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A Novel Smart Target Tracking In Wireless Sensor Networks Using Prediction Technique

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***Abstract*— The effective smart target tracking in wireless mobile sensor networks, this area was originally motivated by military application and it is used many application and reduce the network traffic. The previous work used Anti-flocking algorithm is missing more targets. It is not good communication, and Semi flock approaches the control and coordination problem and it is missing some targets. This works not achieve all the targets. The proposed work applying prediction techniques for predicting the next position of targets and then guide and achieve the all targets. It is power saved and it is admirable communication. This work is more security.**

***Index Terms*—About four key words or phrases in alphabetical order, separated by commas.**

I. INTRODUCTION

A sensor network is an infrastructure comprised of sensing (measuring) computing, and communication elements that give an administrator the ability to instrument, observe, and react to events and experience in a specified environment. The administrator typically is a civil, governmental, commercial, or industrial entity. The environment can be the physical world, a biological system, or an information technology (IT) structure. Network sensor systems are seen by viewer as an important technology that will experience major deployment in the next few years for an excess of applications, not the least being national security. Typical applications include, but are not limited to, data collection, monitoring, surveillance, and medical telemetry. In addition to sensing, one is often also involved in control and establishment. There are four basic components in a sensor network: (1) an assembly of distributed or localized sensors; (2) an interconnecting network (usually, but not always, wireless-based); (3) a essential point of information clustering; and (4) a set of computing property at the essential point (or beyond) to handle data connection, event trending, position querying, and data mining.

Some sensor networks use source-node processing; others use a hierarchical processing architecture. As an alternative of sending the raw data to the nodes responsible for the data mixture, nodes often use their processing abilities locally to carry out basic computations, and then transmit only a subset of the data and/or partially processed data. In a hierarchical processing architecture, processing occurs at consecutive tiers until the information about events of interest reaches the appropriate decision-making and/or administrative point. Sensor nodes are almost invariably constrained in energy supply and radio channel transmission bandwidth; these constraints, in conjunction with a typical deployment of large number of sensor nodes, have posed a plethora of challenges to the design and management of WSNs. These challenges necessitate energy awareness at all layers of a communications protocol stack. The previous worked semi flocking algorithm used to detect the target tracked. The semi sensor used it is not to perfect to detected the targets, the mobile sensor to achieve minimum area and target coverage, and do not target appear frequently. It is low speed of the communication. The semi-flocking algorithm missing some targets and do not achieve all target tracking so it is not flexible this works. The proposed is new prediction technique used the next position of the target to find. The effortless do detect the target tracking and do not missing any target tacking. It is frequently to detect the target, and excellent communication of the mobile sensor network.

II. EXITING WORK

The sensor target problem it is surveillance system consists of n mobile sensor deployed in a two dimensional geographical region, sensor knowledge of targets is limited target position and low speed, low sensors with low communication. It is missing many targets and do not achieve all targets.

III. PROPOSED WORK

The prediction techniques for predicting the next position of the target and then guide sensors toward such position has a great impact on decreasing the chance of missing already detected targets. Targets are able to respond to sensing activities their detecting in observation application. We use multiple target position, the sensors must among several modalities to most quickly and effectively detect the track the targets, and it is very security. In this work achieved all targets.

IV. METHODOLOGY

Prediction-based algorithms in target tracking are algorithms that predict next location of target (using a prediction technique). Then with attention to predicted location, activate specific mobile for tracking and other mobile of network remain in sleep mode for energy saving. Prediction technique in proposed algorithm is a prediction

method. This technique with current and previous location of target, predicts next location of target. So we can estimate the target's speed as

$$v = \frac{\sqrt{(xi - xi - 1)^2 + (yi - yi = 1)^2}}{ti - ti - 1}$$

While the direction is given by

$$\theta = cos - 1 \frac{xt - xt - 1}{(xi - xi - 1) + (yi - yi - 1)^2}$$

Based on this information, the predicted location of target after a given time t is given by

$$xi + 1 = xi + vtcos\theta$$

$$yi + 1 = yi + vtsin\theta$$

After calculation *(xi+1 , yi+1)*, if this location is placed in the current cluster, active selects sensor mobile for target tracking in the next interval time, via the tracker sensor mobile selection algorithm, and wakes up them with sending a message. Otherwise if the next location of target is placed out of the current cluster, selects nearest cluster to that location as next active cluster and with sending a message informs it from arriving the target and gives the tracking task to the new active cluster.

