IOSR Journal of Electronics and Communication Engineering (IOSR-JECE)
e-ISSN: 2278-2834, p-ISSN: 2278-8735
PP 59-68
www.iosrjournals.org

Mobility Location Prediction: A review of Techniques used in Mobile Ad-Hoc Network

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Abstract *: Mobility prognostication for individual way is a fascinating topic. Mobility foretelling in Mobile River advertizement -hoc meshing is a simpleton and effective dodging to predict when the exploiter will leave from the current emplacement and where he will move to next future position. The prediction of the mobility of node s in mobile ad hoc networks becomes a key solution for the delivery of data in real time operations; which enables the reclamation of the path s just prior to the modify of the topology which occurs a seamless and well-organized data delivery that meet the expected value of the real time constraints. The mobility prediction is very significant for equally homogeneous networks and heterogeneous networks, determined by applications in mobility management, smooth handoffs, shout admission control, and resource reservation for improved timber of serving. One way to reference the truth of node mobility is devising proactive solvent that make use of mobility prediction algorithms to estimate the cause of the nodes. At the application level, drug user mobility prediction in combination with user's profile may provide the user with enhanced location-based wireless services, such as route counsel, local traffic info and on-line advertising. In this newspaper we present the most significant mobility prediction techniques for Edouard Manet focusing on their major design rule and description.*

Keywords*— MANET Networks, Mobility Prediction, Clustering, Mobility Models, Network Scalability***.**

1. INTRODUCTION

Mobile ad hoc networks are self-organizing and self-configuring multi-hop wireless networks capable of adaptive re-configuration when they are affected by node mobility. A mobile network is a collection of peer nodes with equal networking capabilities which are able to function as mobile routers, to forward data and maintain routes[1]. Mobile data packets can be forwarded in multi-hops from the source nodes to the destination nodes with no need for underlying fixed network infrastructure (e.g. routers and base stations).As a result, MANETS networks are not constrained in their deployment by any need for underlying infrastructure and they can be deployed rapidly in situations where wireless access to a backbone is impossible and an infrastructure is difficult to install (e.g., disaster recovery). In addition to the traditional problems of wireless networks (bandwidth optimization and transmission quality enhancement) mobile ad hoc networks introduce new issues such as ad-hoc addressing, enlarged power constraints, self-configuration with adaptive reconfiguration, as system topology is changed by node mobility[1]. Also, because of the real occasion nature of ad hoc network applications (e.g., collaborative mobile computation, battlefield infrastructure, tragedy search and rescue operations, disaster recovery), data travel is routed under timing constraints requiring proactive route construction and maintenance procedures.

Mobility prediction absolutely affect the service-oriented aspects (network point) of MANETS networking as well as the application-oriented aspect (application point)[2]. At the network point, accurate mobility prediction may be critical to tasks such as call admission manage, congestion manage, reservation of network resources, pre-configuration of tasks and QoS provisioning. At the application point, user mobility prediction in combination with user's profile may provide the user with enhanced location-based wireless tasks, such as route guidance, local traffic information, tourism services, on-line publicity, etc. LTE, wireless ad hoc and hybrid network will support real -time multimedia apps; the need for mobility prediction is of great significance. Due to the importance of mobility prediction in ad hoc networks, there is a major amount of study work on the subject, while in some cases the projected techniques follow ideas or approaches used in fixed infrastructure type networks[4].

However, prediction approaches for fixed infrastructure type networks are usually inappropriate in the case of ad hoc networks since: (1) Mobility prediction in fixed wireless networks is based on the use of a static fundamental network communications, while in ad hoc networks mobility prediction must be done in a extremely active situation, where the network topology is altering and the mobility of other nodes should be taken into reflection. (2)MANETS are typically applied in emergency operations and military background, where future node actions cannot be based on a record of previous movements because of the dissimilar requirements of each circumstance. (3) Because mobility prediction scheme for ad hoc networks are executed on the mobile nodes, they must be more light-weight than the methods for fixed wireless system, typically perform on the base stations[3][4].

