三层电梯状态机课程设计报告

状态机图

Idle

Doorclosing

Dooropen

Movingup

Movingdown

流程图

Idle

Idle

floor > 0 && up

Yes

SetMotorPower(1)

No

Movingup

Yes

SetMotorPower(-1)

floor > 0 && !up

No

1：SetDoor(floor, 1);

:2：SetOpenDoorLight(0)

GetOpenDoorLight()

Movingdown

Yes

Idle

GetCloseDoorLight()

Dooropen

# Movingup、movingdown

GetOpenDoorLight(); SetOpenDoorLight(0);

GetCloseDoorLight(); SetCloseDoorLight(0)

Dooropen

SetCallLight

SetCallLight

fabs(GetFloor() - 3) < Lib\_FloorTolerance

SetMotorPower(0);

SetDoor(floor, 1);

fabs(GetFloor() - floor) < Lib\_FloorTolerance

Movingup

Yes

No

Yes

No no

**Dooropen**

SetCloseDoorLight(0);

SetDoor(floor, 0);

Dooropen

GetCloseDoorLight()

Doorclosing

SetDoor(floor, 0)

Yes

No

(IsDoorOpen(floor)

SetOpenDoorLight(0)

Yes

No

Dooropen状态

void StateIdle(int \*state)

{

int floor; bool up;

floor = IdleWhatFloorToGoTo(&up);

if (floor > 0 && up)

{

SetMotorPower(1);

\*state = MovingUp;

}//电梯准备上升

else if (floor > 0 && !up)

{

SetMotorPower(-1);

\*state = MovingDown;

}//电梯准备下降

if (GetOpenDoorLight())

{

SetDoor(floor, 1);

SetOpenDoorLight(0);

\*state = DoorOpen;

}// 电梯内开门

if (GetCloseDoorLight())

{

SetCloseDoorLight(0);

return;

}//电梯关闭

}

void StateMovingUp(int \*state)

{

int floor; bool up;

floor = GoingUpToFloor();

if (fabs(GetFloor() - floor) < Lib\_FloorTolerance)

{

SetMotorPower(0);

SetDoor(floor, 1);

\*state = DoorOpen;

if (fabs(GetFloor() - 3) < Lib\_FloorTolerance)

SetCallLight(floor, 0, 0);

SetCallLight(floor, 1, 0);

SetPanelFloorLight(floor, 0);

}//开门

else {

GetOpenDoorLight(); SetOpenDoorLight(0);

GetCloseDoorLight(); SetCloseDoorLight(0);

}//安全设置，无动作

}

void StateMovingDown(int \*state)

{

int floor; bool up;

floor = GoingDownToFloor();

if (fabs(GetFloor() - floor) < Lib\_FloorTolerance)

{

SetMotorPower(0);

SetDoor(floor,1);

\*state = DoorOpen;

if (fabs(GetFloor() - 1) < Lib\_FloorTolerance)

SetCallLight(floor, 1, 0);

SetCallLight(floor, 0, 0);

SetPanelFloorLight(floor, 0);

GetNearestFloor();

}//下降后开门

else {

GetOpenDoorLight(); SetOpenDoorLight(0);

GetCloseDoorLight(); SetCloseDoorLight(0);

}//关灯

}

void StateDoorOpen(int \*state)

{

int floor; bool up;

floor=GetNearestFloor();

if (GetCloseDoorLight())

{

SetCloseDoorLight(0);

SetDoor(floor, 0);

\*state = DoorClosing;

}//正在开门，按关门，关门

if (IsDoorOpen(floor))

{

SetDoor(floor, 0);

\*state = DoorClosing;

}//开门完，直接关门

if (GetOpenDoorLight())

{

SetOpenDoorLight(0);

}//开门时，按开门，无动作

}

void StateDoorClosing(int \*state)

{

int floor; bool up;

floor=GetNearestFloor();

if (GetOpenDoorLight())

{

SetOpenDoorLight(0);

SetDoor(floor, 1);

\*state = DoorOpen;

}//正在关门，按开门，开门

else if (GetCloseDoorLight())

{

SetCloseDoorLight(0);

}//正在关门，按关门，无动作

else if (IsBeamBroken())

{

SetDoor(floor,1);

\*state = DoorOpen;

}//门口有东西挡住，自动上升

else if (IsDoorClosed(floor))

{

\*state = Idle;

}//关门后待机

}