

# 매니코어 환경에서 PARSEC 벤치마크 ROI 확장성 분석

An Analysis of ROI Scalability on PARSEC  
Benchmark for Many-core System

서동주, 경주현, 임성수 / 국민대

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commisori28@gmail.com

# Introduction

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Increase cpu core number of commercial chip

Ex) Xeon Phi



Need Operating system scalability

# Introduction

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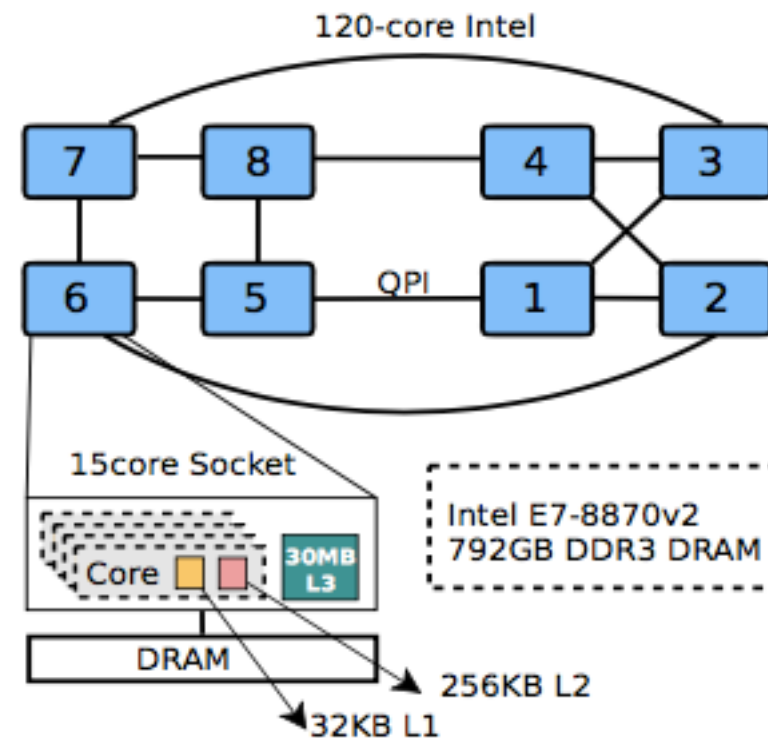
We decided to research about scalability,  
especially when running multithreaded programs.

So,  
analyze the scalability of the actual kernel first.

# Environment

We used 120-core xeon-phi machine,  
4.11-rc8 kernel version, ubuntu and  
PARSEC 3.0 benchmark.

운영체제	배포판	PARSEC 버전	입력 데이터
Linux 4.11-rc8	Ubuntu 14.04	PARSEC 3.0	Native



# Workload

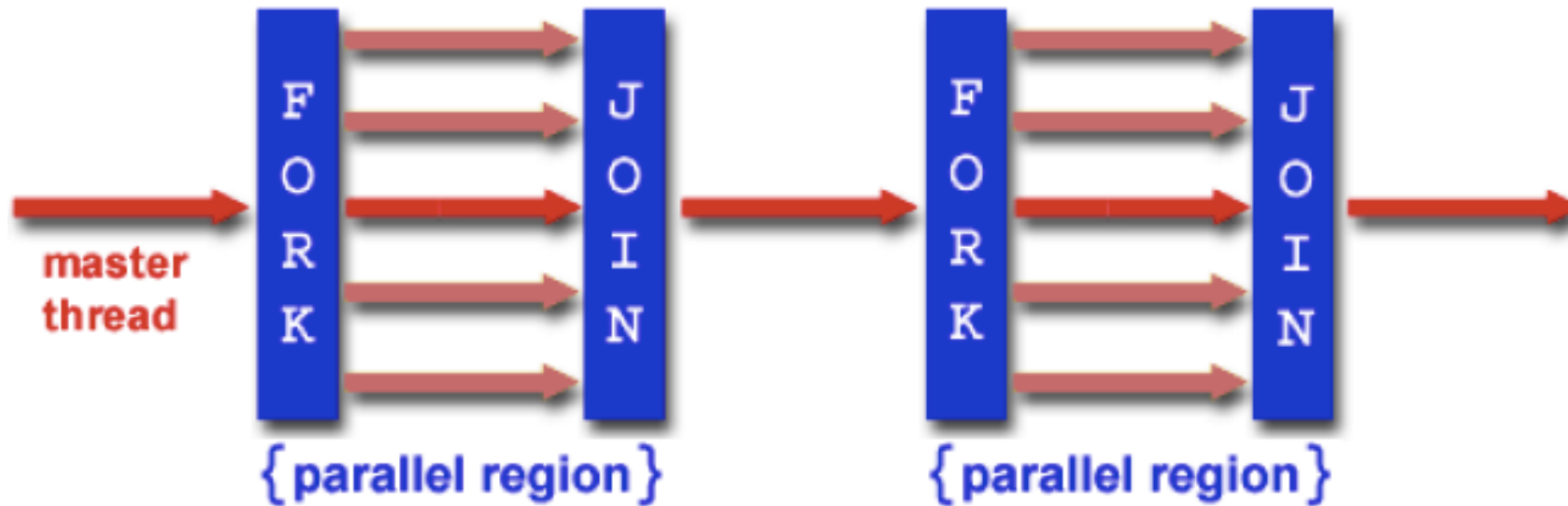
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워크로드명		데이터 공유	동기화 수	병렬화 모델
blackscholes	재정 분석	낮음	8	data-parallel
bodytrack	컴퓨터 비전	높음	2661	data-parallel
canneal	Engineering	높음	34	unstructured
dedup	엔터프라이즈 저장소	높음	160598	pipeline
ferret	유사 검색	높음	345778	pipeline
freqmine	데이터 마이닝	높음	990025	data-parallel
raytrace	재정 분석	낮음	23	data-parallel
streamcluster	데이터 마이닝	낮음	129918	data-parallel
swaptions	재정 분석	낮음	23	data-parallel