In this paper we shall present the most important mobility prediction schemes for MANET's networks in the literature, focusing on their main design principles and characteristics and the mobility models used in prediction[1][4].

Properties of MANETS: MANETs have the following features that should be considered in designing:

- Dynamic Topology - In the node mobility, the topology of mobile multi-hop MANETS networks changes endlessly and randomly. The linkage connectivity bounded by the terminals of the network dynamically varies in an arbitrary manner and is based on the closeness of one node to another.
- Bandwidth-MANETs have significantly lower bandwidth capacity in comparison with fixed networks. The use of air interface has higher bit error rates, which aggravates the normal link value.
- Energy - All mobile devices will obtain their energy from batteries, which is a limited resource. Therefore the energy conservation acts a vital role in MANETs. This resource has to be used very efficiently[1].
- Security - The nodes and the computing data in MANETs are uncovered to the same threats like in other networks. In addition there are particular threats, e.g. denial of service attacks.

Mobility prediction methods for MANETS: Figure 1 shows mobility prediction methods for MANETS networks are categorized in three ways [5].

1.1 Movement history based prediction methods- which estimate the "future" location of a mobile user based on his movement history (i.e., previous user movement patterns) [1][2].

1.2 Physical topology based mobility prediction methods-which base their prediction on utilize of the characteristic of MANET's physical topology and therefore, have need of the use of a Global Positioning System (GPS) to obtain exact node location and mobility information [1][4].

1.3 Logical topology based mobility prediction method-which decide a logical topology of the MANET (e.g. a clustering structure) over which they apply their prediction process [2][3]. On the contrary to the previous category, it does not need correct location, mobility information and thus they do not make utilization of a GPS.

Predicated values of node location and mobility information may be obtained by other means (e.g., with signal attenuation against travelled distance to estimate internodes distances or inferring the mobility of each node from how different is the neighborhood of the node over time). Figure 1 demonstrates the various types used in the mobility prediction.

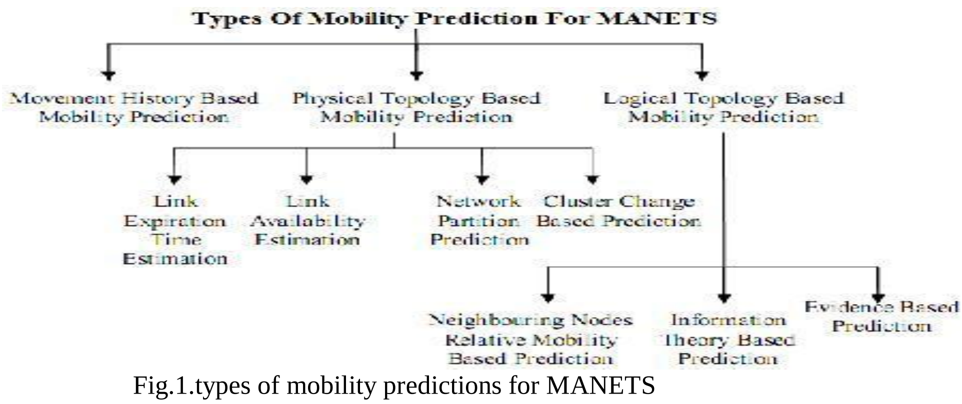

Fig.1.types of mobility predictions for MANETS

2. MOBILITY PREDICTION TECHNIQUIES

In this section, we describe various techniques which can be used on mobile systems, to monitor a nodes mobility and the various types of mobility models use for prediction[1][2][6], based on the narrative on the modeling of human mobility[2][7].

