Introduction to the Internet of Things

Licence 3 - Institut Galilée

Massinissa Hamidi

October 21st, 2020

Université Sorbonne Paris Nord

Outline

- Organization
- Some IoT projects
- Your projects
- Hardware
- Software
- Resources

Organization

Aomar Osmani

Moi même

Modaresi Seyed

Disponible à tout moment par mél ! réponse rapide modulo nos deadlines (rédaction de papiers scientifiques, thèses, etc.)

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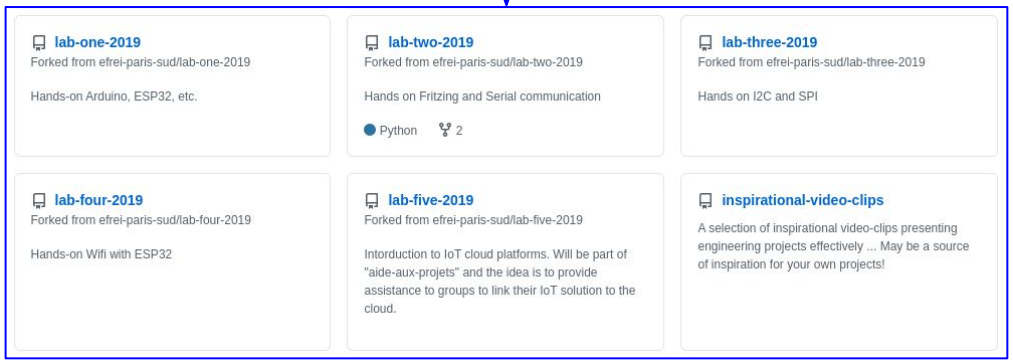
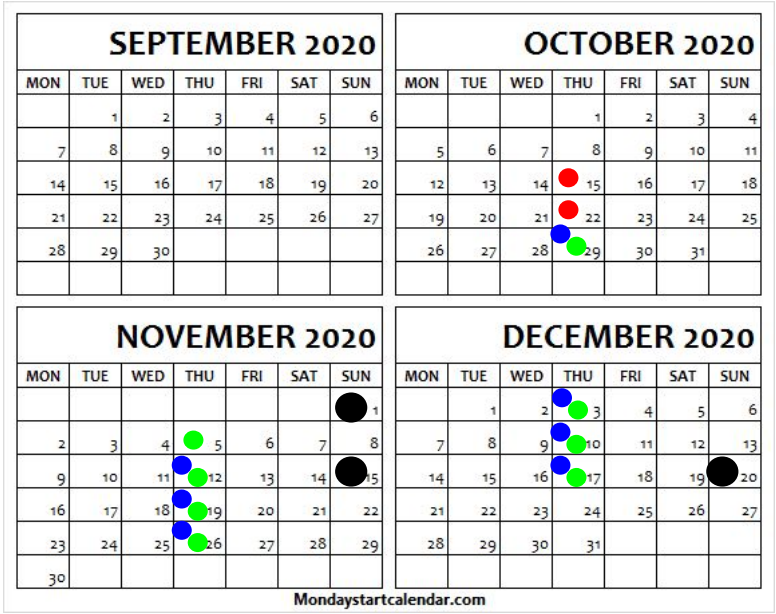
- hamidi@lipn.univ-paris13.fr
- modaresi@lipn.univ-paris13.fr

Organization (Cont'd)

- Courses
- Labs
- Projects
- Deadlines





https://github.com/institut-galilee

What about you?

Quelles sont vos attentes, vos domaines d’intérêt en informatique (sécurité, sûreté/fiabilité, SI, web, compilation, intelligence artificielle, jeux, pourquoi pas IoT *o*, etc.)

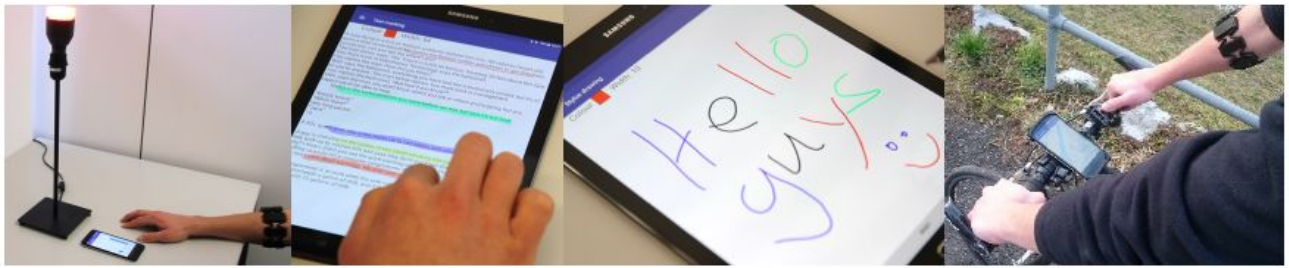
(Some) IoT Projects

Some research projects

TouchSense: Classifying Finger Touches and Measuring their Force with an Electromyography Armband

Vincent Becker, Pietro Oldrati, Liliana Barrios, Gábor Sörös
Department of Computer Science, ETH Zurich, Switzerland
{vbecker | oldratip | lilianab | soeroesg}@ethz.ch

"Enrich the interactions with devices"



(a) (b) (c) (d)

Figure 1: We propose a method that allows to determine the finger and the force applied in touches. We present several applications using this method to enrich the interaction with devices.

Some research projects (Cont'd)

PhysioHMD: A Conformable, Modular Toolkit for Collecting Physiological Data from Head-Mounted Displays

Guillermo Bernal*, Tao Yang+, Abhinandan Jain*, Pattie Maes*
MIT Media Lab, Cambridge, Massachusetts, USA*
Xi'an Jiaotong University, Xi'an, Shaanxi, China+
gbernal, yangtao, abyjain, maes@mit.edu

Figure 2: The image depicts every headset variation explored during this research. a) AR headset with flexible pcb & gold plated electrodes. b) VR headset with flexible PCB & gold plated electrodes. c) VR headset with hydrogel electrodes. d) VR headset with Ag/AgCI electrodes.

ABSTRACT

Virtual and augmented reality headsets are unique as they have access to our facial area: an area that presents an excellent opportunity for always-available input and insight into the user's state. Their position on the face makes it possible to capture bio-signals as well as facial expressions. This paper introduces the PhysioHMD, a software and hardware modular interface built for collecting affect and physiological data from users wearing a head-mounted display. The PhysioHMD platform is a flexible architecture enables researchers and developers to aggregate and interprets signals in real-time, and use those to develop novel, personalized interactions and evaluate virtual experiences. Offering an interface that is not only easy to extend but also is complemented by a suite of tools for testing and analysis. We hope that PhysioHMD can become a universal, publicly available testbed for VR and AR researchers.

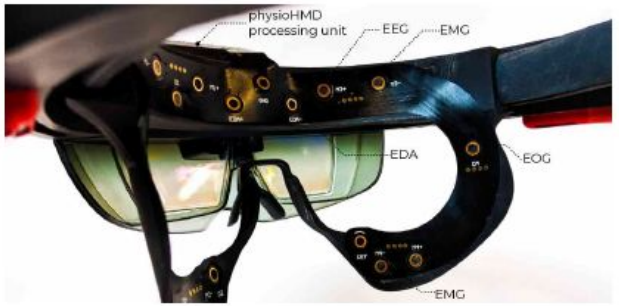


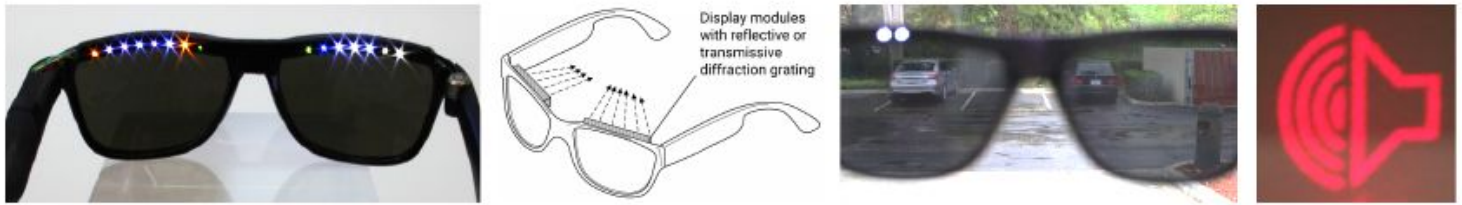
Figure 1: View of PhysioHMD hardware setup for AR experience. Gold plated electrodes and the flexible printed circuit board (PCB) record data through the contact with the skin.

Some research projects (Cont'd)

1D Eyewear: Peripheral, Hidden LEDs and Near-Eye Holographic Displays for Unobtrusive Augmentation

Alex Olwal **Bernard Kress***

Interaction Lab, Google Inc.
Mountain View, CA, 94043, USA
olwal@google.com



a) Wide-FOV, wireless LED glasses b) Embedded CGHs c) Perspective-correct rendering d) Hologram

Figure 1. 1D Eyewear uses 1D arrays of LEDs and pre-recorded holographic symbols for socially acceptable industrial design. We demonstrate near-eye optical designs using computer-generated holograms (CGHs) for compact presentation of symbology.

https://vimeo.com/295963543

Some research projects (Cont'd)

RF-Pick: Comparing Order Picking Using a HUD with Wearable RFID Verification to Traditional Pick Methods

Charu Thomas[1], Theodore Panagiotopoulos[1], Pramod Kotipalli[1], Malcolm Haynes[2], Thad Starner[1]

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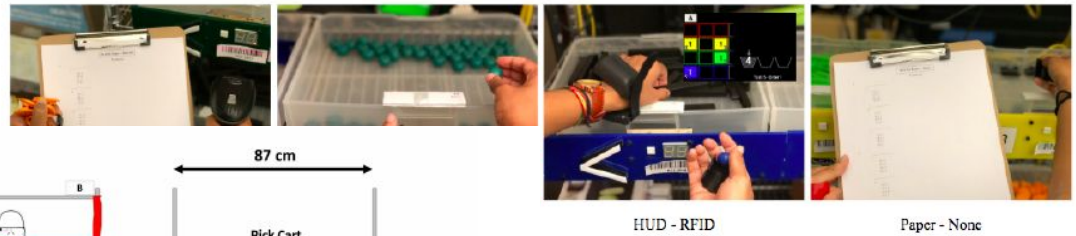
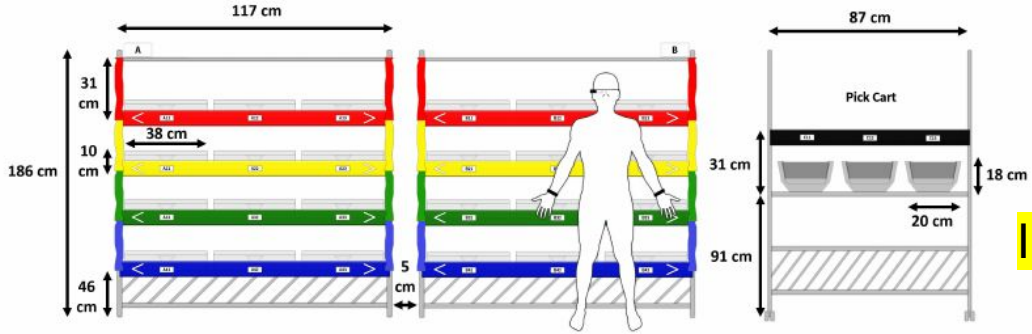
ABSTRACT

Order picking accounts for 55% of the annual $60 billion spent on warehouse operations in the United States. Reducing human-induced errors in the order fulfillment process can save warehouses and distributors significant costs. We investigate a radio-frequency identification (RFID)-based verification method wherein wearable RFID scanners, worn on the wrists, scan passive RFID tags mounted on an item's bin as the item is picked; this method is used in conjunction with a head-up display (HUD) to guide the user to the correct item. We compare this RFID verification method to pick-to-light with button verification, pick-to-paper with barcode verification, and pick-to-paper with no verification. We find that pick-to-HUD with



HUD - RFID | Paper - None



In an industrial context ...