# ROI ( Region of Interest )

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The interval in which the actual parallelization is performed



# Result

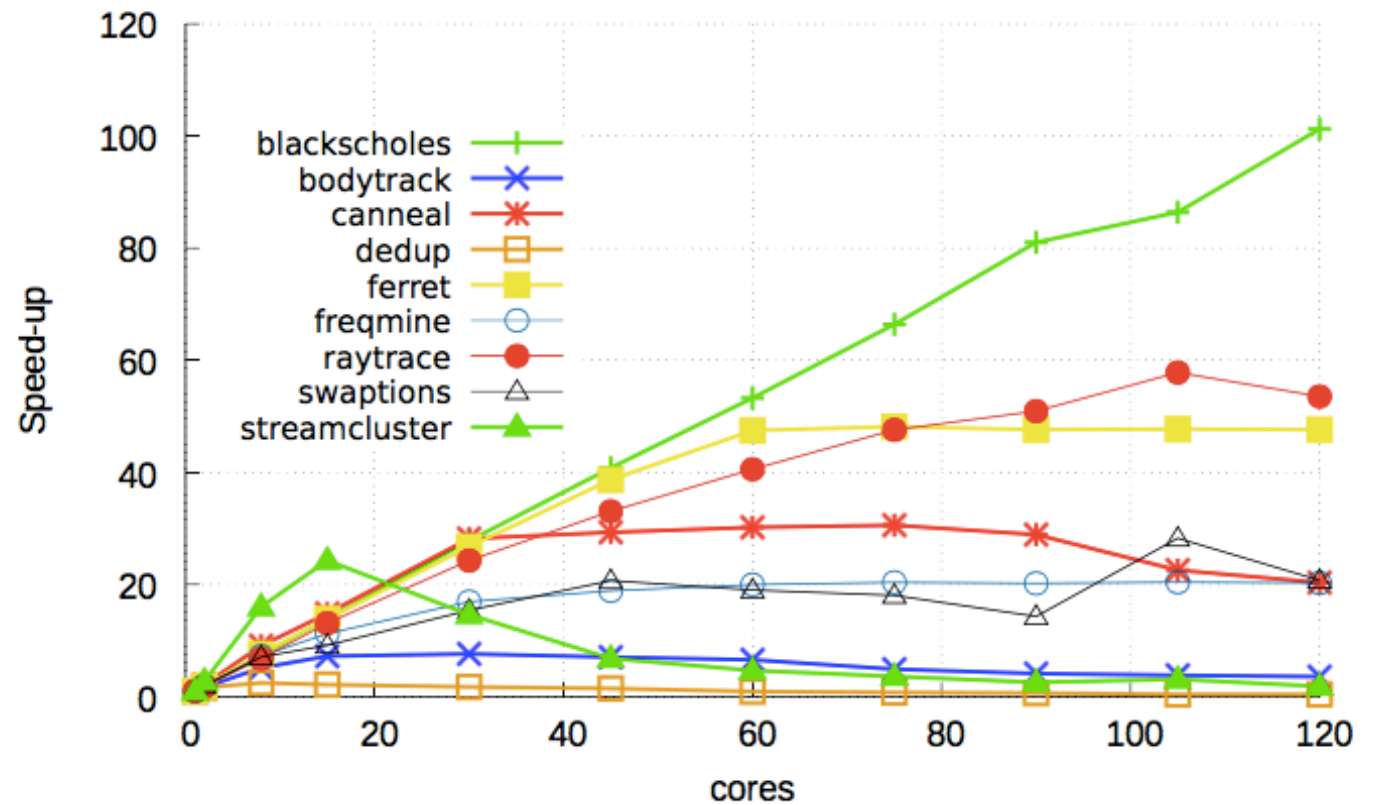
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We were able to divide the results into two groups based on the degree of data sharing.

데이터 공유	
높음	낮음
bodytrack, dedup, canneal ferret, freqmine(A)	streamcluster raytrace, swaptions(B)

# Result

Although there was a difference in the experimental results, we confirmed that all workloads except for blackscholes had problems with scalability.





Thank you