



# Strategies to Save Energy of Mobile Devices and Increase Performance of Mobile Apps Using Cloud Computing

## PhD Proposal

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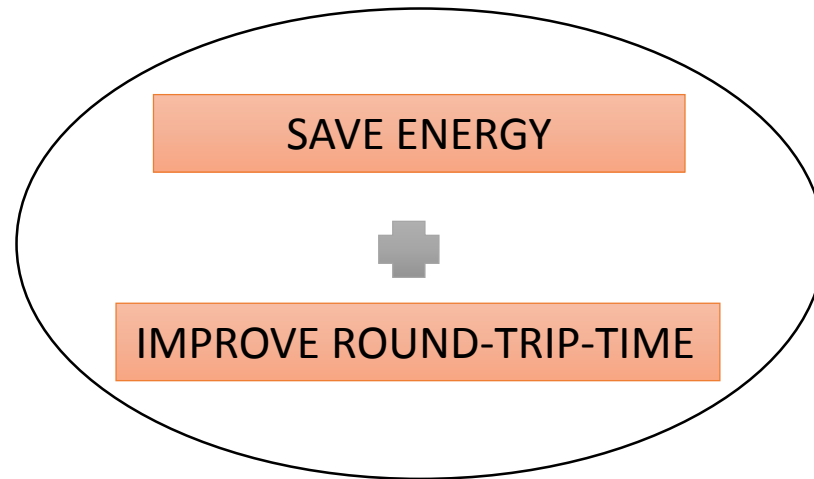
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# Problem





# Goals





***Offload or Not Offload?***



***Offload or Not Offload?***



***How to Distribute Partitions?  
(SmartRank)***



***What Apps?***



***Offload or Not Offload?***

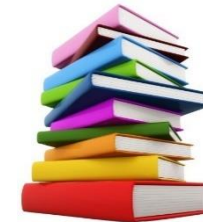


***How to Distribute Partitions?  
(SmartRank)***



# *What Apps?*

## **Benchmark Apps used in Mobile Cloud Computing Research: A Systematic Mapping Study**





# Mapping Study Process



[Petersen, 2007]

## ***Research Question***

What are the benchmark offloaded apps used in MCC and which characteristics define them?

## ***String Search***

mobile AND cloud AND (offload OR offloading)

## ***Engines***

- IEEEXplore
- ACM
- Scopus
- ScienceDirect
- SpringerLink
- + Manual Search





# Mapping Study Process

## ***Screening - Exclusion Criteria***

### ***1º Filter (title and abstract)***

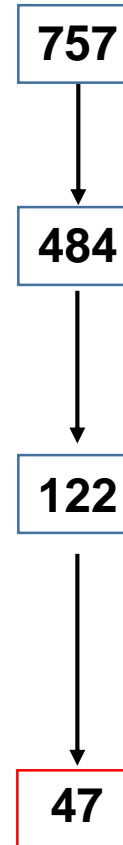
- Studies did not address or just mentioned MCC and/or offloading;
- Studies only available as abstracts or presentations; and
- Duplicate studies.

### ***2º Filter (title and abstract)***

- Articles of theoretical nature, ie without controlled experiment
- Articles that are state of art, taxonomics, open issues, surveys

### ***3º Filter (Introduction and Evaluation)***

- Exclude articles that did not use benchmark apps





# Facets

## • Category

- Antivirus Application
- Text Search
- Video Streaming
- Download Application
- Web Application
- Standalone Utility
- Games
- Mathematical Tools
- **Imaging Tools**
  - **Face Recognition**
  - **Face Detection**
  - Editor
  - Augmented Reality

## • Evaluated Resource

- Memory
- CPU
- Energy
- **Time**
  - Time to Process
  - Communication Time
  - **Elapsed Time**

## • Platform

- Android x86
- **Android**
- Windows
- Blackberry
- Iphone
- Maemo 5 Linux
- Simulation