Figure 6. Our experimental environment consists of two racks (named A and B) and a cart. Each rack has 12 source bins, and the cart has three receive bins (bottom row not used).

Some research projects (Cont'd)

SnapBand: a Flexible Multi-Location Touch Input Band

David Dobbelstein, Tobias Arnold, Enrico Rukzio
Ulm University, Ulm, Germany
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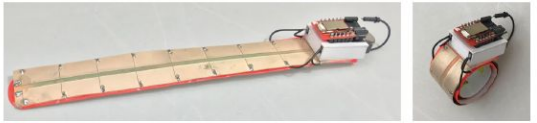


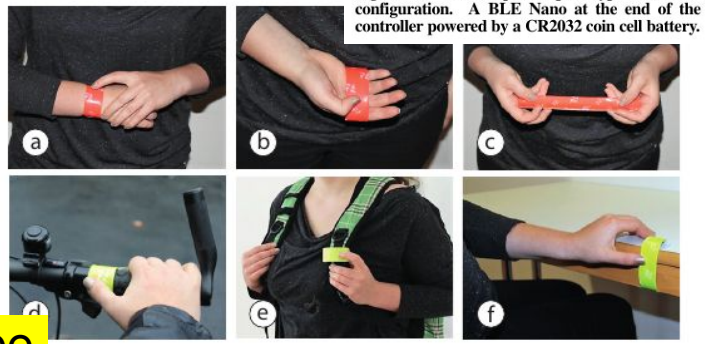
Figure 2. The *SnapBand*-prototype in a flat (left) and curled (right) configuration. A BLE Nano at the end of the band serves as a micro controller powered by a CR2032 coin cell battery.

ABSTRACT
The form factors of current wearable devices are designed and limited to be worn at specifically defined on-body locations (such as the wrist), which can limit the interaction capabilities based on physical constraints in body movement and positioning. We investigate the design of a multi-functional wearable input device that can be worn at various locations on the body and may as well get mounted onto objects in the environment. This allows users to adjust the device's location to different affordances of

By the way, you can contact the authors for more information or in order to get a prototype, who knows ...?

ulti-location; touch input device; on-body; off-body

ification Keywords
H.5.2. User Interfaces: Input devices and strategies



e 1. ***SnapBand*** **is a touch input device that can be snapped, worn and attached to multiple on- and off-body locations, such as onto the wrist similar to a smartwatch (a), as a one- or two-handed touch controller (b&c), attached to a handlebar on a bycicle (d), on a strap of a backback (e) or the edge of a table (f).**

Some research projects (Cont'd)

Empathy Amulet: A Wearable to Connect with Strangers

Sophia Brueckner
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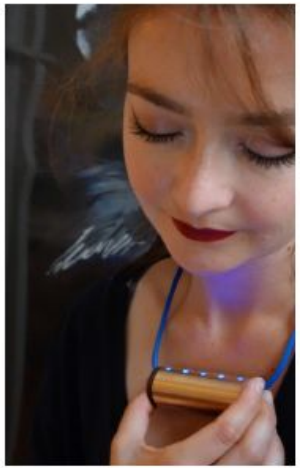


Figure 1: Empathy Amulet.

Figure 2: Grabbing handles to activate the Empathy Box.

Figure 4: Empathy Amulet.

Figure 5: Kapton heater on back of Empathy Amulet.

https://vimeo.com/194698949

Some research projects (Cont'd)

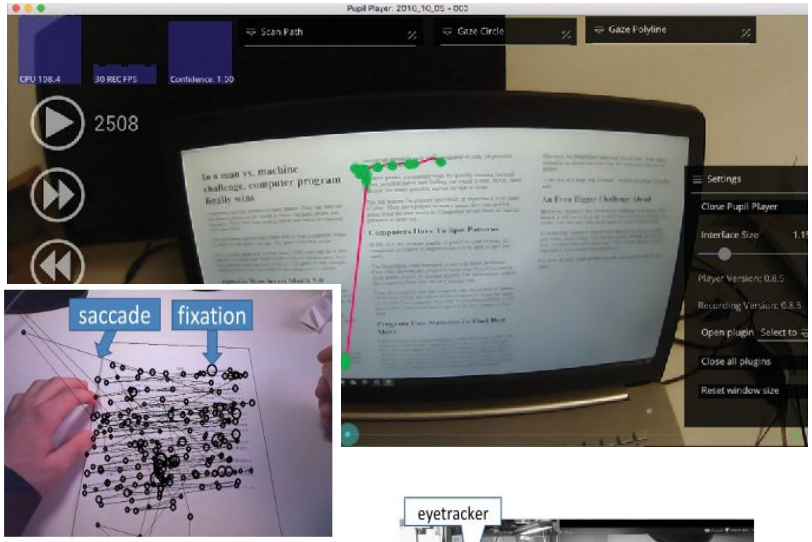


Fig. 1. Eye fixations and saccade traces while reading a document.

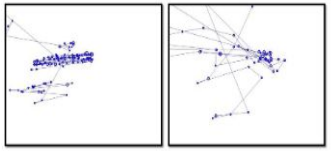


Fig. 2. Eyetracking data for Reading (left) versus not Reading (right)

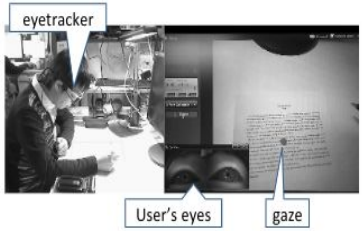


Fig. 3. Conversion of an eye gaze by using LLAH.

Wordometer Systems for Everyday Life

OLIVIER AUGEREAU, CHARLES LIMA SANCHES, and KOICHI KISE, Osaka Prefecture University
KAI KUNZE, Keio University

We present in this paper a detailed comparison of different algorithms and devices to determine the number of words read in everyday life. We call our system the "Wordometer". We used three kinds of eye tracking systems in our experiment: mobile video-oculography (MVoG); stationary video-oculography (SVoG); and electro-oculography (EoG). By analyzing the movement of the eyes we were able to estimate the number of words that a user read. Recently, inexpensive eye trackers have appeared on the market. Thus, we undertook a large-scale experiment that compared three devices that can be used for daily reading on a screen: the Tobii Eye X SVoG; the JINS MEME EoG; and the Pupil MVoG. We found that the accuracy of the everyday life devices and professional devices was similar when used with the Wordometer. We analyzed the robustness of the systems for special reading behaviors: rereading and skipping.

With the MVoG, SVoG and EoG systems, we obtained estimation errors respectively, 7.2%, 13.0%, and 10.6% in our main experiment. In all our experiments, we obtained 300 recordings by 14 participants, which amounted to 109,097 read words.

(a) JINS MEME glasses.

(b) JINS MEME glasses as worn by a user.

https://www.youtube.com/watch?v=7eOkTvC7UNc

Aura Ring

AuraRing: Precise Electromagnetic Finger Tracking

FARSHID SALEMI PARIZI*, ERIC WHITMIRE*, and SHWETAK PATEL, University of Washington

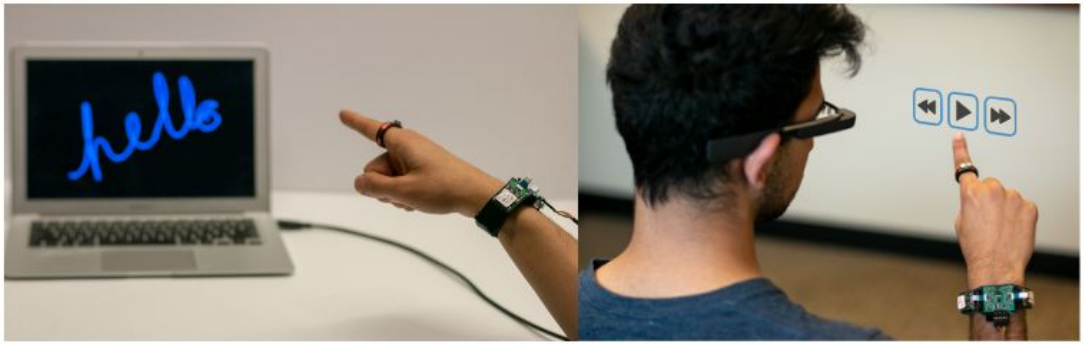


Fig. 1. AuraRing is 5-DoF electromagnetic tracker that enables precise, accurate, and fine-grained finger tracking for AR, VR and wearable applications. Left: A user writes the word "hello" in the air. Right: Using AuraRing to play a song in a music application on a smart glass.

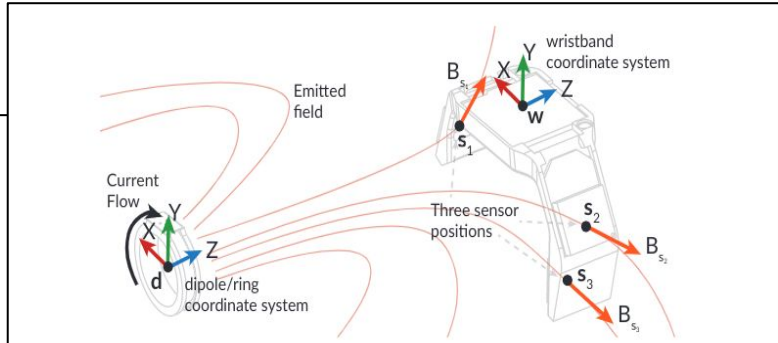


Fig. 2. AuraRing uses a wire coil wrapped on a ring to produce an AC magnetic field around the hand which is measured by three 3-axis coils embedded in a wristband.

