CWI-ADE2016 Dataset
Sensing nightclubs through 40 million BLE packets

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https://github.com/cwi-dis/CWI-ADE2016-Dataset
2 NIGHTS
900 GUESTS
2 WRISTBANDS
24 NETWORKED RPI
40 MILLION BLE PACKETS
14 MILLION SENSOR READINGS
YARNS

Natural
  • Wool
  • Hennep
  • Cotton
  • Silk

Synthetic
  • Polyester
  • Nylon
  • Acrylic

Other
  • Soy
  • Bamboo
  • Corn

MACHINE

Weaving (Dornier)

MACHINE

Circular knitting (Santoni)

PROGRAMMING

Pixel to Needle
SMART TEXTILES
Video at:
https://www.redbull.com/nl-nl/byborre-x-red-bull-at-night-x-ade-the-future
SCENT
SIGHT
TASTE
SOUND
AN EXPERIENCE OF SENSES
WHAT IF THE CLUB COULD ACTUALLY REACT TO THE LEVEL OF EXCITEMENT OF THE CROWD?

WHAT IF THE PEOPLE COULD ACTIVELY INFLUENCE THE OVERALL EXPERIENCE BY THEIR ACTIVITY?
Technology: connector of all senses
HOW DOES THE CROWD TALK?
BLE-ENABLED WRISTBANDS

Sensing Location, Temperature and Energy Level
800 X VIP
Estimote Stickers
Pre-configured
Broadcast: 1.25 / 2.5 seconds

100 X FOR
TI SensorTag CC2650
Programmable
Broadcast: 1.25 seconds
LED strip
SHAKING SENSORS
HOW DOES THE CLUB LISTEN?
A NETWORK OF RPI
DATA PIPELINE

Data collection, processing & interpretation

500x iBeacons
60x SensorTags

30x Raspberry Pi

1x Server

Processing

Signal Strength Analysis & Triangulation
Multi-layer Convolution Neural Network

Unified feed

Feed

JSON
OSC

Output

Data Visualization

Light Installations
4D SOUND
CWI-ADE2016 Dataset
WHAT IS IN THE DATASET?

BLE PACKETS
- Timestamp
- Receiver (RPI)
- Address (hashed)
- Sensor Id
- Type of Device
- Payload (hashed)
- Payload Length

SENSOR DATA
- Temperature
- Accelerometer (X, Y, Z)
- Is moving? (Estimote)
- Previous Motion State (Estimote)
- Current Motion State (Estimote)

We want to open more data, do you want to suggest or help?

https://github.com/cwi-dis/CWI-ADE2016-Dataset
35+ packet types

https://github.com/cwi-dis/CWI-ADE2016-Dataset
600+ sensors/minute

- Friday, estimote
- Friday, sensortag
- Thursday, estimote
- Thursday, sensortag

ENERGY LEVEL & LIVE LOCATION

Displaying the partially unseen

- High Energy
- Medium Energy
- Low Energy
DATA TO HUMANS
Giving the club a voice
LIVE VISUALIZATION

Creating Meaningful Data Summaries
Post-Experience Output
EXPERIENCE SUMMARY

Guest > Data > Club Energy > Flight of the Night

17:30 START

MOST ACTIVE MOMENT

"TOM TRAGO - TIME IS THE MASTER"

DINNER

BLACKBOX

ATRIUM

OVERDRIVE

HOUSE WARMING

RADICAL HI-FI

SLAMMERS

ERIC DUNCAN

TOM TRAGO

CINNAMAN

VENUS X
EXPERIENCE SUMMARY

Club Energy > Data Visualisation > Pixel to Needle > Scarf
Further dataset applications
BLE BROADCASTING PERFORMANCE

- CDF: Cumulative Distribution Function
- 2.5 seconds
- 1.25 seconds

- 0, 10, 20, 30, 40, 50, 60 seconds between packets
- Friday, estimote-nearable
- Friday, sensortag
- Thursday, estimote-nearable
- Thursday, sensortag
ARE YOU INTERESTED IN USING THIS DATA?
DO YOU THINK WE CAN EXTEND THE DATASET?
DO YOU HAVE QUESTIONS?

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The future, I'll see you there.
- The Chemical Brothers

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Thanks
Demosthenis Katsouris
Amritpal Singh Gill
REDBULL
IBM
Clever&Franke

CWI
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Distributed and Interactive Systems

BYBORRE