A. Movement History Based Mobility Prediction

A number of motion prediction algorithms mainly for fixed wireless system have been proposed which predict the "future" location of a mobile user based on the user's movement history (i.e., previous user movement patterns). The algorithms use diverse node mobility models (e.g., the movement circle form, the movement track form, the Markov chain form) to model the user mobility actions, utilize the fact that the movement of a mobile user consists of a random and a regular movement part. The reliability in individual movement behavior derives from certain activities that are repeated within a defined period of time (e.g., going to work every day or visiting a family member every week). The projected idea consists of regularity-pattern recognition algorithms and motion prediction algorithms and they are very critical for supporting high quality services for mobile applications [2]. For illustration, by predicting the next location of a mobile user according to his/her movement history, direction-finding could be predetermined, recourses may be pre-allocated, services may be pre-assigned at the new location before the user moves into it. This process fails in the case that there are unpredictable changes in user's behavior. Also, there are supplementary troubles when these methods are applied in MANETs because of the nature of those networks applications (military environments, urgent situation search and save operations). Due to self-motivated topology and non regular need sin such applications node mobility prediction based on the movement history is not always feasible and/or efficient [3]][4].

B. Physical Topology Based Mobility Prediction

1) Link expiration time estimation

By exploiting the fact that in real world condition, a mobile end node's progress is not completely random but the node travels in a predictable way, we can calculate the future state of the network topology[14]. By calculating the next state of the network topology, the course reconstruction can be completed effectively prior to route breaks and without generating excessive control over head[5][14]. We see that there subsist a wireless link between two nodes p and q of a MANET if and only if p are q are within the broadcast range, say r, of each other, i.e., the distance between their placement is smaller than r. In a mobility prediction process is presented for estimating the expiration time of the wireless link between two adjacent ad hoc nodes as a way to enhance various uncast and multicast routing protocols. By calculating the link expiration instance for any link on a route R, the route's R expiration time is estimated as the least of the link expiration time values of all links on R. Due to this prediction, tunnels are reconfigured before they disconnect. The estimation of the linkage expiration instance or in other words, the time period T that two's MANETS nodes being within mutual broadcast range, remain linked, is done as chase. Consider (xi,yi) and (xi,yi) be the location of nodes i and j, respectively. Consider also vi and vj be the speeds, θi and θj be the affecting

$$T = \frac{ab + cd) + \sqrt{(a^2 + c^2)TX^2 - \quad ad - cb)^2}}{(a^2 + c^2)} \qquad (1)$$

Where a = vi cos θi – vj xi - xj, c = vi sin θi – vj sin θj, d = yi - yj.

The exact location and mobility information of each mobile node can be given by a GPS tool. In cases that the use of GPS to figured exact location information is not possible, then approximate values for inter-node distances are calculate as follows: Transmission power samples are measured periodically from packets received from a node's neighbor. From this knowledge each mobile node can compute the rate of change for a particular neighbor's power point. Therefore, the time that the power level drops below the acceptable value can be fairly easily estimated. On the other hand, the link expiration instance method requires exact location and mobility information while using power attenuation for distance estimation is not accurate.

The above mobility prediction method works well in the case of simple node mobility patterns with no sudden changes in the moving directions and speeds, and when the mobility information (obtained from GPS) is perfect[1][3]. The process was applied to some of the most popular wireless ad hoc routing protocols and simulation results showed that these protocols performed better than their counterparts without Mobility prediction. Delivered to destinations and the control packets were utilized more efficiently. Specifically, results show that the Flow Oriented Routing uncast Protocol (FORP) and Distance Vector (DV) unicast protocol improved with mobility prediction offer packet delivery ratios of 0.9. Also, the On-Demand Multicast Routing Protocol (ODMRP) with mobility prediction performs better than its counterpart without prediction and offers packet delivery ratio of 0.9 (i.e., 10% of packet loss) for define speeds.

2) Link availability estimation

A probabilistic link availability model which can predict the future status of a wireless link is defined. It says that as the probability that there is an active link between two mobile nodes at time t+T given that there is an active link between them at time t. Note that a link might experienced one or more failures and recoveries in the time interval between t and t+T. Note that the metric is not practical as a criterion to select a path among two nodes, since if a link fails[14], then rerouting should immediately take place rather than waiting for the failed link to become available again. But, the link accessibility standard is useful during the clustering process as it can be used by mobile nodes to select more reliable neighbors to form more stable clusters[3][7][8].