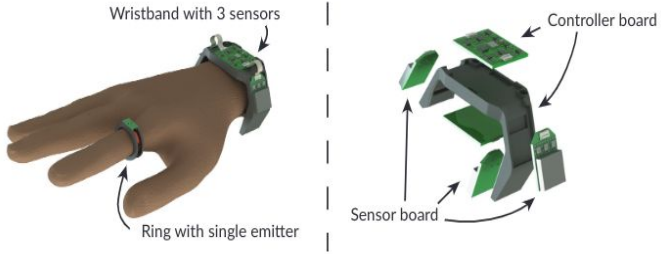


Fig. 4. AuraRing contains two controller and three sensor boards embedded in a wristband and a ring worn device.

https://www.youtube.com/watch?v=fALf9_RNct8

Some research projects (Cont'd)

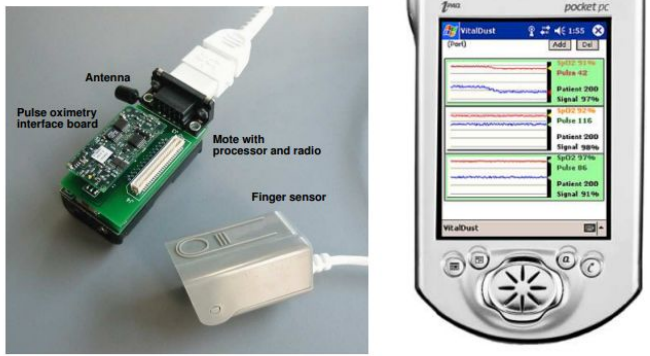


Figure 1: **(a) Our mote-based pulse oximeter. (b) The accompanying patient triage application.**

CodeBlue: An *Ad Hoc* Sensor Network Infrastructure for Emergency Medical Care

David Malan†, Thaddeus Fulford-Jones†, Matt Welsh†, and Steve Moulton‡
†Division of Engineering and Applied Sciences ‡School of Medicine
Harvard University Boston University

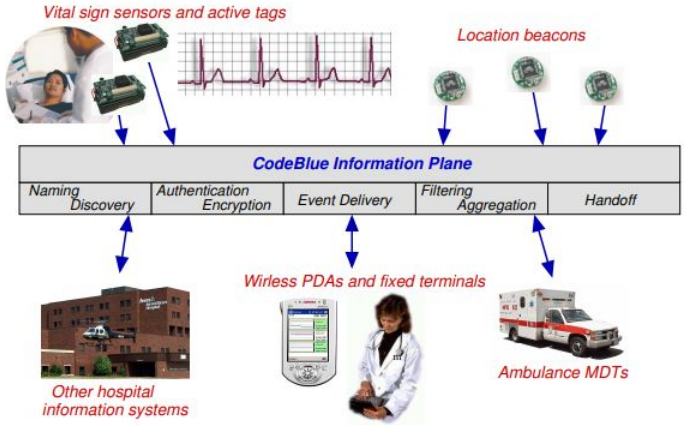
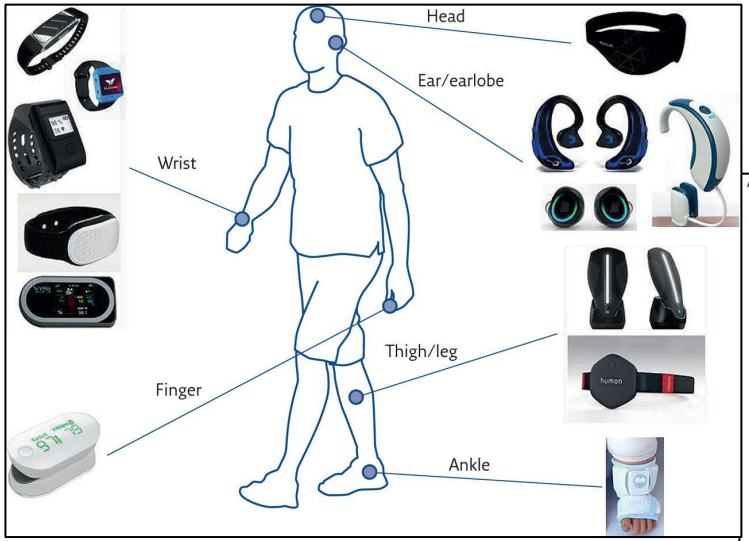
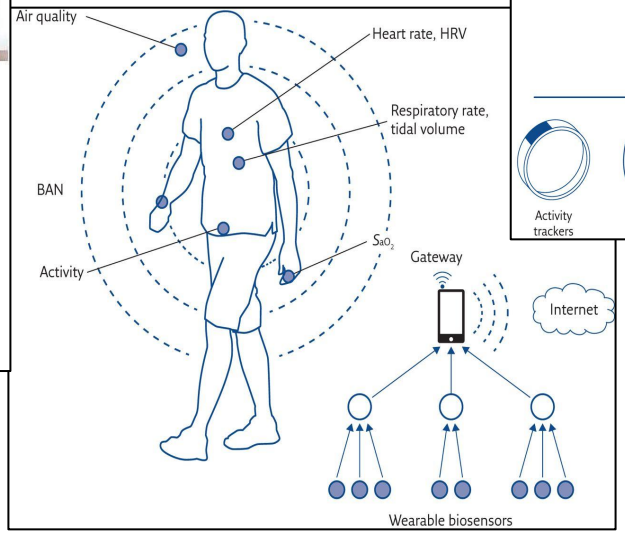
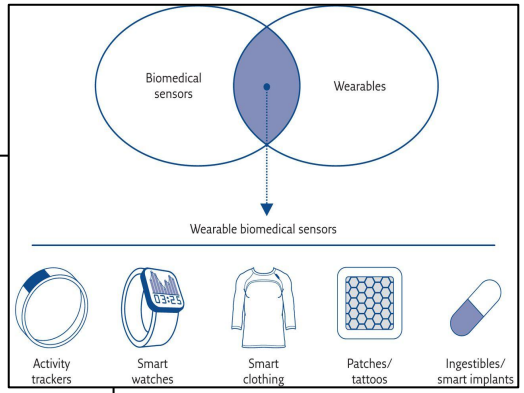


Figure 2: **The CodeBlue communication substrate.**

Wearable biomedical sensors







Aliverti, Andrea. "Wearable technology: role in respiratory health and disease." Breathe 13.2 (2017): e27-e36.

Some research projects (Cont'd)

Predicting Latent Narrative Mood using Audio and Physiologic Data

Tuka AlHanai and Mohammad Mahdi Ghassemi*
Massachusetts Institute of Technology, Cambridge MA 02139, USA
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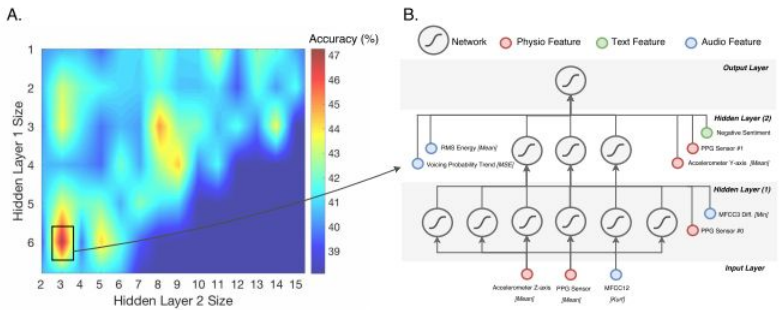


Figure 2: *(A) A heatmap of segment-level NN accuracy for a variety of topological settings. Hotter colors correspond to higher accuracy. (B) A depiction of the segment-level NN after optimization of feature location within the NN topology. Lower level features such as the accelerometer signal was placed in lower levels of the network while more abstract features, such as negative text sentiment, was placed higher in the network.*

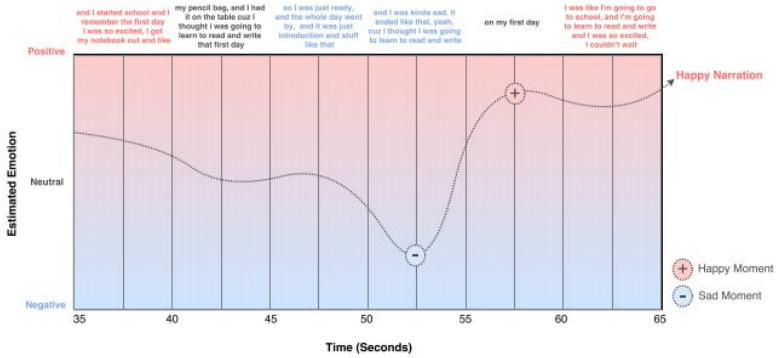
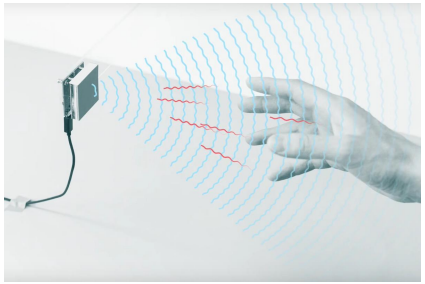


Figure 3: *Real-time estimation of the emotional content in 30 seconds of collected data, using our optimized NN. The color of the text at the top of the plot reflects the ground truth labels generated by the research assistant (blue for negative, red for positive, black for neutral). The predictions of the network (y-axis) reflect the underlying emotional state of the narrator.*

Mood-Predicting Wearables https://www.youtube.com/watch?v=ZZFcgg-7dlc

Some research projects (Cont'd)



BeyondTouch: Extending the Input Language with Built-in Sensors on Commodity Smartphones

Cheng Zhang, Anhong Guo, Dingtian Zhang, Caleb Southern, Rosa Arriaga, Gregory Abowd
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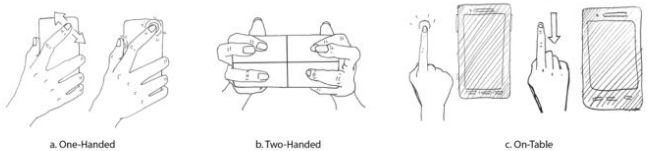
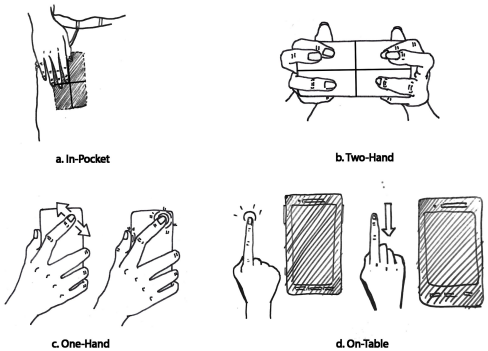


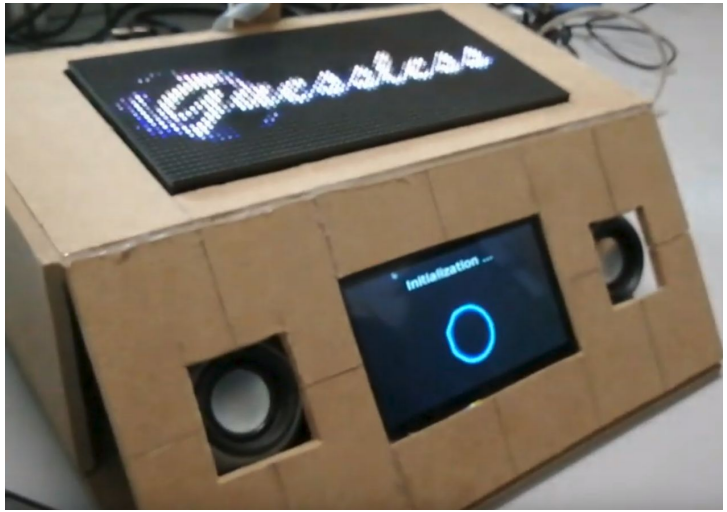


Google Pixel 4 Soli RADAR Gestures https://www.youtube.com/watch?v=hwEDIya5bx0
Welcome to Project Soli https://www.youtube.com/watch?v=0QNiZfSsPc0

Closer to you ...

