**Grid solving bot** –

Algorithm to find blocks –

The bot will traverse throught the grid row by row till the end as shown. In the figure following the white line using 5 IR sensors panel .

Code : sensor motor

Line following (using inside 3 sensors) - 111- forward function – linefollower(); 110 – slight left 011 - slight right 001 - right 011 - left

This function will return to main() when either 1st sensor or 5 th sensor detects the intersection or when the front 2 sensor s detects the object .

Update () – depending on the orientation of it will update coordinates .

{if(ori==1) // orientation= 1 currx++; else if(ori==2) // orientation=2 curry++; else if(ori==3) // orientation = 3 currx--; else if(ori==4) // orientation = 4 curry--; }

takecareofobject() – the block will be held using the jaws and transported to the (0,1). Traversing till the y coordinate becomes 1 and then till xcoordinate becomes 0 . then again it will follow the line till the maze.Also it will communicate to the maze solving bot . there the bot will leave the blocks . then it will retreat to the same location of the object and start scanning the grid from there .

void takecareofobject()

{ if (!(PINA & (1<<6))&&!(PINA & (1<<7))) // OBJECT NOT THERE return; if (((PINA & (1<<6))&&(!(PINA & (1<<7))))||((PINA & (1<<6))&&(!(PINA & (1<<7))))||((PINA & (1<<6))&&(!(PINA & (1<<7))))) // OBJECT FOUND { PORTB |= (1<<0); PORTB &=~(1<<1); // holding object \_delay\_ms(5000); PORTB |= (1<<0); PORTB |= (1<<1); linefollower();//returns as it reaches the object position objx=currx; objy=curry; objtransport(); // object will be transported to (0,1) linefollower1(); // linefollwer fuction to follow the line between maze and grid inchb(); // going an inch backward for placement of block exactly at the intersection PORTB &=~ (1<<0); PORTB |=(1<<1) ; // keeping object \_delay\_ms(5000); PORTB |= (1<<0); PORTB |= (1<<1); inchb(); inchb(); turn('U'); // turning backward linefollower1(); // following line backward to the grid f1=0; // making flag zero indicating that block is deposited to maze . retreat(); // object will come back to (objx,objy) from (0,1)

}

}

decide() - It will decide the turns to be taken turns when currentx is 7 or 0 . so that row by row scanning is possible .

turn(c) – makes the required turns by sending the value of character c = R-right,L-left ,U-Uturn

Electronic Circuitry

Microcontroller – ATmega 16 – for grid solver . ATmega 32 for mazesolver Sensors – TCRT5000 5 sensors panel - for line following and sensing bridges and nodes . 2 separate TCRT5000 sensors for block detection 9V, 200 rpm motors ; L293D motordriver for motors .; cc2500 module - trans receiver for communicating between the bots . 7805- 5v regulator , 7809 – 9v regulator . 12V battery li-po battery .