In a prediction-based link availability estimation and a routing metric in terms of path reliability based on the link availability estimation are offered. The basic idea of this estimation is as pursued. Given an estimation T of the expiration time (i.e., the continuously available time) for an active link {v,u} between two nodes v and u at time t (computed e.g., by using the link expiration time algorithm of the accessibility L(T) of link {v,u} is classify as[7]:

L(T)=Pr { the link {v,u} lasts from time t to time t+T given that the link is available attime t}which indicates the probability that the link {v,u} will be continuously available from time t to time t+T. The calculation of L(T) is divided into two parts: the link availability L1(T) when the speeds and moving directions of the nodes v and u remain unchanged from time t to time t+T, and the link availability L2(T) for the other cases. That is, L(T) = L1(T) + L2(T). Using the estimation of L (T), a routing metric based on L (T) × T is given in that offers improved network performance, according to simulation results.

3) Group mobility and network partition prediction

Network partition occurs when groups of mobile nodes follow various mobility blueprint, which cause the separation of the network into disconnected sub networks. Predicting the happening and the instance of network partitioning allows MANET applications to improve their performance by acting in advance and preventing disruptions caused by the partitioning[3][10].

A method for network partition prediction which exploits group mobilitypatterns to compute the remainder time before separation is proposed . In order to explain the basic idea of the process, we think about a simple case of a network consisting of two mobility groups Ci and Cj each moving with velocities Vi = (vxi, vyi) and Vj= (vxj, vyj) respectively. The relative mobility among them is to gain by fixing one group, say Ci, as stationary. Then the efficient rate Vij at which Cj is moving away from Ci is agreed by:

$V_{ij} = V_j+(-V_i)$, where $V_{ij} = (vx_{ij}, vy_{ij}) = (vx_j-vx_i, vy_j-vy_i)$ Assume that the two groups cover a circular region of

diameter D, wherein the nodes are regularly dispersed. Suppose that the groups are in ideal overlap. In order for the two cluster to split, Cj must go past a distance of the distance D of Ci 's coverage region. Hence, the instance engaged for the two groups to alter from total overlap to whole separation is follows: $T_{ij} = D/ (vx^2_{ij}+vy^2_{ij})^{1/2}$.

In a network made up of lots of varied mobility groups, whose nodes are initially diffuse and inter-mixed, known the mean group speed, the time of separation can be designed for any pair of mobility groups[10]. The incidence of divider is predicted as a sequence of the normal time of separations among the different pairs of mobility groups in the system. The network partition prediction process uses a low-complexity information clustering algorithm that precisely determine the mobility groups and their mobility parameters as well as the group sponsorship of each mobile node. The problem is that the prediction algorithm suppose that group and node velocities are time invariant, which is not a sensible statement for most MANET purpose[4][9].

4) Cluster change based prediction

In a clustered ad hoc network each mobile node belongs to a cluster while the position of each mobile node is defined with respect to the cluster head of the group. Mobile terminal modify the cluster it belongs to as changes by mobility [3]. The sectorized MANET mobility prediction algorithm is based on the principle that in order to achieve maximum prediction accuracy the prediction process should be restricted to areas of the network with nodes of high cluster change probability. The algorithm begin the sectorized cluster structure i.e., the cluster is separated into three area with respect to the probability of cluster change as follows[3][12]:

i. The No-Cluster Change (No-CC) area of each cluster, which include the nodes of the cluster that are within message range of each other and they do not satisfy the requirements for membership to any adjoining cluster. Thus, for the nodes in the No-CC region clusteralter is not possible.
ii. The Low-Cluster Change (Low-CC) region of each cluster, which enclose the nodes of the cluster that are reachable by all nodes in the No-CC region, either straight, or through other middle nodes belonging to the No-CC region. Thus, for the terminal in Low-CC region the chanceof cluster change is fairly low.
iii. The High-Cluster Change (Hi-CC) region of each cluster, which enclose the nodes of the cluster that are not reachable by any node in the No-CC region

