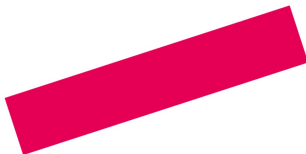


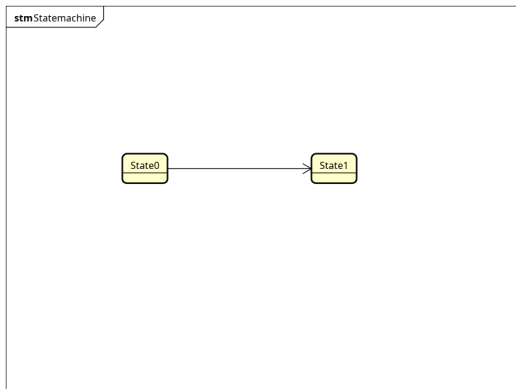
Robots les 2

World of Robots

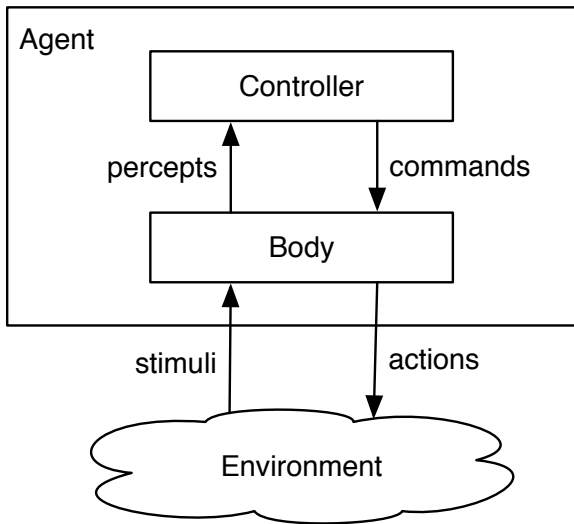
Joost Kraaijeveld
ESD
August 29, 2023



State machine



Robotmodel



Soorten real-time

Wikipedia:

Hard	Missing a deadline is a total system failure.
Firm	Infrequent deadline misses are tolerable, but may degrade the system's quality of service. The usefulness of a result is zero after its deadline.
Soft	The usefulness of a result degrades after its deadline, thereby degrading the system's quality of service.

Events en actions

- Event: gebeurtenis
- Action: het uitvoeren van één of meer functies in reactie op een event

Events

- Events: gebeurtenissen ...
- Arrival patterns: periodic or aperiodic/episodic

Periodic events

- Fixed time intervals
- Periodic arrival variance: jitter

Aperiodic events

- bounded
- unbounded
- bursty
- irregular

Aperiodic events

bounded:

- minimum interarrival time
- maximum interarrival time

Aperiodic events

unbounded

- no begin or end
- stochastic

Aperiodic events

bursty

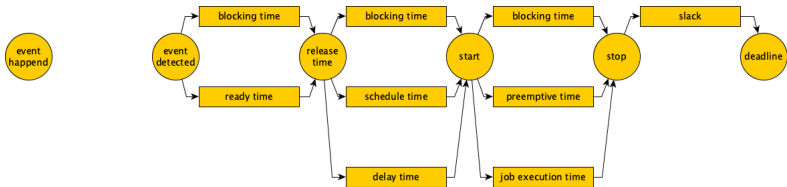
- positive correlation in the between arrival of one message and the near arrival of the next
- maximum burstlength
- burst interval
- stochastic

Aperiodic events

irregular

- Nothing to see, move on

Tijd, een overzicht



Tijd

- Priority
- Blocking Time
- Ready Time
- Delay Time
- Release Time
- Preempted Time
- Worst-Case Completion Time
- Laxity
- Absolute Deadline
- Relative Deadline
- Start
- End
- Duration
- Is atomic

Attribute	Description
Priority	The priority of the action from a scheduling perspective. It may a result of static analysis or by dynamic scheduling software.
Blocking Time	The length of time that the action is blocked waiting for resources.
Ready Time	The effective Release Time expressed as the length of time since the beginning of a period; delay between the time an entity is eligible for execution and the actual beginning.
Delay Time	The length of time an action that is eligible for execution waits while acquiring and releasing resources.
Release Time	The instant of time at which a scheduling job becomes eligible for execution.
Preempted Time	The length of time the action is preempted, when runnable, to make way for a higher-priority action.
Worst-Case Completion Time	The overall time taken to execute the action, including overheads.

Attribute	Description
Laxity	Specifies the type of deadline, hard or soft.
Absolute Deadline	Specifies the final instant by which the action must be complete. This may be either a hard or a soft deadline.
Relative Deadline	For soft deadlines, specifies the desired time by which the action should be complete.
Start	The start time of the action.
End	The completion time of the action.
Duration	The total duration of the action (not used if start and end times are defined).
Is atomic	Identifies whether the action can be pre-empted or not.

Real time systeem

Video van Maarten

Niemand is gewond geraakt. . .

Video van Maarten

Opdracht

Maak in groepjes van 4 een tijdlijn die begint met het vallen van een motorrijder en eindigt met het stilstaan van de eerste achterligger. Gebruik hierbij zoveel mogelijk de termen uit de les. Zoek de events en hun eigenschappen.

Gegeven een aantal uitgangspunten:

- Alle motorrijders rijden 50 kilometer per uur.
- De heuvel is 10 meter hoog en heeft een basis van 30 meter.
- De lucht- en grondwrijving zijn verwaarloosbaar.
- De communicatie tussen de diverse apparaten gaat op basis van 100Mbit/s ethernet.
- De camera doet 30 fps met een resolutie van 1920x1080, 32-bit kleur.

Alle andere relevante data kan je via Google vinden of uit je geheugen opdiepen. . . Oh, en je kan het mij vragen.