# High Throughput Opportunistic Cooperative Device-to-Device Communications With Caching

## ABSTRACT

Device-to-device (D2D) communications enable direct communications between two user devices without traversing the base station (BS) or core network, and are promising to achieve the high throughput goal of 5th generation (5G) cellular networks. The typical use-cases of D2D communications include cellular offloading, content distribution, and relaying, etc. where content delivery service has attracted considerable attention recently, since it accounts for the majority of the explosive increasing traffic load. To achieve the potential in providing high throughput for cellular networks by device-to-device (D2D) communications, the interference among D2D links should be carefully managed.

## EXISTING SYSTEM

In Existing System, Motivated by the observation that a large amount of content delivery requests are asynchronous but redundant, i.e., the same content is requested repeatedly at different times, caching has long been studied as a technique to improve performance of wired networks. Due to the rapid reduction in cost of storage device, caching at the wireless edge is also recognized as a promising way for delivering popular contents nowadays, which can improve the network throughput, energy efficiency and the quality of user experience (QoE).

## DIS ADVANTAGES

- A large amount of content delivery requests are asynchronous but redundant.
- rapid reduction in cost of storage device.

## PROPOSED SYSTEM

In Proposed System, an opportunistic cooperation strategy for D2D transmission by exploiting the caching capability at the users to control the interference among D2D links. We consider overlay in band D2D, divide the D2D users into clusters, and assign different frequency bands to cooperative and non-cooperative D2D links. To provide high opportunity for

cooperative transmission, we introduce a caching policy. To maximize the network throughput, we jointly optimize the cluster size and bandwidth allocation, where the closed-form expression of the bandwidth allocation factor is obtained. Simulation results demonstrate that the proposed strategy can provide 400% _ 500% throughput gain over traditional D2D communications when the content popularity distribution is skewed, and can provide 60% _ 80% gain even when the content popularity distribution is uniform.

## ADVANTAGES

- To improve performance of wired networks.
- It improves the network throughput, energy efficiency and the quality of user experience (QoE).

## SYSTEM REQUIREMENTS

**H/W System Configuration:-**

| | | |
|---|---|---|
| Processor | - | Pentium –III |
| RAM | - | 256 MB (min) |
| Hard Disk | - | 20 GB |
| Key Board | - | Standard Windows Keyboard |
| Mouse | - | Two or Three Button Mouse |
| Monitor | - | SVGA |

**S/W System Configuration:-**

| | | |
|---|---|---|
| Operating System | : | Windows95/98/2000/XP |
| Application Server | : | Tomcat5.0/6.X |
| Front End | : | HTML, Jsp |
| Scripts | : | JavaScript. |

| | | |
|---|---|---|
| Server side Script | : | Java Server Pages. |
| Database | : | MySQL 5.0 |
| Database Connectivity | : | JDBC |