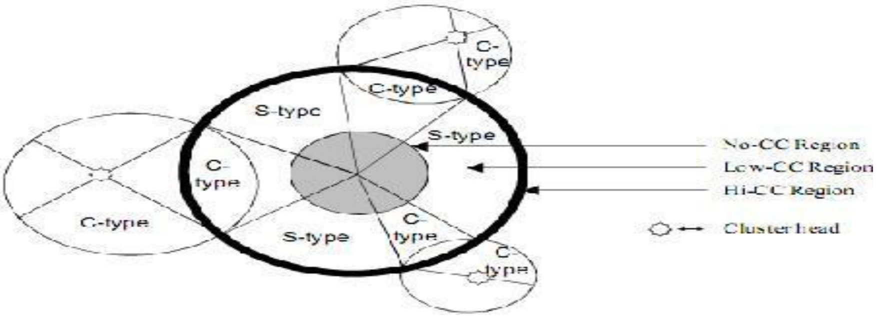

Fig. 2. The sectored cluster structure

The cluster is further separated into sectors shown in figure 2. Two types of sectors are initiate depending on whether or not the sector is adjacent to a neighboring cluster. C-type cluster-sectors that are nearby to neighbor clusters, and S-type cluster-sectors that are not. It is only from C-type group that cluster change is potential. Each C-type cluster-sector is adjacent to only one adjacent cluster and it is only to this cluster that the node can cluster change to. Nodes in S-type cluster-sectors are not aspirant for cluster change as there are no adjoining clusters nearby[3][7].

The cluster sector-numbering plan is used to predict the next cluster change depending on the mobile node's location in the cluster and its moving route in the Hi-CC region. The process uses a GPS to construct the sectors and locate the mobile nodes location. Note that, the cluster-sector numbering method, as a prediction way, may sit on top of any other MANET network clustering algorithm that make utilize.

C. Logical Topology Based Mobility Prediction

1) Neighboring Nodes Relative Mobility Based Prediction

Many researchers have acknowledged the importance of node mobility estimation for building clustering method more stable and less reactive to topological changes of MANET networks. In this mobile terminal form clusters according to a path accessibility criterion[7]. The network is divided into clusters of mobile terminal, that are equally available along cluster inside paths which are expected to be available for a stage of time t with a probability of at least a. The limit of this system are predefined. In addition, it is supposed that the association of each mobile terminal is random and entirely independent of the movements of other mobile nodes. Still, this random walk form cannot always capture some node mobility patterns occurring in exercise in MANETs[3].

MOBIC elects as CHs the mobile nodes which exhibit the lowest mobility in their neighborhood. Each node evaluate the receiving signal strength from its neighbors over the occasion and uses the discrepancy in these values as an indication of how fast this mobile node is moving in relation to the adjacent nodes. MOBIC utilize only the current mobility to decide the most appropriate mobile nodes for CHs. As an extension of MOBIC, also uses the unevenness in receiving signal strength as a hint of district mobility and construct variable-diameter clusters. It uses more example of receiving sign than MOBIC to estimate the forecast mobility, while the prediction model is based on the statement that the future mobility patterns of movable nodes will be accurately the similar as those of the new precedent[12].

2) Information theory based mobility prediction

Information theory based techniques for node mobility prediction, where it focused on the problem of mobile tracking and localization in cellular networks. Later, it is used the basic method of cluster configuration algorithm for MANETs. In their work they assume that a geographical region is divided into circular-shaped regions (virtual clusters) and each mobile terminal knows the virtual cluster where it is presently in[4].