Guessless

Authors: Maher LAAROUSSI, Aboubakr CHOUTTA, Hamid OUFKIR, Othmane MCHOUAT



https://roboticsmind.github.io/project > guessless

Closer to you … (Cont'd)

Sapio Mirror

Authors: Pellier Bastien, Antoine Dombrecht, Pierre-Marie Frerot, Maxime Danguin

SocialMirror: Motivating Young Adults with Autism to Practice Life Skills in a Social World

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Abstract
In this video, we present *SocialMirror* [1], an interactive mirror connected to an online social network that allows young adults with autism to seek advice from a trusted and responsive network of family, friends and professionals. We depict three social scenarios that show the feasibility and applicability of SocialMirror.

Keywords
Autism, Social Networking, Collaborative Care

https://roboticsmind.github.io/project > smart-mirror
Gatech's SmartMirror https://www.youtube.com/watch?v=91-JnTq3MhA

Closer to you … (Cont'd)

Immersion 3.5D

Authors: Heba Kaddouh, Mohamed Ben Saad, Jessy Colombo, Khalid Barakat

roboticsmind.github.io

Closer to you … (Cont'd)

Digiscript

Authors: Nicolas Dziurda, Guillaume Jobin, Thomas Arpin, Thomas Cornier, Steve Demeulemeester

Gatech - BrailleTouch Helps Visually Impaired Users https://www.youtube.com/watch?v=rIEO1bUFHsI
https://twitter.com/DigitalTrends/status/1111976370828181504

Closer to you … (Cont’d)

Eye Truck

Authors: Vincent Keller, Antoine Vo, Zhu Yongyi, Yixin Li

Closer to you … (Cont'd)

Connected chair

Authors: Etienne Famery, Amandhi Kahawita, Sirine Nouri

Image of the chair cushion with the location of the cells and sensors

https://roboticsmind.github.io/project > 2019-connected-chair

Closer to you … (Cont'd)

Pot de fleurs connecté

Authors: Zhang Bingqin, Dechaumet Léo, Bouziane Hajar

Hello water

Authors: Li Ying, Mi Yaoli, Zhu Yanwu

Rapport final

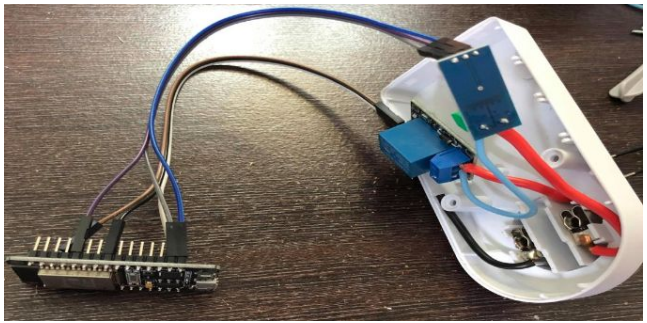
https://roboticsmind.github.io/project > 2019-les-licornes2019-hello-water

https://roboticsmind.github.io/project > 2019-hello-water

Closer to you … (Cont'd)

Smart Plugs

Authors: Amine Yahouni, Eugenie iacobiciuc



1. Matériels utilisés
   a. Un microcontrôleur :

ESP32 qui nous a été remis par l'université au début du semestre

   b. Relay :

Afin de relier le microcontrôleur a la prise et il a couté 3 euros

   c. Capteur de courant :

Pour pouvoir mesurer la consommation électrique, il a couté 3euros

Closer to you … (Cont’d)

MyP13 : borne connectée P13

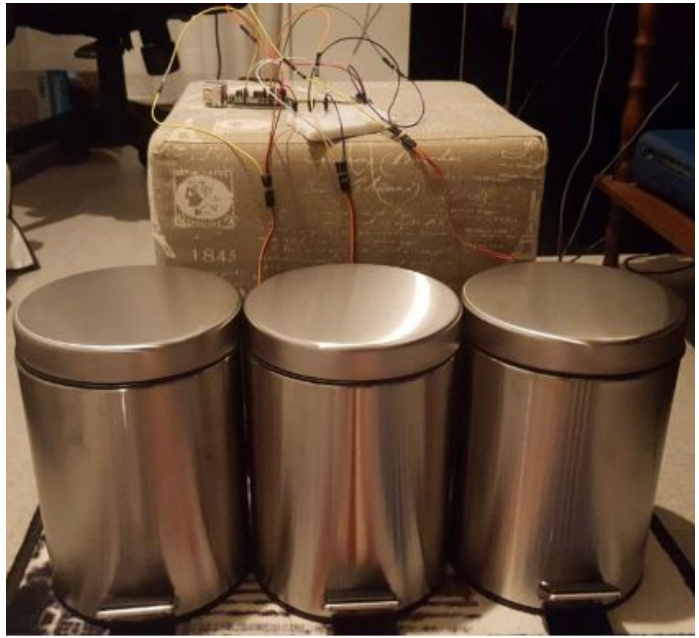
Authors: Nait Saada Tarek, Messaoudi Nassim, Jean-Pierre Marc

https://roboticsmind.github.io/project > 2019-nasta

Closer to you … (Cont’d)

Poubelle connectée

Authors: Nady SADDIK, Alexandre KARAKAS



Closer to you … (Cont'd)

Platform for Assessment and Monitoring of Infant Comfort

Aomar Osmani, Massinissa Hamidi
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Abdelghani Chibani
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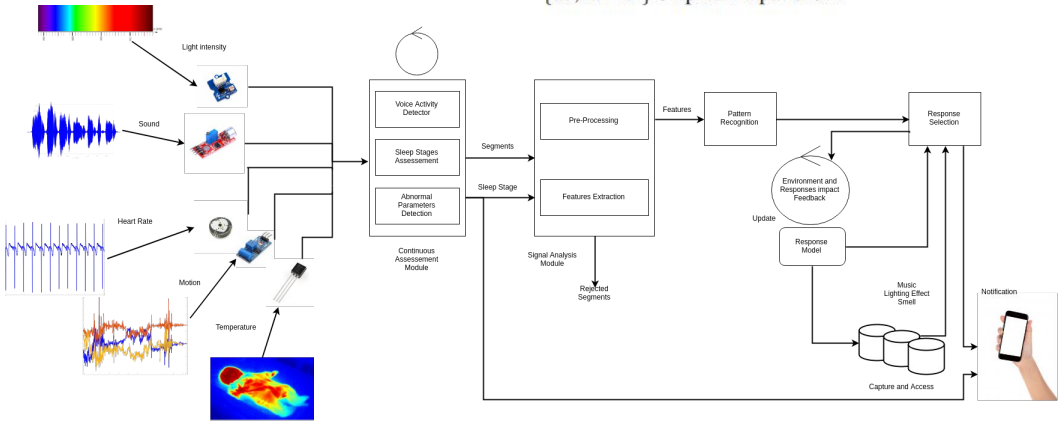
Université Paris Est Créteil, France
chibani@u-pec.fr



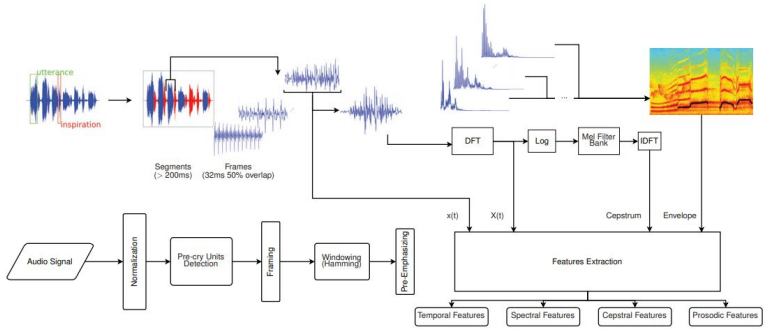
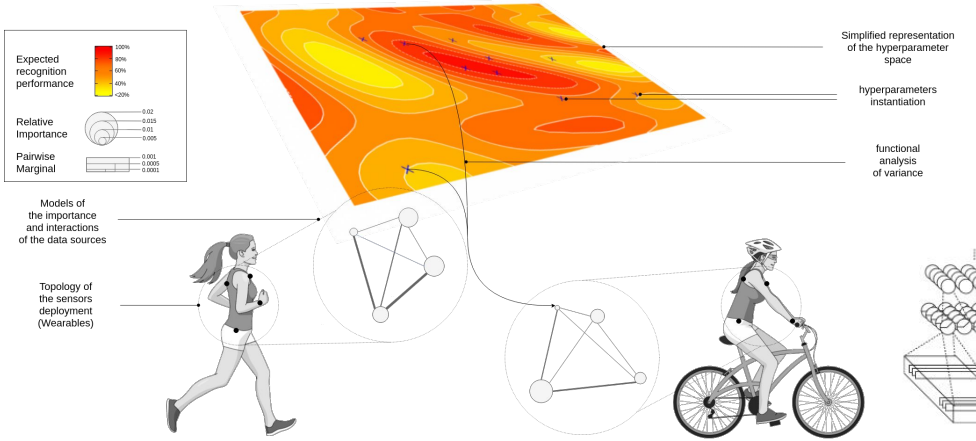


Figure 2: Block diagram of data preprocessing and features extraction

Closer to you … (Cont'd)



HAR Data Generation Model to Highly Reduce Learning Space

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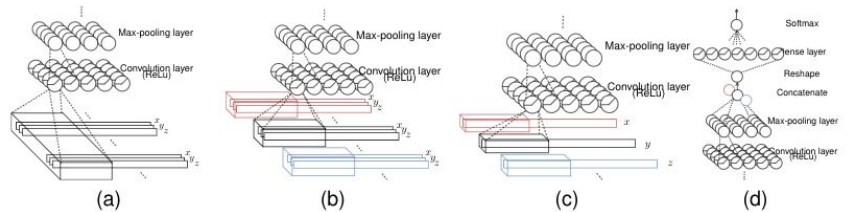


Figure 1: Schematic representation of the different *convolutional modes* of input data: (a) modalities are grouped together and convolved with the filters, (b) modalities are taken apart from each other, (c) Each channel is convolved alone. (d) Classification layer encompassing a set of convolutional layers followed by a dense layer. The features maps outputted from the last convolutional layer of each modality is concatenated and then reshaped to be fed into the dense layer.

