Model::Main

rMotorControl

+controlPort
+status: MotorControlState
+holeIndex

+homeScanner()
+awayScanner()
+scanHome()
+scanAway()
+stopScanner()
+loop()

+motorControl

Main

+guard: MotionGuard
+motorControl: rMotorControl
+webServer: rtWebServer
+sensorComm: SensorCommunicator
+imageProcessor: rtImageProcessor

+initial()
+run()

+guard

MotionGuard

+hasReachedHome()
+hasReachedAway()

«enumeration»
MotorControlState

HOMING
AWAYING
HOMING_SCAN
AWAYING_SCAN
UNKNOWN
HOME
AWAY

+webServer

rtWebServer

+workerPool
+rootDir
+taskQueue: rtBlockingQueue

+run()

+workerPool

rtWebWorker

+run()

SensorCaptureArduino

+sensorIndex: int
+stepIndex: int
+state

+Serial Link

«enumeration»
SensorCaptureArduinoState

WAITING
SCANNING_ROW
WAITING_FOR_ROW

Sensor Serial Data Format:
x,y,value
x,y,value...

+imageProcessor

rtTask

+Task(taskname: char*, priority: int)
+run(void args)*
+bool start(void* args)
+bool startPeriodic(periodClockTicks: size_t)
+void waitForNextPeriod()
+void yeild()
+void waitForClockTicks(ticks: size_t)
+void kill()
+void join()

rtSensorToImageProcessorQueue

+queue: rtBlockingQueue

+run()

+queue

rtBlockingQueue

+take(): T
+put(value: T)
+rtBlockingQueue(name: const char*, size size_t)

rtImageProcessor

+queue: rtBlockingQueue

+run()
+generateFileName()

Model::GuardStateMachine::StateDiagram

Model::MotorControl::StatechartDiagram1

```
                        ●
                          \  homeContact
                           \
                            ↓
                          ┌────────┐    scanStart    ┌──────────────┐
                          │  home  │───────────────→│ scanForward  │
                          └────────┘                 └──────────────┘
                             ↑                              │
                             │                              │ awayContact
                   homeContact                              ↓
                             │                       ┌──────────┐
                      ┌──────────────┐               │   away   │
                      │ scanBackward │←──────────────└──────────┘
                      └──────────────┘ reverseScanStart

        ┌──────────────────┐     homeContact     ┌────────────────┐
        │ unknownPosition   │────────────────────→│ validHoleIndex │
        └──────────────────┘                      └────────────────┘
```

idle

startScan

scaningRow

scanRowComplete

writeRow

writingComplete

Model::SensorComm::StatechartDiagram1

idle

startScan

informingArduino

scanComplete

informAwknowledged

triggerRowCapture

consumingData

rowPacketComplete

writingData

Model::WebServer::StatechartDiagram1

idle

incomingPacket

assigningWorker

workerCompleted

tooManyWorkers

overflowed

Model::WebWorker::StatechartDiagram1

idle

fetchfile

outputfile

taskAssigned

fileLoaded

outputComplete

Model1::DeploymentDiagram1

Solar Scanner ————— +HTTP ————— Solar Research DB