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# Content-Based File Sharing in Detached MANETs for Existing Social Network

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**ABSTRACT:** Present peer-to-peer (P2P) file distribution methods in mobile ad hoc networks (MANETs) can be divided into three categories: local broadcasting based advertisement (push) and discovery (pull)-based and contact-based. The first two techniques can simply be time consuming and low ability to accommodate when the demand grows higher. They are mainly developed for linked MANETs, in which end-to-end relativity among nodes is preserved. The contact-based methods adjust to the adaptable nature of disconnected MANETs but fail to regard the social contents of portable nodes, which can be subjugated to advance the file searching effectiveness. In this paper, we suggest a P2P content-based file distribution system, namely SPOON, for disconnected MANETs. The system uses an interest mining algorithm to derive a node's concern from its files for content-based file searching. For competent file searching, SPOON assembles similar-interest nodes that frequently gather with each other as a set. It takes the benefit of node portability by designating constant nodes, which has the most common contact with neighbourhood members, as community coordinator for hunt within the community and highly-mobile nodes that visit other communities frequently as community ambassador for search in other communities. An interest-oriented file searching scheme is projected for high file searching efficiency. Supplementary strategies for file transfer, request-completion and avoiding occurrence of loops and node churn consideration are measured to further enhance the file searching competence. We developed a virtual environment using JAVAFX and MYSQL to test our system. The test outcome show that our system considerably lowers communication cost and improves file searching success rate compared to present methods.

**KEYWORDS:** MANETs, mobility, coordinator, ambassador, community.

## I. INTRODUCTION

In MANETs consisting of digital devices, nodes are constantly moving, forming disconnected MANETs with opportunistic node encountering. Such transient network connections have posed a challenge for the development of P2P MANETs. Traditional methods supporting P2P MANETs are either flooding-based or advertisement-based. The former methods rely on flooding for file searching. However, they lead to high overhead in broadcast. In the latter methods, nodes advertise their available files, build content tables, and forward files according to these tables. But they have low search efficiency because of expired routes in the content tables caused by transient network connections. Also, advertising can lead to high overhead. Some researchers further proposed to utilize cache/replication to enhance data dissemination/access efficiency in disconnected MANETs. However, nodes in these methods passively wait for contents that they are interested in rather than actively search files, which may lead to a high search delay.

We propose an interest-oriented file searching and retrieval scheme that utilizes an interest-oriented routing algorithm (IRA). Based on P3, IRA selects forwarding node by considering the probability of meeting interest keywords rather than nodes. The file searching scheme has two phases: Intra- and intercommunity searching. In the former, a node first queries nearby nodes, then relies on coordinator to search the entire home community. If it fails, the intercommunity searching uses an ambassador to send the query to a matched foreign community. A discovered file is sent back through the search path or the IRA if the path breaks. SPOON is novel in that it leverages social network properties of both node interest and movement pattern. First, it classifies common-interest and frequently encountered nodes into social communities. Second, it considers the frequency at which a node meets different interests rather than different nodes in file searching. Third, it chooses stable nodes in a community as coordinators and highly mobile nodes that travel frequently to foreign communities as ambassadors. Such a structure ensures that a query can be forwarded to the

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community of the queried file quickly. SPOON also incorporates additional strategies for file pre fetching, querying-completion and loop-prevention, and node churn consideration to further enhance file searching efficiency.

## II. RELATED PRIOR WORK

P2P File Sharing in MANETs:

We have mention the former approach of the P2P file sharing algorithms designed for connected MANETs.
There are two methods of data transmission in connected MANETs.
i. Flooding Based Methods: The flooding-based methods, exploits the mobility of nodes within a geographic area to disseminate web content among neighbours. Passive Distributed Indexing (PDI) is a general-purpose distributed file searching algorithm.
ii. Advertisement Based Methods: It disseminates contents and requests in crossed directions to ensure their encountering. Each file holder regularly broadcasts an advertisement message to inform its surrounding nodes about holed files. Though the advertisement based methods reduce the overhead of flooding based methods, they still generate high overhead for advertising and cannot guarantee the success file searching due to mobility of nodes.

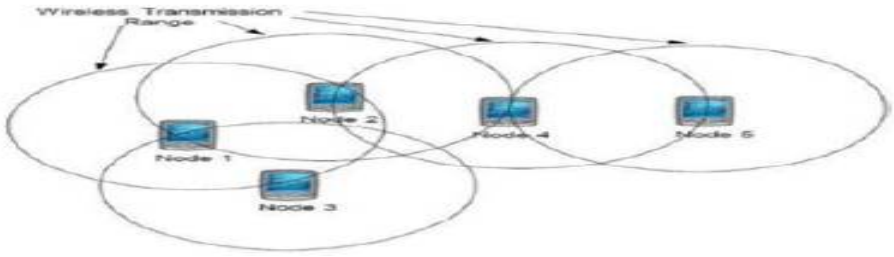


Fig 1: Data transmission in Connected MANETs

A. P2P File Sharing in Disconnected MANETs

Fig 2: Data transmission in Disconnected MANETs.