Sports

Reconnaissance automatiques d'exercices physiques

ERICA (Prof. Archan Misra SMU Singapore)

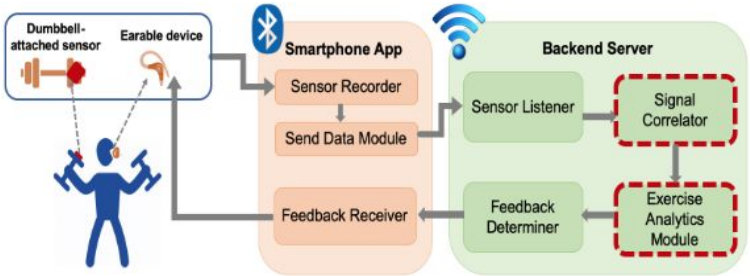


Figure 1: System Architecture

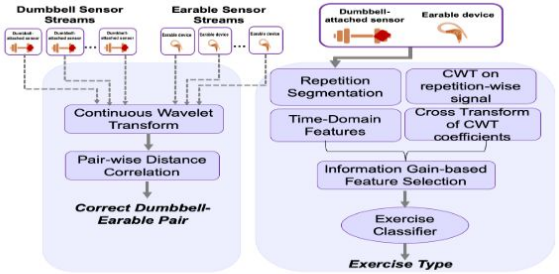


Figure 3: Steps involved in identifying the Correct *{Dumbbell-Earable}* Pair and Exercise Type

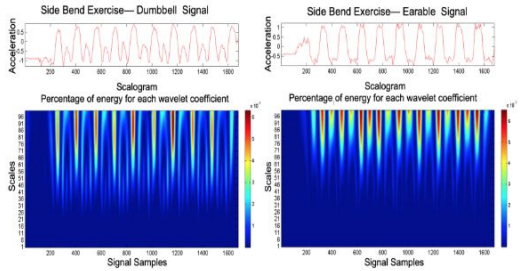


Figure 4: Continuous Wavelet Transform of Dumbbell (*left*) and Earable (*right*) Signal for *Side-Bend* Exercise

	Accuracy	Precision	Recall	F-Score
Naive Bayes	79.23%	0.792	0.79	0.79
Random Forest	**92.94%**	**0.93**	**0.929**	**0.929**
Decision Tree	83.98%	0.84	0.84	0.84
SVM	71.04%	0.71	0.71	0.71
Logistic	72.98%	0.73	0.73	0.73

Table 1: Exercise Classification accuracy using different machine learning algorithms

https://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=5761&context=sis_research

Sports

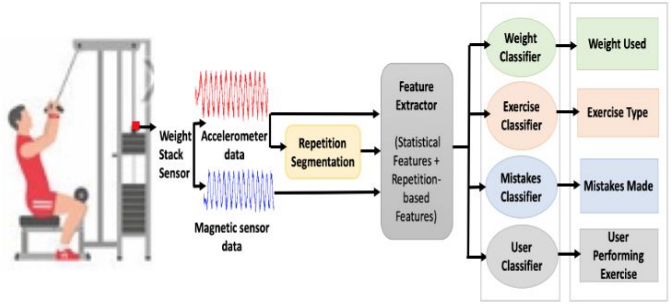


Fig. 2: Overview of *W8-Scope's* Workflow.

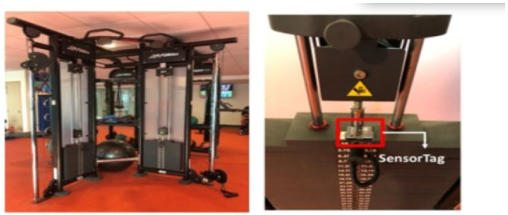


Fig. 1: Multi-Purpose Cable Pulley Machine and Proposed Sensor Placement on the Weight Stack

Fig. 3: Exercise positions for 10 exercises (on cable pulley machine)

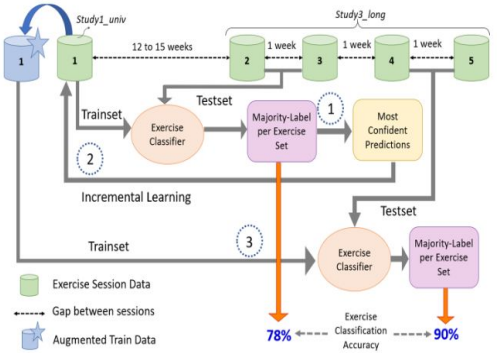


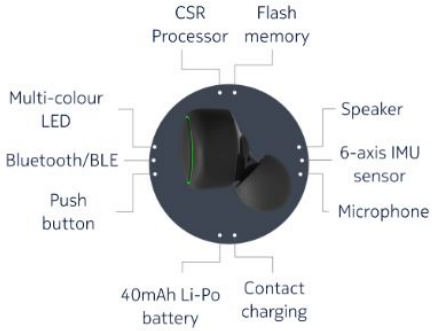
Fig. 8: Incremental Learning with Longitudinal Exercise Data

https://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=6105&context=sis_research

Nokia’s eSense

eSense OVERVIEW

eSense is a multi-sensory earable platform for personal-scale behavioural analytics research. It is a True Wireless Stereo (TWS) earbud augmented with a 6-axis inertial motion unit, a microphone, and dual mode Bluetooth (Bluetooth Classic and Bluetooth Low Energy). eSense is built with a custom-designed 15 × 15 × 3 mm PCB and composed of a Qualcomm CSR8670, a dual-mode Bluetooth audio system-on-chip (SoC) with a microphone per earbud; a InvenSense MPU6500 six-axis inertial measurement unit (IMU) including a three-axis accelerometer, a three-axis gyroscope, and a two-state button; a circular LED; associated power regulation; and battery-charging circuitry. There is no internal storage or real-time clock. It is powered by an ultra-thin 40-mAh LiPo battery. The carrier casing is equipped with a battery enabling recharging of eSense earbuds on the go (up to 3 full charges). Each earbud weights 20 g and is 18 × 20 × 20 mm.



Please check the IEEE Pervasive Computing article on eSense for more details.

If you use eSense in your research project, we would appreciate if you kindly cite the following two papers.

[1] Fahim Kawsar, Chulhong Min, Akhil Mathur, and Alessandro Montanari,. "Earables for Personal-scale Behaviour Analytics", IEEE Pervasive Computing, Volume: 17, Issue: 3, 2018
[2] Chulhong Min, Akhil Mathur and Fahim Kawsar . "Exploring Audio and Kinetic Sensing on Earable Devices", In WearSys 2018, The 16th ACM Conference on Mobile Systems, Applications, and Services (MobiSys 2018), June 2018 , Munich, Germany.

Nokia used to provide eSense to researchers working on “earable computing” … Is it still the case? if you are interested, we can ask them to provide us one of these ...

https://www.esense.io/

Earables

Design Space and Usability of Earable Prototyping

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Anja Exler
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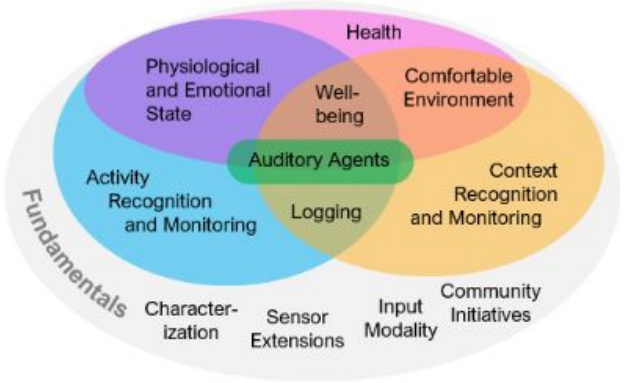
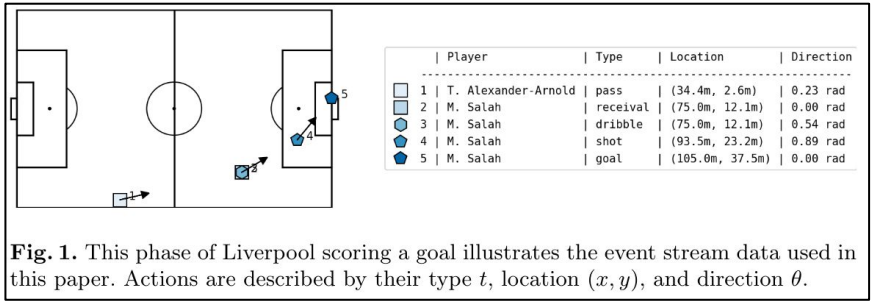


Figure 1: Initial design space characterization of publications on eSense to put into contrast with non-expert results.

In a *health* context, eSense was used to track the user's *physiological state* (respiration rate [38]). The platform was also used as mHealth building block [5] and to detect jaw clenching [40]. *Activity recognition* includes step counting [35], stay/walk detection as well as classifying speaking, eating and head shaking or nodding [15], drinking or chewing [23, 25], and exercising [16]. Additionally, frown and smile detection [22] as well as head movement [36] are possible indicators of the *emotional state*. Also, a data *logging* mechanism was proposed [14]. *Auditory agents* were used for auditive manipulation to support walking in a straight line [24]. Katayama et al. [19] proposed a setup for adapting a conversational agent's style, tone, and volume to the emotional, environmental, and social *context* to create a *comfortable environment*. *Well-being* creates a feedback loop, e.g., to understa conversational well-being [28]. In general, eSense can be an interface device of virtual conversational agents [1]. Work on *fundamental* principles creates the foundation of the research space. This includes e.g., *characterization* of wearing variability [27] and understanding earables as *input modality*, e.g., to control a robot arm [31]. *Community initiatives* include approaches for secure earable data sharing platforms [34], and also *sensor extensions* such as a magnetometer [13]. Publications for any of the other platforms also fall into the proposed prototyping design space.

Machine Learning and Football



	Player	Type	Location	Direction
1	T. Alexander-Arnold	pass	(34.4m, 2.6m)	0.23 rad
2	M. Salah	receival	(75.0m, 12.1m)	0.00 rad
3	M. Salah	dribble	(75.0m, 12.1m)	0.54 rad
4	M. Salah	shot	(93.5m, 23.2m)	0.89 rad
5	M. Salah	goal	(105.0m, 37.5m)	0.00 rad

Fig. 1. This phase of Liverpool scoring a goal illustrates the event stream data used in this paper. Actions are described by their type t, location (x, y), and direction θ.

