The Smart Hospital Living Lab

Prof. Vassilis Kostakos School of Computing and Information Systems University of Melbourne

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Jorge Goncalves

Gabriele Eduardo Velloso Marini

Niels van Berkel

Chu Luo

Zhanna Sarsenbayeva

Yitong Chen

Chaofan Wang



Tilman Dingler



Jiang



Senuri Hettiachchi Wijenayake



Xiuge Chen



Simo Hosio



Klakegg

Aku Visuri





An Adventure 65 Million Years In The Moleing.

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Smart Hospital Living Lab

Improve hospital operations

Safety:reduce errorsEfficiency:generate insights



Ongoing projects



<u>Smart pill box</u> Identify pills using chemical signatures



<u>Operating theatre tracking</u> Track patients/staff in & out of operating theatres



<u>IV line monitoring</u> Continuous identification of liquids/concentrations in IV line



<u>Predict ED arrivals</u> Predict people arriving to the Emergency Department



Hand washing detection Detect (and quantify) hand washing in the hospital

















NoPreprocessing 0.3 0.2 Absorbance ($\log_{10} \frac{1}{R}$) 0.1 0.0 Preprocessing1 2. 0. -2. -4 Preprocessing2 2024 1100 1300 900 1500 1700

Wavelength (nm) Pharmaceutical – caffeine









IV line monitoringContinuous identification ofliquids/concentrations in IV line









0.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 Labelled Concentration (g/100ml)































Operating theatre tracking Track patients/staff in & out of operating theatres































DO NOT UNPLUG!

Project: Reliable Operating Rooms (ROR) In collaboration with The University of Melbourne

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For more information contact: Prof. Vossilis Kostokos vossilis kostakas@unimelb.edu.au

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DO NOT UNPLUG!

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Hand washing detection Detect (and quantify) hand washing in the hospital







with interfaced fingors intericed and vice versa.











rotational rubbing, backwards and forwardswith clasped fingers of right hand in left paim and voe versa.







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AFTER

OCEDURA









How to Handrub How to Handwash?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOIL WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUE

0

Duration of the entire procedure: 20-30 seconds



Apply a palmful of the product in a cupped hand, covering all surfaces;



Right palm over left dorsum with interlaced fingers and vice versa;



Rotational rubbing of left thumb clasped in right palm and vice versa;



Palm to palm with fingers interlaced;



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Rub hands palm to palm;

Backs of fingers to opposing pa

with fingers interlocked;





Rotational rubbing of left thumb clasped in right palm and vice versa;



Once dry, your hands are safe. Dry hands thoroughly with a single use towel;



Duration of the handwash (steps 2-7): 15-20 seconds

Duration of the entire procedure: 40-60 seconds



Apply enough soap to cover all hand surfaces;



Palm to palm with fingers interlaced;



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Use towel to turn off faucet:





Backs of fingers to opposing palms with fingers interlocked;



Rinse hands with water;



Your hands are now safe.



Patient Safety A World Alliance for Safer Health Care

SAVE LIVES Clean Your Hands



Patient Safety

SAVE LIVES Clean Your Hands



Wet hands with water;











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Upper Arm with Both Hands(smoothed with ecp)





9:41

- Home

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Hand Hygiene History



80

09

07

10



- Home









06





07

08

Rotational rubbing left thump clas in the right paim and vice versa

Completeness: 50%

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice verse.

9:41

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Wet your hands with water

Apply Soap to cover all hand surfa

Completeness: 50%

Completeness: 100%

Completences: 70%

Completeness: Missed

Completeness: 100%

with fingers interlocked.

Completeness: Wrong Order

Rub hands palm to palm

Right palm over left dorsum with

Interlaced finger and vice versal

Backs of lingers to opposing pain

Palm to palm with fingers interlac-

🚍 Home

01 ^w

Wet your hands with water

Completeness: 50%

Description

This is the first step from the standard hand washing process from WHO; however, it seems like you may need to prolong the curation of hand washing.

Standard Procedure



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Predict ED arrivals Predict people arriving to the Emergency Department







2014-05







Living Lab: Continuous Innovation





Outcomes and benefits



Improved operations



Generalisable solutions



Pathway to funding



Establish critical mass



Innovation beyond hospitals





Prof. <u>Vassilis Kostakos</u> vassilis.kostakos@unimelb.edu.au

School of Computing and Information Systems University of Melbourne