It is a mobility-aware method for cluster formation and maintenance is planned. The main idea in the system is to guess the future mobility of mobile nodes so as to select cluster heads that will exhibit the smallest predicted mobility in contrast to the other mobile nodes. As a result to calculate of node mobility pace, it is used the chance of a mobile terminal having the same mobile terminal in its neighborhood for adequately long time. A lofty probability rate for a mobile terminal indicates either a relatively stationary node or the existence of a group of nodes just about this particular node that show the same mobility pattern. Anything the case is, this mobile terminal is in fact a good applicant for a CH, seeing as in all likelihood, it will serve the identical neighbors for a long time. For approximation the predicted mobility of a mobile end, it is assumed that the movements of nodes are not arbitrary but display a regular pattern, which can be forecast, provided that sufficient “historic” information has been collected for the actions of each mobile end. For the association of the historic evidence and the judgment of prospect mobility based on this record, forecast method from the field of data firmness are used. purposely, the problem of approximation the prospect neighborhoods of a mobile end is reduced to that of predicting the subsequently characters in a text given that we have already seen a particular text context. Then, by using context modeling techniques , the likelihood of stable neighborhood about a node can be reliably approximate. The most significant characteristic of these way is the on-line learning of the probability replica used for forecast the subsequently character/neighborhood. This is necessary in the case of MANETs since the actions of individual nodes as well as the strong association, existing in the actions of these hosts, cannot be easily explain by predefined random models[16]. The process does not make any use of a fixed geographical separation in contrast to previous work and thus, the notion of cells is immaterial to this method. Also for calculate the mobility, the system does not use any special reason hardware such as GPS, but the mobility of each node is incidental from how dissimilar is the zone of the node over moment. Note that the mobility prediction method is of self-governing notice and may be joint with other clustering algorithms to improve the stability of the derived clustering arrangement in the companyof topology change.

3) Evidence based mobility prediction

TheDumpster-Shafer (DS) theory of evidence has attracted considerable attention as an approach that enables combination of different information sources (called evidences) to reach decisions in situations characterized by a high degree of uncertainty[3][17]. In the DS hypothesis, if a probability p is allocate to an event, then 1-p stand for the confidence not assigned to this event. 1-p symbolize lack of knowledge and doubt and it is not necessarily assigned to the conflicting event. The main benefit of the DS hypothesis of evidence is its ability to replica the narrowing of a theory with the accumulation of evidences and to explicitly represent uncertainty in the form of ignorance or reservation of judgment. The DS theory offer the option of giving to dissimilar evidences weights according to their relevance and importance in the final decision. It also give an process, called the Dumpster's rule of grouping, for combining facts.

In the DS theory of evidence is used for user mobility prediction based on the use of contextual information. The process can precisely predict user’s traveling route using knowledge of mobile user’s profile and preferences and analyzed spatial information[17]. Note that information of such background information is very significant for mobile environments because they may adapt their services according to users’ specific demands. Uncertainty of the user’s direction-finding actions is captured by gathering pieces of evidence concerning different groups of candidate future locations. These collection are then sophisticated to forecast the user’s future location, when proof build up using the Dempster’s combination rule. The method does not require the continuation of the past of users’ actions. The forecast means uses the subsequent main class of criteria to predict each mobile node’s next cluster:

i. The physical measure, which utter the mobile node’s physical progress. Such criterion include: the applicant cluster radius (if a cluster has the maximum radius it cannot receive new nodes as members), the links strength with each applicant cluster (this criterion chooses the applicant cluster with whom the mobile node has the maximum number of strong links) and the links potency development with each applicant cluster (this criterion chooses the applicant cluster to which the mobile node gets nearer).

ii. The semantic measure, which are used to choose a cluster when the physical criterion can not do it visibly (e.g., there are several clusters that can be the outlookcluster according to the physical criterion). Such criterion include: the user ask for services (this criterion chooses the applicant cluster that contains the mainly services use by the mobile) and the user profile (this criterion chooses the applicant cluster whose outline is the most applicable to the user outline).