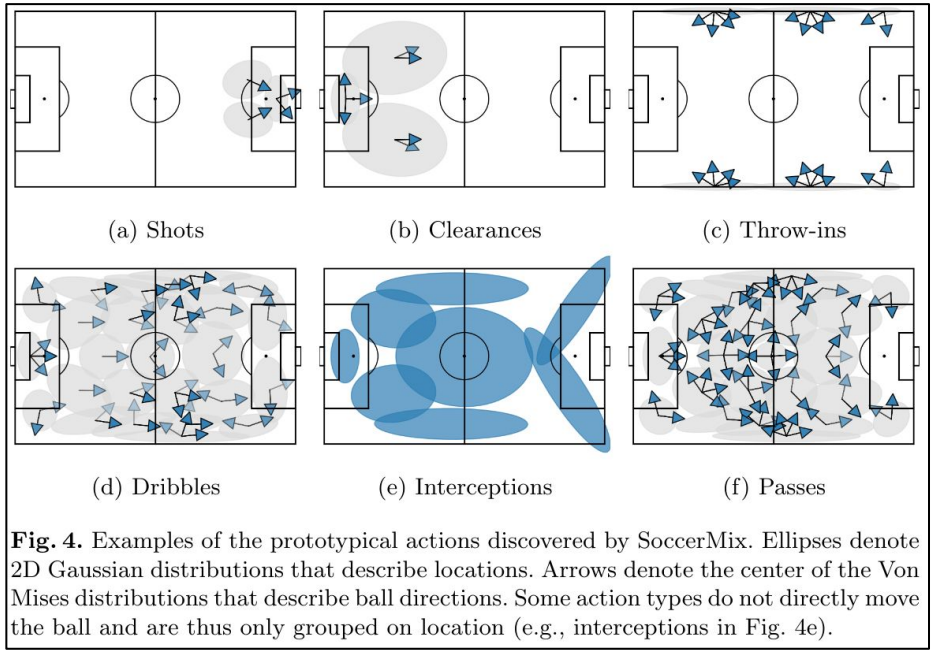


Fig. 4. Examples of the prototypical actions discovered by SoccerMix. Ellipses denote 2D Gaussian distributions that describe locations. Arrows denote the center of the Von Mises distributions that describe ball directions. Some action types do not directly move the ball and are thus only grouped on location (e.g., interceptions in Fig. 4e).

https://slideslive.com/38932389/soccermix-representing-soccer-actions-with-mixture-models

Automatic Pass Annotation from Soccer Video Streams Based on Object Detection and LSTM

Danilo Sorano[1], Fabio Carrara[2], Paolo Cintia,[1]
Fabrizio Falchi[2], and Luca Pappalardo[2] ✉

[1] Department of Computer Science, University of Pisa, Italy
[2] ISTI-CNR, Pisa, Italy
luca.pappalardo@isti.cnr.it

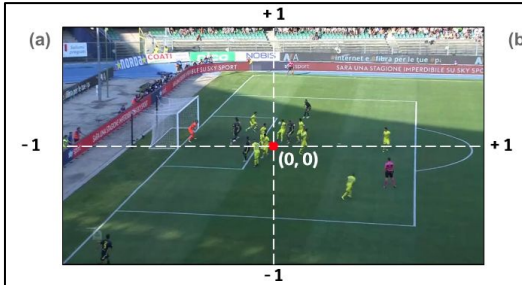


Fig. 3. Construction of the Object Position Vectors. (a) Normalization of the coordinates in the range $[-1, +1]$, where the center of the frame has coordinates $(0, 0)$. (b) The five players identified by YOLOv3 with the shortest distance from the ball.

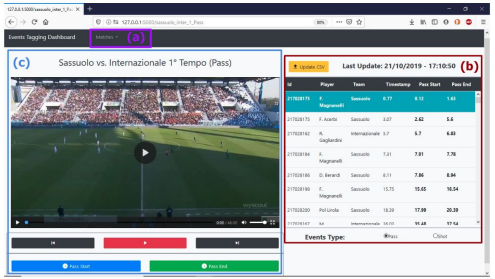


Fig. 5. Visual interface of the manual annotation application. The user can load a match using the appropriate dropdown (a). On the right side (b), a table shows all the pass events of the match and related information. On the left side (c), the interface shows the video and buttons to start and pause it, to move backward and forward, and to annotate the starting and ending times. When the user clicks on a row in the table, the video moves to two seconds before the event. A video that illustrates the functioning of the application is here: `https://youtu.be/vO98f3XuTAU`.

https://github.com/jonpappalord/PassNet
https://slideslive.com/38932413/automatic-pass-annotation-from-soccer-video-streams-based-on-object-detection-and-lstm

SoccerMap: A Deep Learning Architecture for Visually-Interpretable Analysis in Soccer

Javier Fernández[1,2]✉ and Luke Bornn[3]

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[2] FC Barcelona, Barcelona, Spain, javier.fernandezr@fcbarcelona.cat
[3] Simon Fraser University, British Columbia, Canada, lbornn@sfu.ca

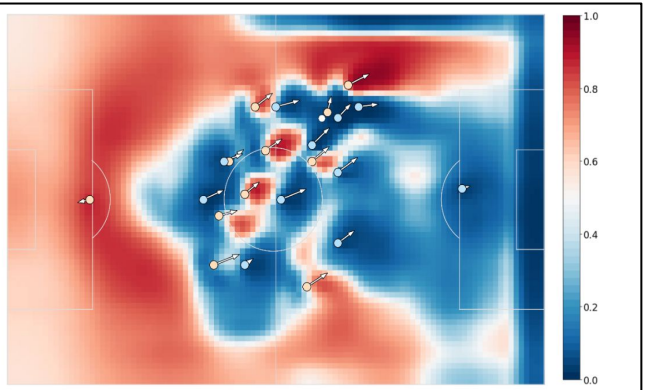


Fig. 3: Pass probability surface for a given game situation. Yellow and blue circles represent players' locations on the attacking and defending team, respectively, and the arrows represent the velocity vector for each player. The white circle represents the ball location.

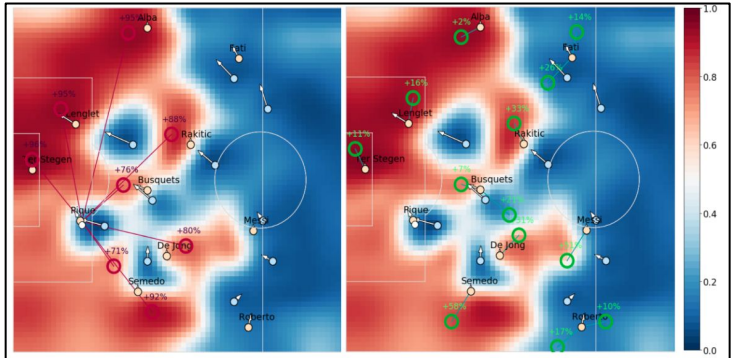
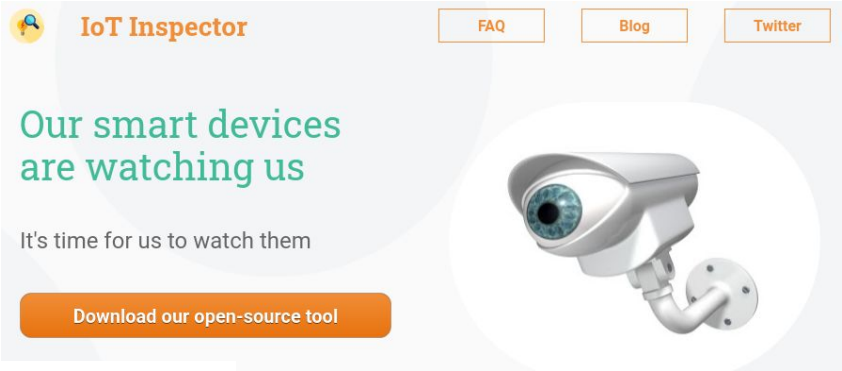


Fig. 5: In the left column, we present a game-state where red circles represent the optimal passing location for each teammate, and the expected pass probability. In the right column, the green circles represent the optimal positioning of players increasing the expected pass probability if the players were placed in those locations at that time.

Security



IoT Inspector: Crowdsourcing Labeled Network Traffic from Smart Home Devices at Scale

DANNY YUXING HUANG, Princeton University
NOAH APTHORPE, Princeton University
FRANK LI, Georgia Institute of Technology
GUNES ACAR, imec-COSIC KU Leuven
NICK FEAMSTER, University of Chicago

this data enables new research into smart homes through two case studies focused on security and privacy. First, we find that many device vendors, including Amazon and Google, use outdated TLS versions and send unencrypted traffic, sometimes to advertising and tracking services. Second, we discover that smart TVs from at least 10 vendors communicated with advertising and tracking services. Finally, we find widespread cross-border communications, sometimes unencrypted, between devices and Internet services that are located in countries with potentially poor privacy practices. To facilitate future reproducible research in smart homes, we will release the IoT Inspector data to the public.

https://iotinspector.org/
https://github.com/nyu-mlab/iot-inspector-client

Security (cont'd)

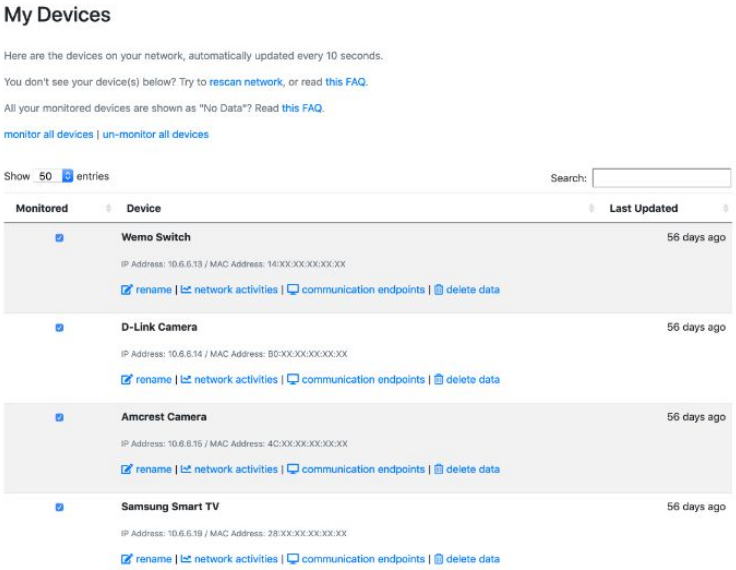


Fig. 1. A screenshot of IoT Inspector's user interface that shows a list of devices on the network.

