Viper Snake intelligent algorithm using Radar Tracking and Attacking System

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***Abstract*— Viper Snake algorithm is useful for tracking the target of fighter flight , missiles in radar display system and it is useful for airborne early warning and control system and attacking system.This algorithm make a radar as intelligent system for tracking the target as a long range and detect the enemy aircraft or missile and set the target position. This attacking the own missile have hit the enemy target and it will inform to base system .**

***Keywords* --Primary radar (PR) ,Secondary Radar(SR),keywords or phrases,**

I. INTRODUCTION

It has a very fine algorithm use for high speed moving air based radar. It radiating both side and tracking the high speed moving target like fighter ,missile was tracking and display the actual position for the target. The viper snake using for sensor as nosile ,and it is waiting for the pray with near zone. while the pray will come attacking area, it bite and it will simply Quit for some time. after some time it trace the target and verify the target is died and eat. while they decide as it was not pray it don't attack.

This purpose of this paper is to implement efficient and intelligent oriented algorithm is use to track the enemy high speed aircraft and high speed missiles. In this algorithm portable array antenna used for transmit and receive the radio waves all azimuth. In that there are two sensor have one is long range sensor called as primary radar, and small range transmit sensor called secondary radar were used. in secondary radar they transmit low level frequency less than 1mhz to track the air based missile attack and prevent the missile will attack. the primary radar will track the high Speed moveable target like fighter aircraft. Finally weather the enemy aircraft attacked by our awacs weapon thermal radar will séance near range target were alive or not. If live they sent another attacking missile.

The structure of the paper is as follows. Section II provides a brief overview of previous research on high speed platform moveable radar and tracking algorithm. Section III provides proposed system of Viper snake algorithm using high speed platform moving and tracking high speed moving target. The result of viper snake algorithm explain in section IV. with the main conclusions presented in section V.

II. BACKGROUND

Airborne radar algorithm designed to detect targets at ranges of thousand of miles. Radio waves of the frequencies used by airborne radars behave very much as visible light, penetrate clouds and are aerosols. so clutter come.here energy of the target signal are based upon average rate flow of energy, intercept by target and scattered back in the radar's dirction.fraction of the power which is capture by the radar antenna, length of time the antenna beam is trained on the target.in that algorithm supports fan beam, pencil beam, special beam to track the specific target. It allocate there zone one primary radar zone, second radar is made tracking the target and sense which type of the target and finall sensor is less termal sensor which is used the target is affected by boms or missile and resend the data.ma from due to to comply with the conference paper formatting requirements is to use this document as a template and simply type your text into it.

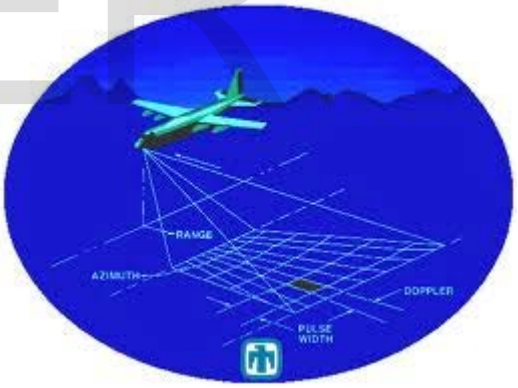

Fig:1

Above figure show the basic fundamental character of the awacs system. here home aircraft range ,azimuth, pulse width ,Doppler all functionality defined by this algorithm.

Early warning system provide a general warning to all other defensive layer of territory. as the effectiveness of these systems are mainly based on the search radar performance. Here Missile systems are have anti aircraft surface to air ,air to air ,air to sea, IR guided .Anti ship systems there are air to air missile launched from air, air to surface as land and coastal defence system.

The tracking radar keeps searching in azimuth and elevation until a detection based upon array performance and transmitting power. The particular target based they set the goal by fire control centre .The missile based upon wind flow, air temperature and pressure, missile ballistics and tracking techniques .The firing accuracy required of a weapon system depends on the type of ammunition used and jammer can reduce the killing probability of an artillery system based upon by

- The search radar to prevent a quick destination to the weapon.
- The tracking radar in acquisition mode, thus preventing the determination of the data needed to extrapolate the interception point
- The tracking radar in its tracking mode, thus generating errors that may yield an incorrect interception point.