By using the DS theory of proof as a modelling process, the above criterion are weighted according to their significance. Then, the Dempster's rule of grouping is applied to join the dissimilar criterion (evidences) and to choose the appropriate applicant cluster as the mobile node's prospect cluster. The means does not need the use of a GPS, as the signal strength may be used to estimate the link strengths and to estimate the distance among the mobile nodes. The mobility prediction method has been applied to the Zone Routing Protocol and simulation results have exposed its competence.

3. NODE MOBILITY MODELS

One way to use mobility models is location prediction. Location prediction is a standard area of research and has been studied extensively in cellular networks where a central authority tracks nodes' mobility patterns [2,5,15]. In various methods, location prediction is based on short term, short range tracking of nodes. These differ in conditions of the kind of information and quantity of parameters taken into reflection.

A. Extended Mobility Markov Chain

It is composed of Mobility Markov Chain (MMC) and an algorithm for learning a n-MMC out of the trail of mobility traces of an individual[2].This type of extended mobility Markov chain is said as a n-MMC. A MMC form can be exposed by graph or transition matrix. A variety of MMCs possessed memoryless property that the prediction of the future location depends only on the current location[14][15][16]. In the graph illustration, nodes symbolize POIs while arrows signify the transitions among POIs along with the associated probability of performing this transition. In the matrix representation, the row corresponds to the POI of origin and the column the target POI. The value stored in the unit is the probability of the associated transition[2][5].For determining the future next position in accounts for the Next Place Prediction algorithm based on this model.

Algorithm 1: n-MMC Algorithm
Input: a trail of (mobility) traces D, n the number of previous location kept, MinPts the minimum number of traces in a cluster, *E* the maximum radius of a cluster and d.min the merging distance for clusters.
-Preprocess the trail of mobility traces D by deleting moving and redundant traces thus producing D'.
-Run a clustering algorithm on D' to discover the most significant clusters.
-Merge the clusters that share at least a common point. -Merge the clusters that are within d.min distance of each other
-Let *list* POIs be the list of all constructed clusters. -for each cluster Cin *list* POIs *do*
-Compute the *time_interval*, *radius* and *density* of C -end for
-Sort the clusters in *list* POIs by decreasing order according to their densities.
-for each cluster Ci in *list* POIs do
-Create the corresponding state pi in the mobility Markov chain
-end for
-for each mobilitytrace min D' -do
-if the distance between the trace and the center of the -cluster C_i is less than the radius i then
-Update the n -1 previous locations (FIFO) and the current position with C_i
-Label the trace m with then-1previous locations and Ci -else

-Label the trace m with the value "unknown" -end if
-Delete all traces that are "unknown"
-Squash all the successive mobility traces sharing the same label into a single occurrence
-Compute all the transition probabilities between each pair of states of the Markov chain
-return the Mobility Markov chain computed [2]

B. Hidden Markov Models

It is a fused method for predicting human mobility on the basis of Hidden Markov Models. In this the movement location histories is clustered according to their characteristics, and latter trains an HMM for each cluster[7][15]. Every cluster it bring into play only information about the geospatial points (i.e the geospatial coordinate of latitude and longitude) for each visited position[2][15]. Former to the use of HMM models, each of the places in a given series is first preprocessed in order to change the real uninterrupted values connected to the geospatial coordinates of latitude and longitude, into separate codes associated to specific region.

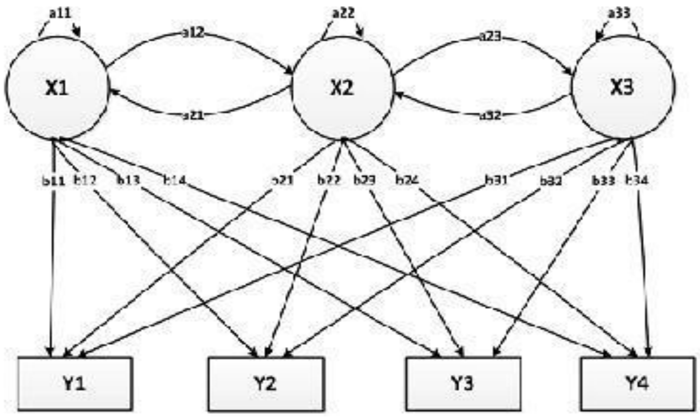

Fig. 3. Example Hidden Markov Model

Figure 3 shows concept of an Hidden Markov model. Random variable x(t), y(t) represent each shape. the value of the seemed location y(t) only depends on the value of the hidden variable x(t), at time t. Conditional dependencies represented by arrows.