V. Results

Prediction-based algorithms in target tracking are algorithms that predict next location of target (using a prediction technique). Then with attention to predicted location, activate specific mobile for tracking and other mobile of network remain in sleep mode for energy saving. Prediction technique in proposed algorithm is a prediction method. This technique with current and previous location of target, predicts next location of target.

Table 1: Percentage of detected targets in two Flocking

Parameter	Prediction Techniques	Semi Flocking	Anti-Flocking
Targets Coverage	98.5	85.6	1.91
Achieved Targets	99.5	80.2	50.6
Missing Targets	0	50.9	86.9

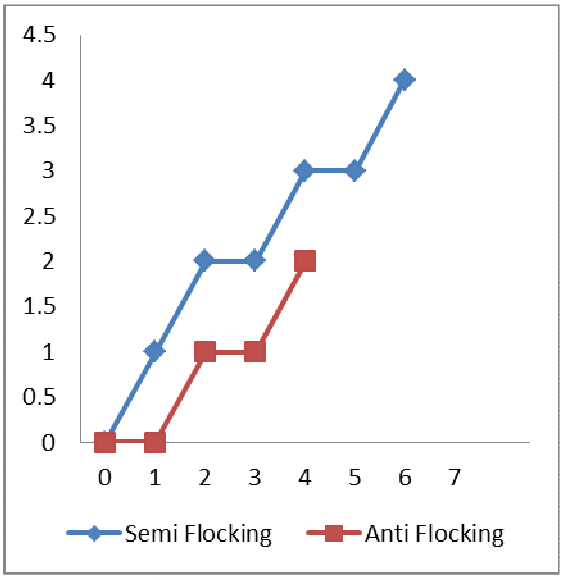

Fig. 1: Percentage of detected targets in two Flocking algorithms

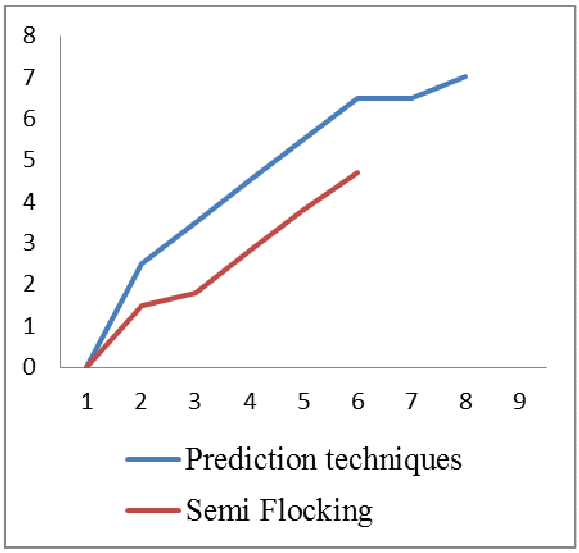

Figure 2: Percentage of detected target tracking in Semi Flocking and Prediction Techniques

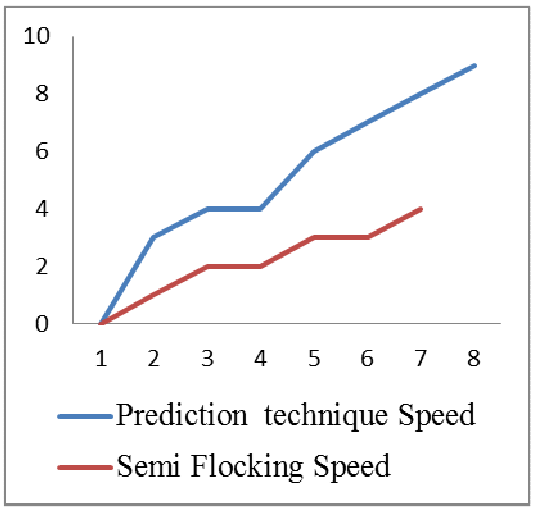

Figure 3: Average Target Detection Speed in Semi Flocking algorithms and Prediction Techniques.

VI. CONCLUSION

The existing algorithms are not suitable for achieved all targets. It is not good communication. The proposed prediction technique is very effective and quality target tracking, in this works next position of the targets to achieve so do not missing targets and it is achieving all targets. It is power saving and quickly to achieve the targets. It is admirable communication. The future works is more implements the security, the quick path detects and sensing activities.

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