In missile usually consists of a seeker which is protected by radome to detect the target and generate command signals. A warhead which is used for an explosive charge and heavy metal material , prefragmented or not ,to damage the target. A fuse is used to assure detonation of the warhead explosive in the absence of a direct impact. Autopilot a guidance system that intercepts the signals produced by the seeker to position the control fins, and thus directs the missile toward the point of impact. A propellant motor to provide the correct thrust. A control fins ,stabilizing fins were used to missile will go stable and travelling path correctly. Missiles system can defined medium to long range(command missile), medium to short range(beam riding missile),medium to long range (semiactive missile, Active homing missiles).

The angular accuracy of the radar is some fraction of the antenna lobe width ὐ.milliradiations(σ_t) is the precision of the radar in tracking the target. precision of the radar in tracking the missile and rms target to missile distance at the range R(km) will be given in meters by

$$m_d = R(\sqrt{\sigma_r}^2 + \sqrt{\sigma_m}^2 + 2\ \sigma_r\ \sigma_m$$

the advantages of may extract the angle tracking data while operating in an extremely narrow band. The system precision not depends on range measurement but on the quality of the seeker and the manoeuvrability of the missile.It cases timing error of the launcher, target maneuvers,glint, seeknoise, guidance loop parameters. The missile is launch toward the predicted interception point, while the seeker antenna tracks the target. Sea Skimming Missiles it is a special type antiship missile flying at very low altitude the surface of the sea. Guidance based upon vertical plane is by a small radar altimeter ESM equipment.

$$\sigma_g = {}^1/_3\ {}^l/_r$$

The effect of glint may be reduced sufficiency by filtering the radar error with constants that take into account the desired miss distance. The need to calculate the interception point sometimes frustrates the use of the electronic defence for antimissile defence by navel artillery systems. the missile can often shift immediately to memory and succeed in reacquiring its target, Quickly returning to active tracking mode.

Transmission link types:

- Ground link frequencies between 30MHZ to 300MHz.
- Microwave multichannel radio relay links.
- Satellite links.
- Links with submerged platforms.

Strategic, long-range links the frequencies used are from 1.5MHz to 30MHz.

III.PROPOSED SYSTEM OF VIPER SNAKE ALGORITHM:

Range coverage area:

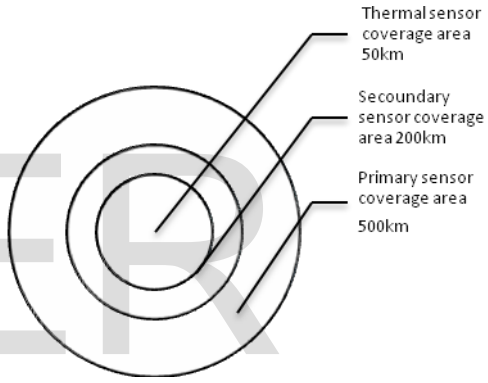

Fig.2

Here core coverage area 1000km.in that attacking zone is 200km it identified by secondary radar base upon Viper snake algorithm and thermal sensor coverage area around 50km.

viper snake algorithm using based upon two types:

- Tracking the high speed targets
- Attacking the target

A. *Tracking the high speed targets*

1)*primary radar functionality*

In primary radar radiated maximum range up to 1000km area radiation beam will send particular frequency and reflected waves received used transmitter and receiver. These waves captured and grouping the pattern data and maching the orginal frequency data of the target.In radar system need automatically detect the which target moving and it tell about the range of the target, speed of the target ,height of the target using main above radar functionality.

2)*Secoundary radar functionality*

In secoundary radar radiated with low power transmit and it detect the low level data and it modified by

secoundary radar processing unit.It display the actual type of the aircraft and give parameters of the targets.

3)*Thermal radar functionality*

In thermal radar radiated near range and it convert the ultraviolet waves and it display the current situation of the target.In thermal radar sense attacked position of the aircraft, aircraft's affected percentage and exact location of firing and it reply the base system.