The disconnected MANETs are featured by sparse node density and intermittent node connection, which makes previously, introduced methods infeasible in such networks. So, we further present the approach of P2P file sharing methods for disconnected MANETs i.e. Social Network-Based Method.
Social Network-Based Methods: This modus provides content based services utilizing the long term neighbouring relationship between nodes. It groups nodes with frequent contacts and selects nodes that connect different groups as

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ambassadors, which are responsible for intercommunity communication. The one which has the least mobility is elected as the community coordinator responsible for intra-community file searching and the node which has the highest mobility is elected as the community ambassador responsible for intercommunity file searching. The ambassador of one community communicates with the coordinator of other community for querying and fetching of data. The retrieval of data is based on the node's interest and mobility.

## III. PROBLEM DEFINITION

To design a Peer-to-Peer content based file sharing system, namely SPOON, for disconnected MANETs. The system uses an interest extraction algorithm to derive a node's interests from its files for content-based file searching. For efficient file searching, SPOON groups common-interest nodes that frequently meet with each other as communities. It takes advantage of node mobility by designating stable nodes, which have the most frequent contact with community members, as community coordinators for intra-community searching, and highly mobile nodes that visit other communities frequently as community ambassadors for intercommunity searching. An interest-oriented file searching scheme is designed for high file searching efficiency.

## IV. PROPOSED ALGORITHM

In this social network-based P2P content file sharing system in disconnected mobile ad hoc Networks. SPOON considers both node interest and contact frequency for efficient file sharing. We introduce four main components of SPOON: Interest extraction identifies nodes' interests; Community construction builds common-interest nodes with frequent contacts into communities. The node role assignment component exploits nodes with tight connection with community members for intra community file searching and highly mobile nodes that visit external communities frequently for intercommunity file searching; the interest-oriented file searching scheme selects forwarding nodes for queries based on interest similarities. SPOON also incorporates additional strategies for file pre fetching, querying-completion, and loop-prevention, and node churn consideration to further enhance file searching efficiency. The system deployment on the real-world GENI Orbit platform and the trace-driven experiments prove the efficiency of SPOON.

### A.SPOON Protocol Design

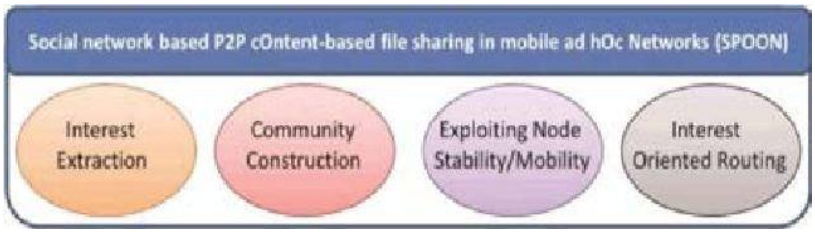


Fig 3: Components of SPOON.

Interest Extraction

The node contents can be classified into different interest categories. First we derive a node's interests from its files. The interest facilitates queries in content-based file sharing and other components of SPOON. Collective of nodes that share common interests and meet frequently is grouped as a community in which a node having high probability to categorized as a community. The search is made by the node which has the high probability to find interested files in its community. If this fails the node can rely on nodes that frequently travel to other communities for file searching. We build the community for efficient file searching.

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Community Construction
SPOON classifies nodes with common interests and frequent contacts into a community to facilitate interest oriented file searching. Nodes with multiple interests belong to multiple communities.

Node Role Assignment
Social network consists of several nodes. So, we find the nodes based on some traits like node's mobility, strength and distance and based on this the nodes are assigned a responsibilities to query the data from the mobile node. We assign two roles namely *Community Coordinator t*o maintain the index of similar interested files of mobile nodes and *Community Ambassador* to query and retrieve the content from dissimilar community .

Community Coordinator
We define node that has tight contact frequency with other community members as the community coordinator.

## V. CONCLUSION AND FUTURE SCOPE

SPOON considers both node interests and contact frequency for efficient file sharing. We introduce four main components of SPOON: Interest extraction identifies nodes' interests; Community construction builds common-interest nodes with frequent contacts into communities. The node role assignment component exploits nodes with tight connection with community members for intracommunity file searching and highly mobile nodes that visit external communities frequently for intercommunity file searching; The interest-oriented file searching scheme selects forwarding nodes for queries based on interest similarities. SPOON also incorporates additional strategies for file prefetching, querying-completion, and loop-prevention, and node churn consideration to further enhance file searching efficiency. The system deployment on the real-world GENI Orbit platform and the trace-driven experiments prove the efficiency of SPOON. In future, we will explore how to determine appropriate thresholds in SPOON, how they affect the file sharing efficiency, and how to adapt SPOON to larger and more disconnected networks.

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