Hadoop [1]	map reduce
OpenCV [2] Pattern matching in video	
ansible [4]	Automated deployment
collectd [3]	Collection of statistics of setup for benchmarking

3. PLAN

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Week	Work Item	Status
week1	Ansible deployment script for Hadoop setup	planned
week2	Ansible deployment script for OpenCV setup	planned
week3	Creating sample videos	planned
week4	OpenCV template matching script	planned
week5	Deployment and test of basic setup	planned
week6	Ansible deployment of collectd	planned
week7	Performance measurement of setup and report creation	planned
week8	Exploring different setup	planned

4. DESIGN

TBD

5. DEPLOYMENT

TBD

6. BENCHMARKING

TBD

7. DISCUSSION

TBD

8. CONCLUSION

TBD

9. ACKNOWLEDGEMENT

REFERENCES

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[2] itseez.com, “Opencv- open source computer vision,” Web Page, 2017. [Online]. Available: http://opencv.org/
[3] “collectd - the system statistics collection daemon,” Web Page. [Online]. Available: https://collectd.org/
[4] “Ansible, deploy apps. manage systems. crush complexity,” Web Page. [Online]. Available: https://www.ansible.com/