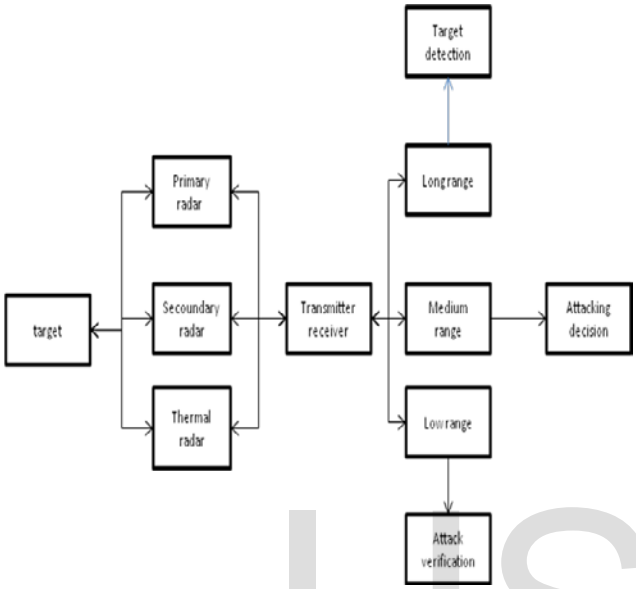

Fig.3

B. *Attacking the high speed targets*

Radar sense the target and it display the all data in radar display system. Here attacking decision automatically send the missile to attack the enemy of aircraft. If enemy of the aircraft while it comes it send warning message. If not responding the send the missile. If travelling aircraft it sense the not attack it send the warning and verification message. If Friend target it won't attack.

Here launching missile was searched by radar not a target and it will send signals to base subsystem. In radar keep the missile data and store the data in display system.

C.*Verification of the damaged targets*

After some time later the awacs aircraft follow the missile motion path and search the affected the target and it will know status of the enemy aircraft using the thermal sensor .it will tell how much temperature ,wounded aircraft perentage of damaged.

SECTION IV

A. Algorithm codings

Algorithm implementation using following steps.
Input: a1,a2 …,an data

Output:permutation (b1,b2,b3…….,bn) such that b1

For i<-1 to n
Do for j<- 1 to n
Do c_{ij}<-0
For k<-1 to n
Do c_{ij}<-c_{ij}+a_{ik}.b_{kj}

//Using divide and conquer
Partition(A_n,p_n,q_n) A[p..q]
X<-A_n[p_n]
piviot=A[q_n]
I<-p_n
For j<-p_n+1 to q_n
Do if A[j]<- x
Then i<-i+1

Exchange A[i]<-->A[j]
Exchange A[p]<->A[i]
Return i

Data graph(x,y,z) +data graph(x_1,y_2,z_3)…….data graph(x_n,y_n,z_n);

Find locationtarget(azi,ele);
Predict (update speed,altitude)
{
{
While(high speed target)
{
Find ()
Friend,nutral,enemy;
}
If(enemy=near attacking range)
{
Send missile
}
Else
wait(near range);
}
If(friend&&neutral)
{
Send warning msg
Get response
No attack
}
While (missile hit target)
{
Thermal radarsense;
Find amount of damages;
}
Else
{
Send respose(base);
}

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Find(missile path)
Follow path;
}

TABLE I

COMPARISON OF ALGORITHMS

Sl. no	Approach based upon intelligent		
	other radar algorithm	**viper snake algorithm**	**result**
1	near,far range separater not there	is there	tracking performance well
2	missile based tracking not used	missile based tracking used	high speed scan done
3	three sensor based search not done	done	making efficient results
4	intelligent technic not used	used	gather friend or enemy
24	attacking method not there	attacking, tracking method used	making as a intelligent system

V. CONCLUSION

The viper snake intelligent algorithm using radar tracking and attacking targets will implement for future radar tracking system for india.Here air to air missile communication path we make auto handsake method .Missile travelling path and responding system making high scan method is very much power needed.In future i will implement high speed targets coverage area expand more than 1500km.

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BIOGARPHIES

Venkateswaran.M doing his master degree in Technology(M.Tech) Computer Science Engineering in PRIST university,Tanjavur,Tamilnadu,India.Since he has been working as a junior research fellow in CABS,DRDO.

He recived bachelor of Engineering in Vickram College of Engineering,Anna University.He received Diploma in computer engineering in Government Polytechnic College,Tamilnadu.He has taught courses on Java programming ,algorithm and data structure and computer simulation of radar apllications.since 2011. He working in DRDO for high speed platform moving radar and testing.His current research interest are developing ,testing new algorithm for better radar application window.