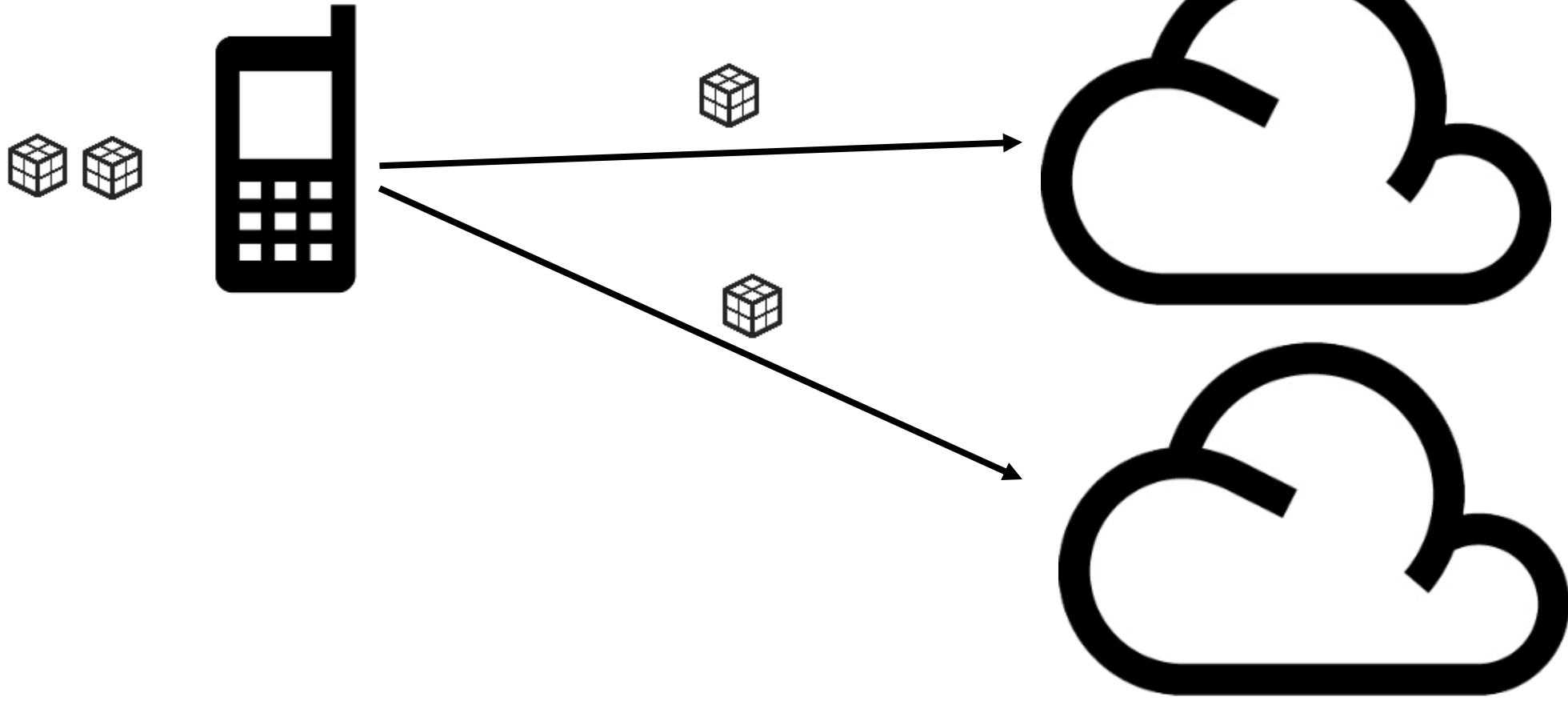


# Downloadable Apps

Nome	Category	Url
N-Queens	Game	<a href="https://play.google.com/store/apps/details?id=com.memmiolab.queens&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.memmiolab.queens&amp;hl=pt-BR</a>
Gobang	Game	<a href="https://play.google.com/store/apps/details?id=com.aidem.android.gobang&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.aidem.android.gobang&amp;hl=pt-BR</a>
AndTweet	Download App	<a href="https://play.google.com/store/apps/details?id=com.xorcode.andtweet&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.xorcode.andtweet&amp;hl=pt-BR</a>
OpenCV Face Detection	Imaging Tools (Face Detection)	<a href="https://play.google.com/store/apps/details?id=org.opencv.samples.facedetect">https://play.google.com/store/apps/details?id=org.opencv.samples.facedetect</a>
Photoshoot	Game	<a href="https://play.google.com/store/apps/details?id=photo.booth.app">https://play.google.com/store/apps/details?id=photo.booth.app</a>
Google Goggles	Imaging Tools (Face Recognition)	<a href="https://play.google.com/store/apps/details?id=com.google.android.apps.unveil">https://play.google.com/store/apps/details?id=com.google.android.apps.unveil</a>
Ebay	Web Applications	<a href="https://play.google.com/store/apps/details?id=com.ebay.mobile&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.ebay.mobile&amp;hl=pt-BR</a>
Navegador Chrome	Web Applications	<a href="https://play.google.com/store/apps/details?id=com.android.chrome&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.android.chrome&amp;hl=pt-BR</a>
Youtube	Video Streaming	<a href="https://play.google.com/store/apps/details?id=com.google.android.youtube&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.google.android.youtube&amp;hl=pt-BR</a>
Bing Search	Web Applications	<a href="https://play.google.com/store/apps/details?id=com.microsoft.bing&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.microsoft.bing&amp;hl=pt-BR</a>
Flickr	Web Applications	<a href="https://play.google.com/store/apps/details?id=com.yahoo.mobile.client.android.flickr&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.yahoo.mobile.client.android.flickr&amp;hl=pt-BR</a>
Facebook	Web Applications	<a href="https://play.google.com/store/apps/details?id=com.facebook.katana&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.facebook.katana&amp;hl=pt-BR</a>