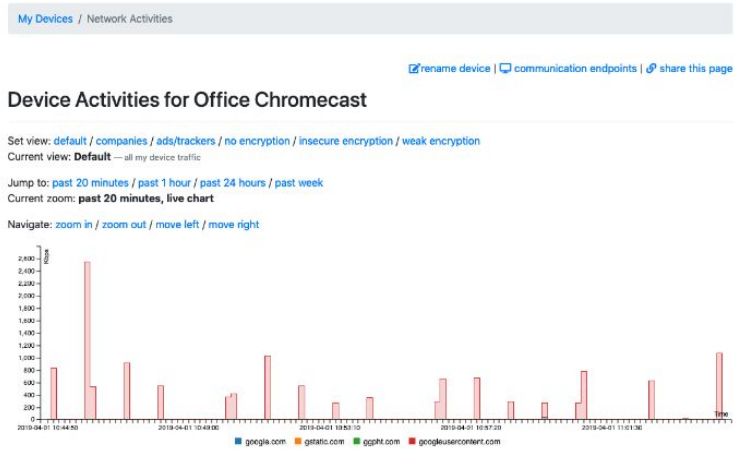
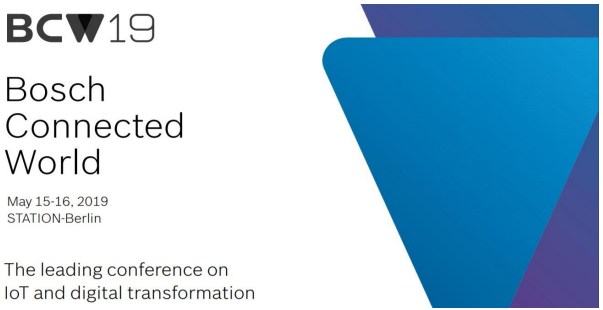


Fig. 2. A screenshot of bandwidth usage for individual endpoints on a Chromecast device.

International contests

- IoT world cup
- Bosch hackathon
- RoboCup (plus orienté robotique) more information with Lab instructor (he is the Technical Committee Head of the International Robocup Federation)



https://bosch-connected-world.com/hackathon/
https://bosch-connected-world.com/hackathon/recaping-bcx19/
https://viewpointsystem.com/en/applications/?branche=a-industry
https://www.innovationworldcup.com/11th-iot-wt-innovation-world-cup/

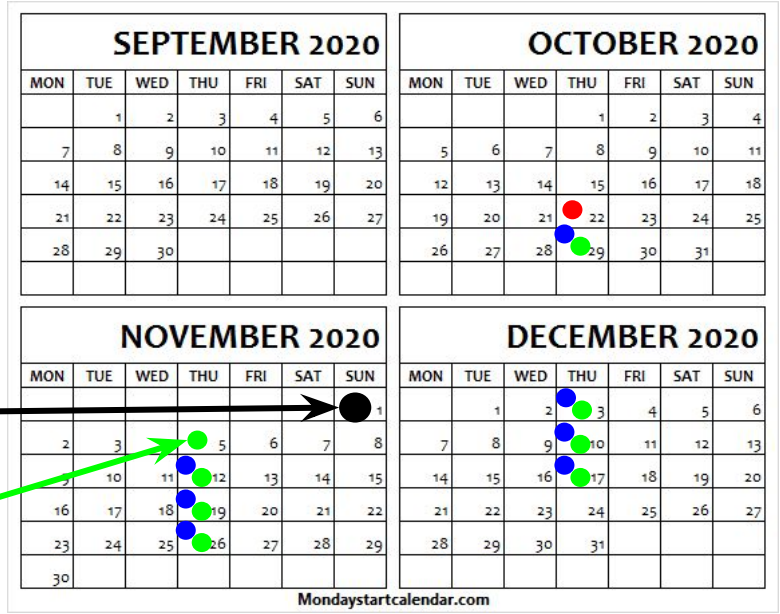
Your projects

Back to organization

- Courses
- Labs
- Projects

1st deadline:

- Sunday 1st November, 2020
- Project proposal: state-of-the-art, market study, norms and regulations, implementation planning
- Presentations

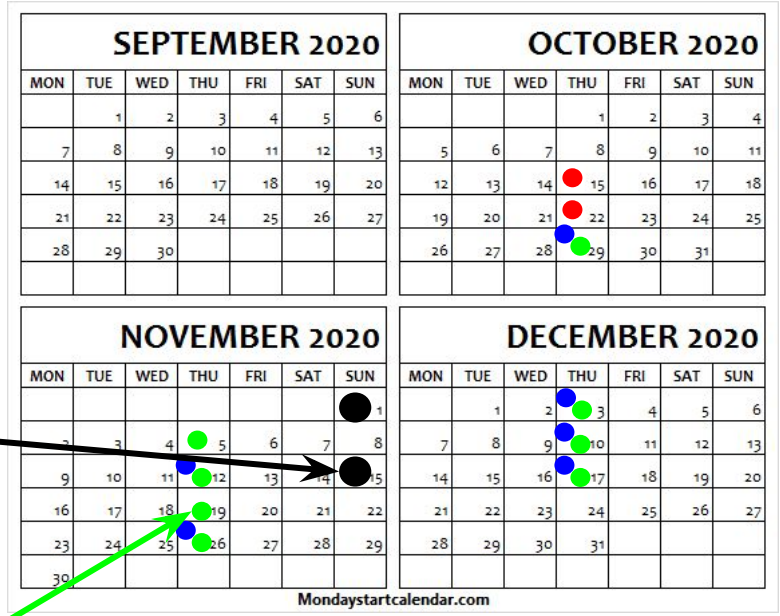


Back to organization (Cont'd)

- Courses
- Labs
- Projects

2nd deadline:

- Sunday 15th November, 2020
- Technical details: components list, software design (uml diagrams), hardware design, *etc.*
- Presentations and validation of the project … No major changes after that

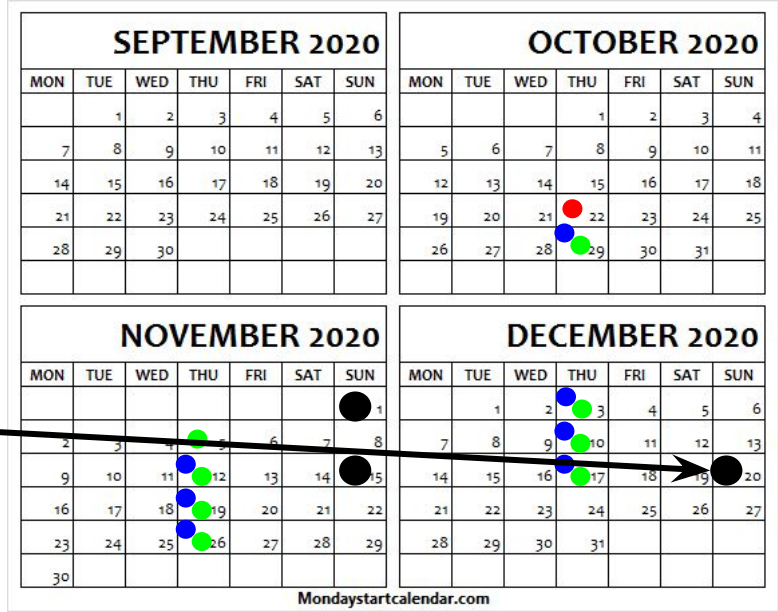


Back to organization (Cont'd)

- Courses
- Labs
- Projects

3rd deadline:

- Sunday 20th December, 2020
- What to submit: the final report, video, slides, and the code. Everything via your GitHub repository;
- Final Presentations (Jan 7th, 2021)



Project-oriented course

At the end of the whole IoT-course, you have to submit:

1. a report;
2. a video;
3. mid-term presentations;
4. final presentation;

Report

Goals (a report? what to include?)

Your deliverables must include:

1. a clear description of the problem you tackle;
2. a comprehensive state-of-the-art around proposed solutions;
3. a description of your IoT-based solution and what makes it better than other solutions;
4. norms and regulations that apply in your specific case;
5. implementation planning in the form of Gantt diagram;
6. anything that would be of interest to your solution.

Video

Goals (a video? what to do? what not to do?)

Do’s

- 3 minutes NO MORE, NO LESS;
- Concise description of the Hardware and software;
- Demo of your product;
- Take a look at inspirational works around YouTube, Vimeo, etc.

don’ts

- More than 3 minutes;
- Less than 3 minutes;
- Showing only a demo;

An exemple (https://www.youtube.com/watch?v=U7y1wiYqHDc)

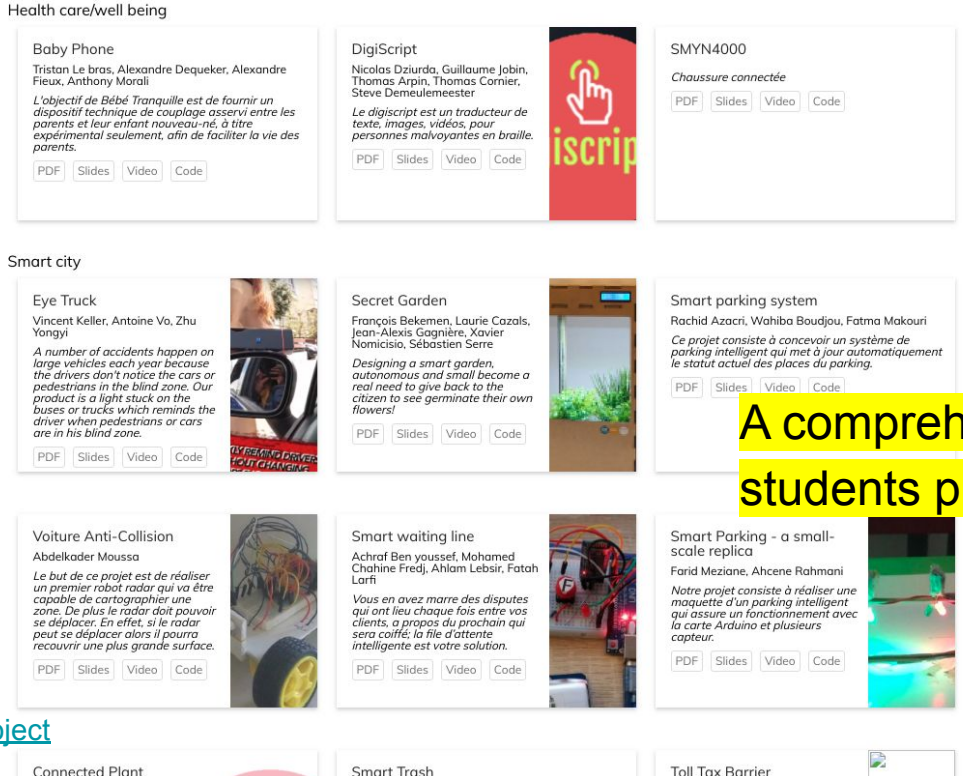
Project proposal presentation

Presentation rules:

- Each group has 7 minutes to convince (followed by 3 min. questions);
- Each member of a group has to present, mainly, his part;

IoT website

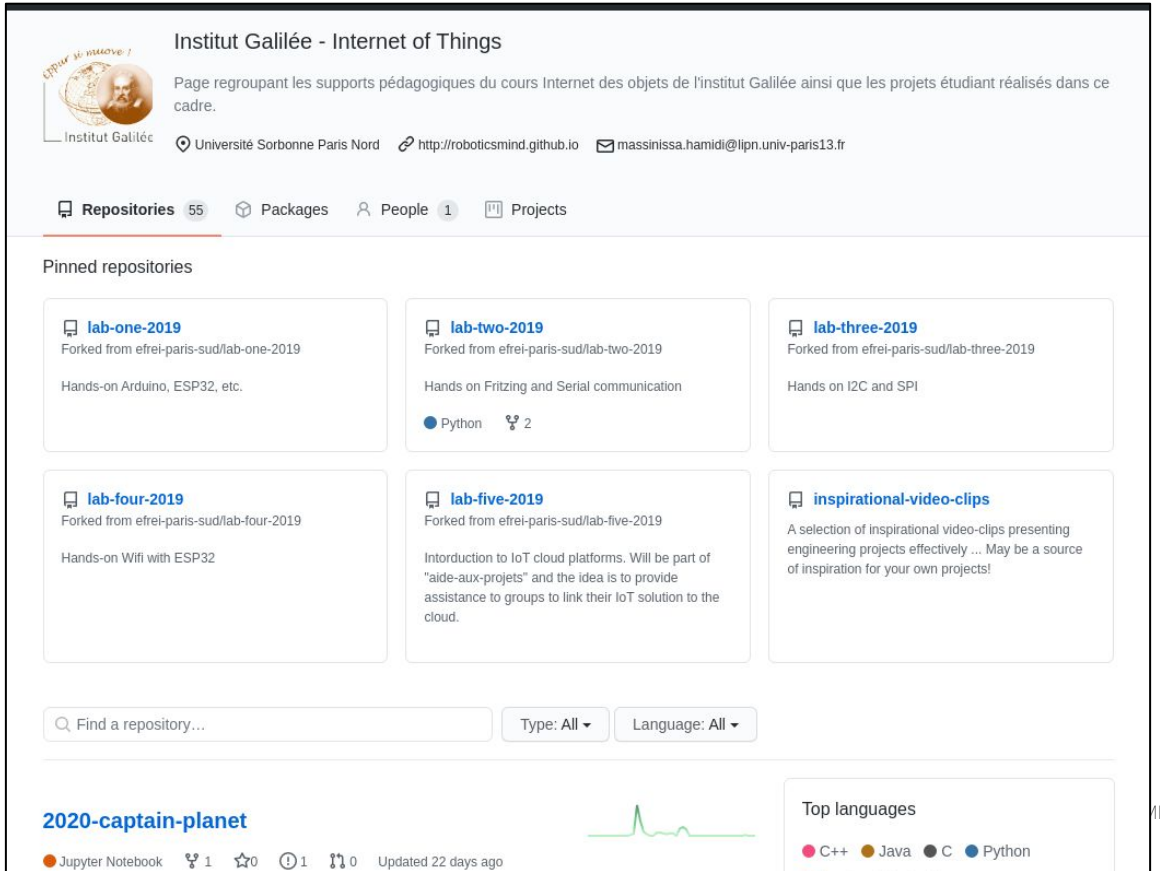
Objectifs (le site web? pourquoi faire?)



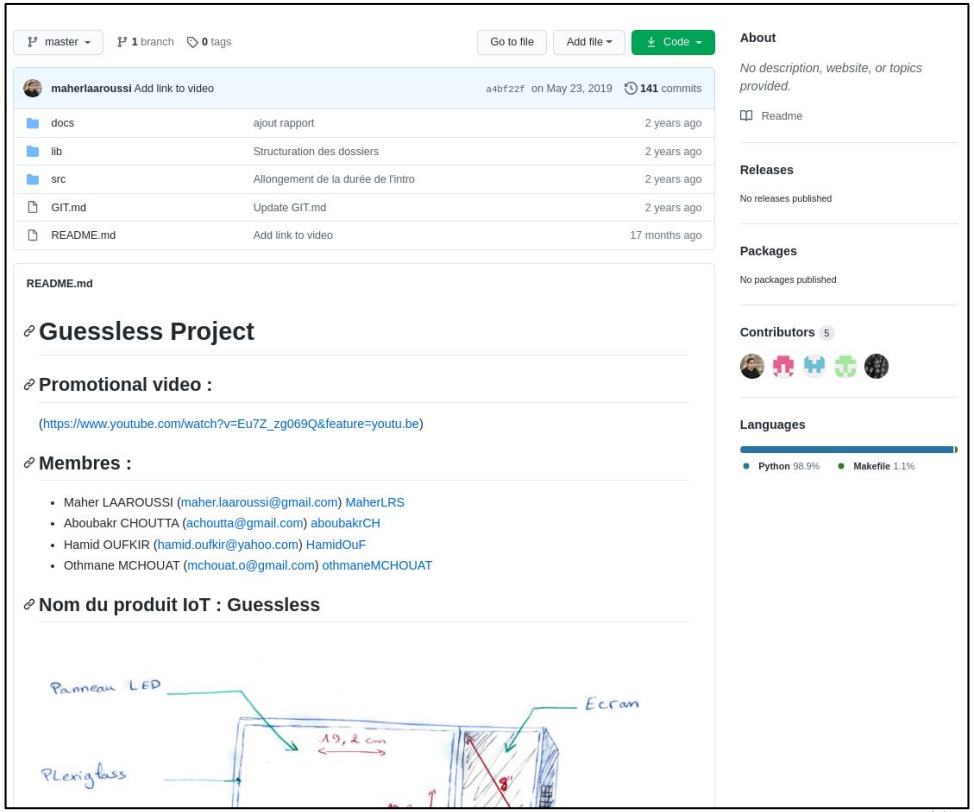
A comprehensive resource for students projects, eventually ...

https://roboticsmind.github.io/project

GitHub Organization

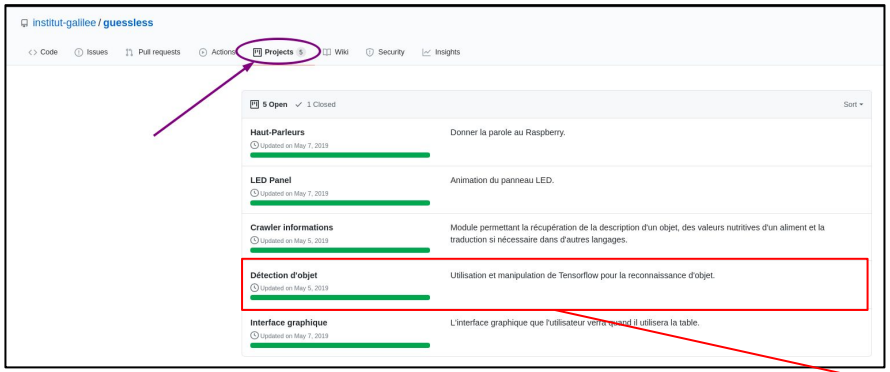


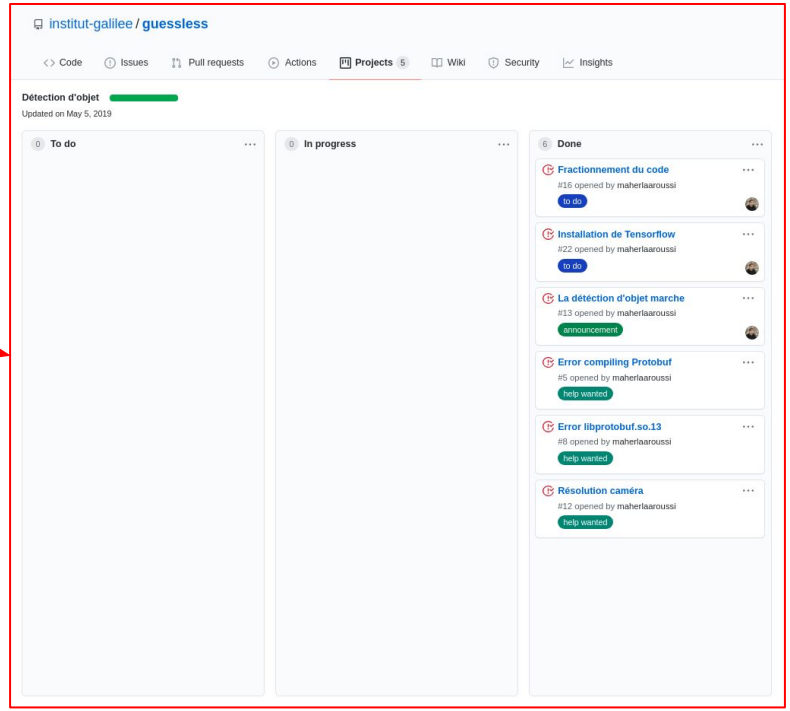
GitHub Repositories



https://github.com/institut-galilee/guessless

Project management inside GitHub





- Bug report (issues);
- Feature request (pull requests);
- Tasks assignment;
- Prioritize tasks;
- Versioning;

https://github.com/institut-galilee/guessless

Evaluation

Sujet
[G] Difficulté
[G] Originalité
[P] Difficulté de la tâche

Présentation
[G] slides
[G] qualité générale
[P] Présentation personnelle
[P] Réponse aux questions
[G] Démo du travail effectué

Rapport
[G] Qualité présentation
[G] qualité état de l'art
[G] présentation de l'étude
[G] présentation de la solution
[G] aspects généraux
[P] Contribution personnelle

Vidéo
[P] Contribution personnelle
[G] qualité générale

Git [G]
activité en commits, issues, pull requests
pertinence des commits

Suivi lors des Tps
Présence
Engagement

Code
Aspects généraux
Fonctionnel?

Hardware
Aspects généraux

Time to create your GitHub accounts

Use usernames that correspond to your real names (easy for us to find out who is who!);

https://github.com

Time to team-up

- Based on personal affinities or shared interests;
- Flexible until the next course, no changes allowed after that;
- 3 members maximum, no singletons;

Even if you work in teams, final marks are individual!

Time to team-up (Cont'd)

- A GitHub repository will be created for each team;
- All your software developments will be done in GitHub (commits, issues, *etc.*) will be considered;
- All documents, reports, consulted resources, hardware designs, *etc.* have to be put in your respective project repository;
- A dedicated organization page, https://github.com/institut-galilee, will host your projects;
- You can find last years IoT projects in this organization page. You can also check the "sister" organization page, https://github.com/efrei-paris-sud.