C. Random Waypoint Model

It is a mobility model to estimate the MANET routing protocols. Due to its simplicity and broad accessibility, it become a standard mobility model [6][7]. V max and T pause are the two key parameters that decide the mobility actions of nodes. If the V max is small and the pause time T is long, the topology becomes relatively constant. On the contrary, if the node moves fast and the pause time T is small. It create a range of mobility scenario with different levels of nodal speed. As a result, it seem essential to calculate the nodal speed mentioned or random waypoint model in figure 4.

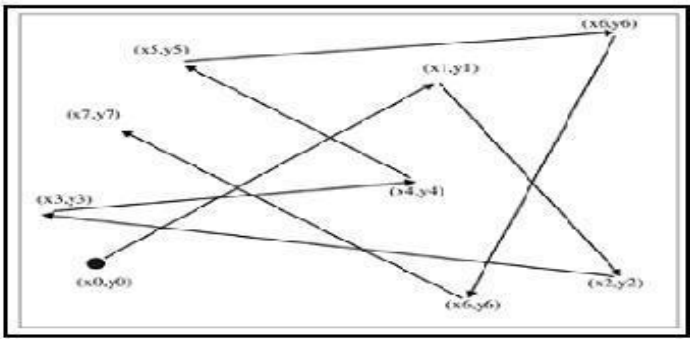

Fig 4.Example of Random Waypoint model

4. FUTURE SCOPE

So far, ad hoc networks have been organize for particular cases such as battlefield or crisis situation. On the other hand, this knowledge is soon usual to be considered as a common place and support our every-day activities and also will coexist with fixed-infrastructure wireless networks (4G networks). The surfeit of multimedia services and requests that will run over these networks will pose severe requirements for real-time continuous data flow with guaranteed data rate (QoS requirements). In this new background, predicting the portable user's prospect position and the network topology change may considerably get better the QoS parameter by attaining course discovery and course reconstruction prior to the user's movement and to the topology transform. The deployment of MANETS networks alongside with fixed-infrastructure networks in urban areas also modify some of the fundamental assumptions about the request field of these networks. Now, the users of mobile devices are not essentially members of a team that act for a special reason such as soldiers in a battle-field situation or rescuers in a crisis scenario but they can be persons not related in an clear way.

5. RESULT AND DISCUSSION

This paper proposes a novel techniques in mobility prediction, which is used in various applications such as location tracking, next place position, etc. The result can be data sets can be a real traces of mobility history gained by such methods. This refined mobility history will be used for the prediction process. For accurate prediction fine grained mobility history is essential. The predicted result will be the future position of mobile node.

6. CONCLUSION

Mobility prediction, i.e., estimating the future positions of the mobile nodes in MANETs, positively affect the service-oriented as well as the application- oriented aspects of ad hoc networking. The employment of mobility prediction techniques at the network level is very crucial in the design of efficient routing schemes, while at the application level, in combination with user's profile may provide the user with enhanced personalized wireless services. In our system will solve the energy issue of continuous sensing in real deployments. The designed sensing levels and an adaptive duty cycle using MDP reduce the energy consumption in continuous monitoring. This shows that this approach has minimized energy consumption. The design and implementation of the MMC model for predicting the future location has demonstrated accuracy on different dataset. Our analysis demonstrates that the accuracy in predicting the future location is in the range of 65-85 % for different dataset, adaptive duty cycle results perform best when set to 120 sec. This amount less energy consumption and more energy backup in mobile devices. Thus we have present well-known mobility prediction schemes classifying them according to their applications.

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