Linpack for Android	Mathematical Tools	<a href="https://play.google.com/store/apps/details?id=com.greenecomputing.linpack&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.greenecomputing.linpack&amp;hl=pt-BR</a>
CNN Breaking US & World News	Web Applications	<a href="https://play.google.com/store/apps/details?id=com.cnn.mobile.android.phone&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.cnn.mobile.android.phone&amp;hl=pt-BR</a>
ESPN SportsCenter	Web Applications	<a href="https://play.google.com/store/apps/details?id=com.espn.score_center&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.espn.score_center&amp;hl=pt-BR</a>
Twitter	Download App	<a href="https://play.google.com/store/apps/details?id=com.twitter.android&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.twitter.android&amp;hl=pt-BR</a>
Last.fm	Web Applications	<a href="https://play.google.com/store/apps/details?id=fm.last.android&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=fm.last.android&amp;hl=pt-BR</a>
Chess Game	Game	<a href="https://play.google.com/store/apps/details?id=com.kiwi.chess&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.kiwi.chess&amp;hl=pt-BR</a>
Physics2d	Imaging Tools (Augmented Reality)	<a href="https://code.google.com/p/physics2d/">https://code.google.com/p/physics2d/</a>
Bolso Xadrez, Jogo de Xadrez	Game	<a href="https://play.google.com/store/apps/details?id=com.neatapps.chess">https://play.google.com/store/apps/details?id=com.neatapps.chess</a>
Virus Scan	Antivirus Applications	<a href="https://play.google.com/store/apps/details?id=com.pablossoftware.virusscan&amp;hl=pt-BR">https://play.google.com/store/apps/details?id=com.pablossoftware.virusscan&amp;hl=pt-BR</a>
Adobe Photoshop Express	Imaging Tools (Editor)	<a href="https://play.google.com/store/apps/details?id=com.adobe.psmobile">https://play.google.com/store/apps/details?id=com.adobe.psmobile</a>
Google Gesture Search	Standalone Utility	<a href="https://play.google.com/store/apps/details?id=com.google.android.apps.gesturesearch">https://play.google.com/store/apps/details?id=com.google.android.apps.gesturesearch</a>
Visidon Applock	Imaging Tools (Face Recognition)	<a href="https://play.google.com/store/apps/details?id=visidon.AppLock">https://play.google.com/store/apps/details?id=visidon.AppLock</a>
MyExpenses	Standalone Utility	<a href="https://play.google.com/store/apps/details?id=org.totschnig.myexpenses">https://play.google.com/store/apps/details?id=org.totschnig.myexpenses</a>



