SAFEST

Crowd Monitoring and Fence Monitoring Systems

From distributed video to a single density map

Extract background

Compute radius of occupied area

Compute number of people per grid from radius

0.9	1.6	0	0	0	0	0.1	0	0
0.2	1	0	0	0	0	0.9	1.9	0.1
0.7	1.1	2	0	2.1	0.2	2.7	2	0
0	2	4.5	5	10	9	8	7	1
1	1	1.5	3	7	6	6	7	5
1	0	1	2	7	4	7	4	4.5

Fuse single density maps

Intrusion detection using different sensors

SD-Karten-Socket

Transceiver: CC110, 868 MHz

MCU: ARM7, LPC2387, 72 MHz, 96 kB SRAM, 512 kB ROM

MSBA-2-Board

Sensoric

Acceleration Sensor   Ultrasonic sensor   Radar sensor   Infrared sensor
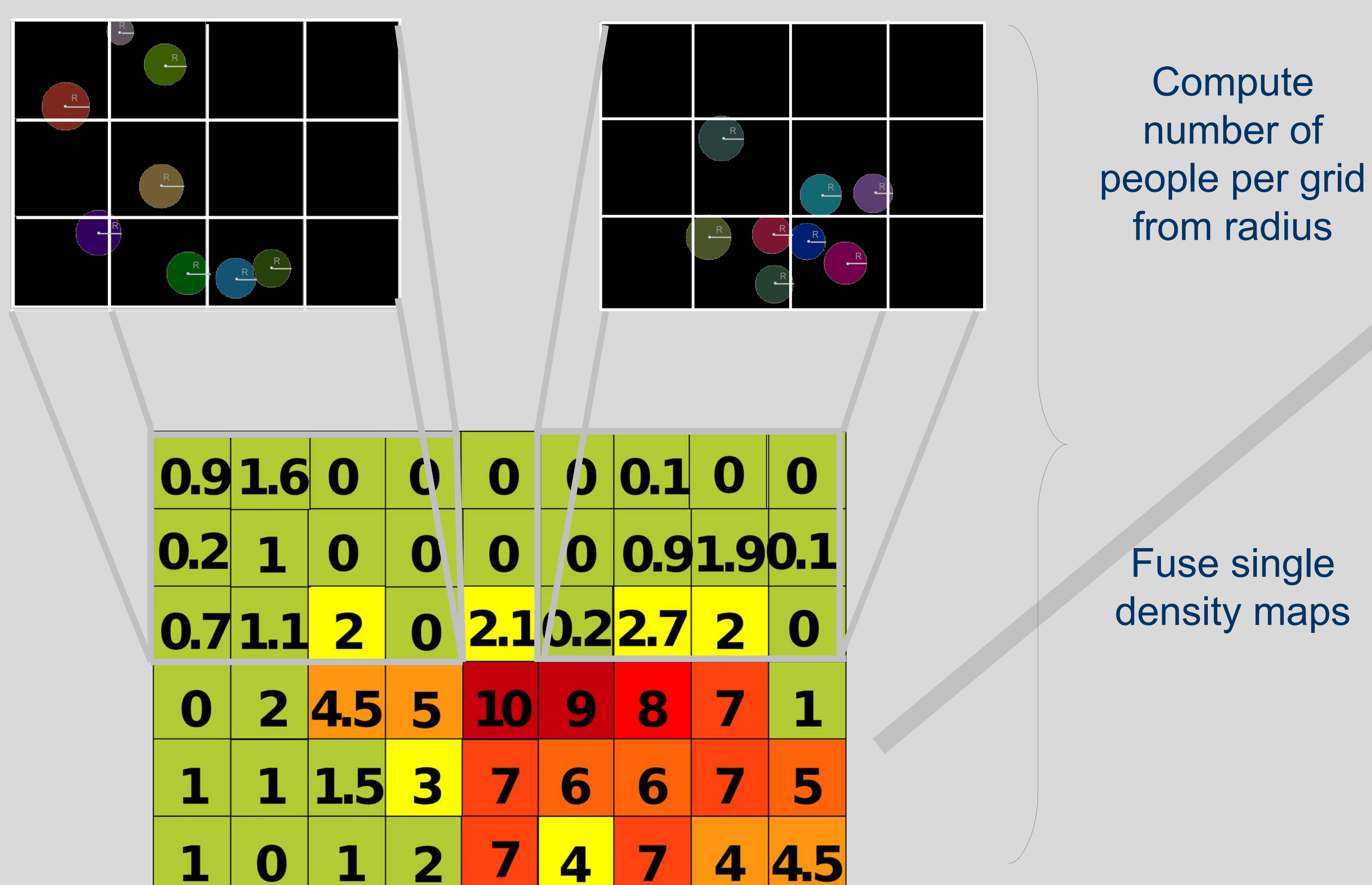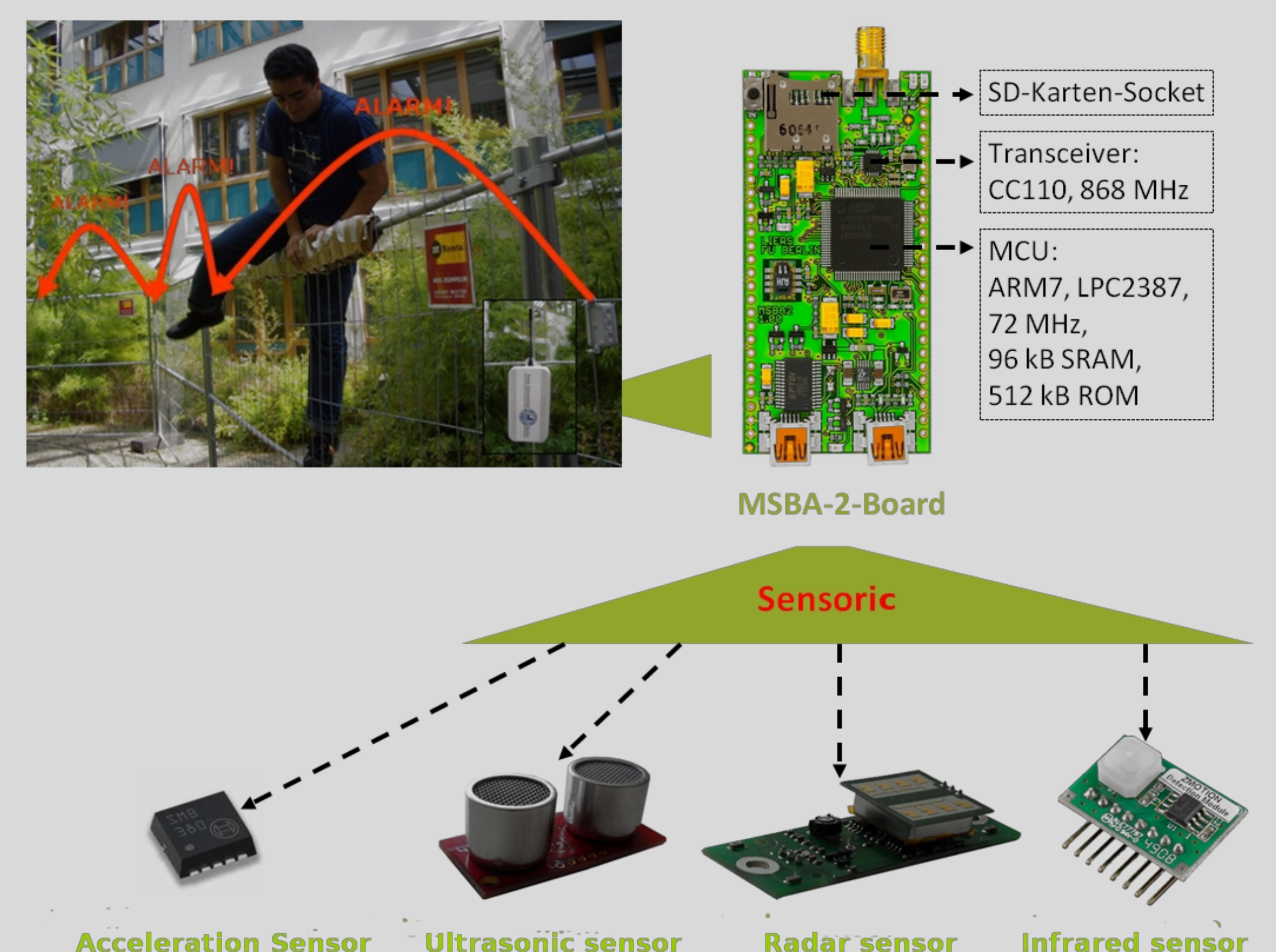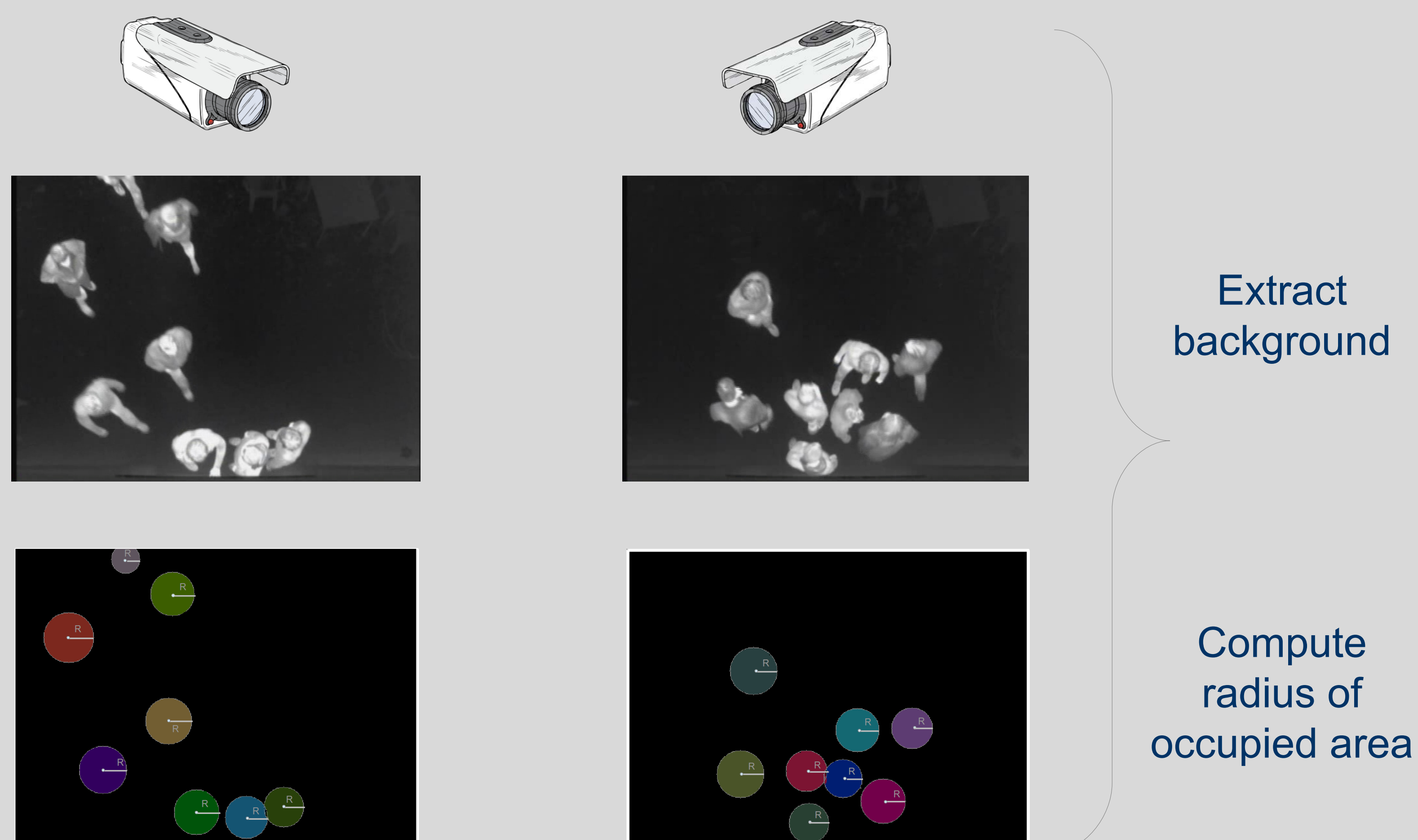
Predict crowd behaviour using hidden Markov chains

Time

B   F   E   ?

$\mathbf{argmaxP(X|E)}$
$x=\{A,..K\}$

Vocabulary   A   K

P_{1A} P_{2A} P_{1K} P_{2K}

α_{11} State 1 α_{21} State 2 α_{22} Hidden states

α_{12}

Alexandra Danilkina
alexandra.danilkina@fu-berlin.de

http://safest.realmv6.org/

Hauke Petersen
hauke.petersen@fu-berlin.de