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CS 2310 – Multimedia Software Engineering

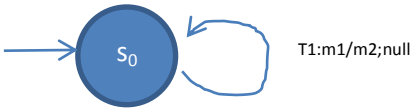
Exercise 2

(a)

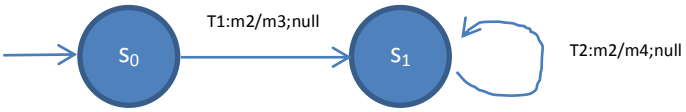
Messages:
m1: “I need help.”
m2: “Patient Smith needs help.”
m3: “Call Patient Smith.”
m4: “Visit Patient Smith.”
m5: “No response from phone.”

Actions:
a1: Calls the patient.
a2: Drives to patient.

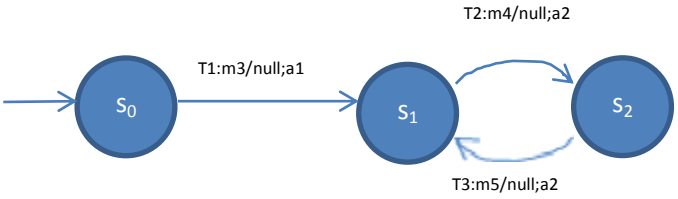
Gesture Recognition Index Cell



Emergency Manager Index Cell



Homecare Staff Index Cell



(b) ic = (X, Y, S, s_0, A, t_{max}, f, g)

Gesture Recognition Index Cell (ic1)

X = {m1}
Y = {m2}
S = {s_0}
S_0 = s_0

A = {}
t_{max} = ∞
f: f(m1,s_0) = 1
g: g(m1,s_0) = (ic2, m2, s_0, null)

Emergency Manager Index Cell (ic2)

X = {m2}
Y = {m3, m4}
S = {s_0, s_1}

S_0 = s_0
A = {}
T_{max} = ∞

f: $f(m2, s_0) = 1$
$f(m2, s_1) = 1$

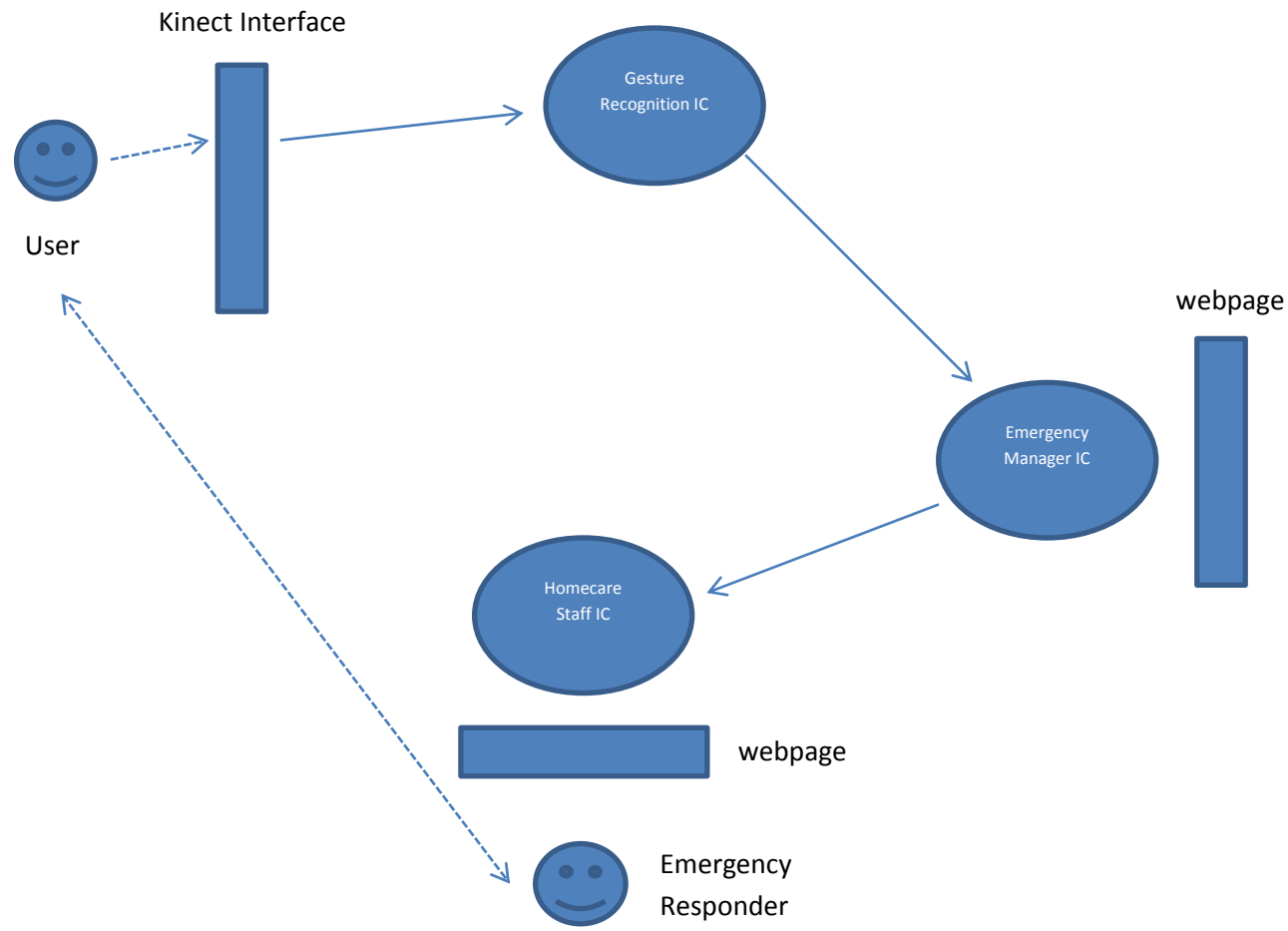
g: $g(m2, s_0) = (ic3, m3, s_1, null)$
$g(m2,s1) = (ic3, m4, s_1, null)$

Homecare Staff Index Cell (ic3)

$X = \{m3, m4, m5\}$
$Y = \{\}$
$S = \{s_0, s_1, s_2\}$
$S_0 = s_0$
$A = \{a1, a2\}$
$t_{max} = \infty$
f : $f(m3, s_0) = 1$
$f(m4, s_0) = 0$
$f(m5, s_0) = 0$

$f(m3, s_1) = 0$
$f(m4, s_1) = 1$
$f(m5, s_1) = 1$
$f(m3, s_2) = 0$
$f(m4, s_2) = 0$
$f(m5, s_2) = 0$
g: $g(m3, s_0) = (null, null, s_1, a1)$
$g(m4, s_1) = (null, null, s_2, a2)$
$g(m5, s_1) = (null, null, s_2, a2)$

(c) message action



(d) Some Patterns that are found in the above specification:

Context: Only one help signal received
Problem: Patient Smith may not be physically able to gesture more than once because he is very hurt, or he might not actually need help
Solution: Make sure there is a follow up – Call and if he doesn't answer, visit him regardless of whether a second help gesture is received, but don't visit until this call is made.

Context: Patient Smith is very hurt and needs help
Problem: Patient Smith can't reach anything
Solution: Allow help to be received without him ever needing to reach anything; The Kinect picks up one "help" signal, and if he doesn't answer the phone, the responder will visit.

Context: Patient Smith doesn't need help
Problem: Kinect interface picks up an accidental "help" signal
Solution: Don't visit the patient on the first "help" signal, just call, which is less costly.

(e) A visual specification of these patterns:

A time-sensitive visual sentence that describes these patterns is below.