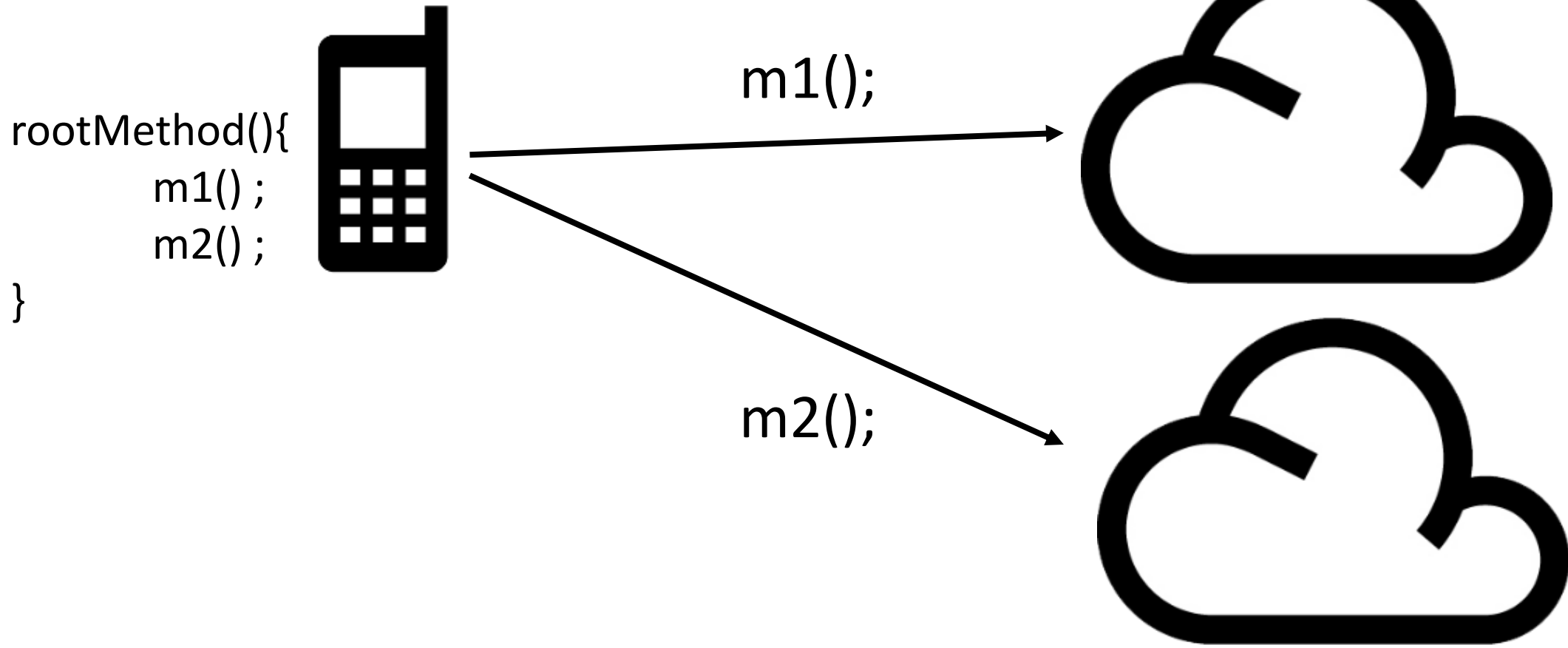
# How to distribute?



SmartRank 1.0 -> Input Granularity



# How to distribute?



SmartRank 2.0 -> Method Granularity



```
rootMethod(){  
    m4();  
    m5();  
}
```

