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## Emo Spark – A Study on Revolution in Human Emotion through Artificial Intelligence

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**ABSTRACT:** For as long as long we've been imagining computers with emotional intelligence, we've depicted something slightly resembling human forms. The inventor of Emo Spark console, Patrick Levy-Rosenthal, focuses to bring artificial intelligence to human being in the form of cube small enough to fit in the palm of hands. Emo Spark is an android powered Wi-Fi/Bluetooth cube that allows users to create and interact with an emotionally condensed intelligence through music, conversation and visual media. It operates on "Emotional Processing Unit", a microchip that enables the system to create emotional profile graphs of its surroundings which collects and measures unique emotional input from a user. The EPG (Emotional Profile Graphs) allows the cube to virtually "FEEL" senses such as pleasure, pain and expresses those desires according to the users. Emo Spark is the future of artificial intelligence (AI) that allows you to transfer your real-time emotions and desires directly into the digital platform using state of art AI measurement and technology. This is the world's first "Emotional Intelligence" device that uses emotion text and content analysis to evaluate emotional responses of several people all at the same time and its capabilities and benefits are unlimited.

**KEYWORDS:** Android powered Wi-Fi/ Bluetooth cube, Artificial Intelligence, Emotional Profile Graph, Haywire Webee Automation.

### I. INTRODUCTION

The Emo Spark console is a 90 x 90 x 90 mm (3.5 x 3.5 x 3.5 in.) cube enabled by Wi-Fi and Bluetooth that interacts with human emotions by merging content analysis and face tracking software. It consists of a 1.8 GHz CPU, 2 GB of DDR3 memory and custom-built 20 MHz EPU (Emotional Processing Unit). The Emo Spark console interacts with conversation level, monitors facial expression through external camera and demonstrates human emotions while it delivers music, games, and videos that are most delightful to the user. i.e., it works to improve your mood and overall happiness by connecting to and recommending songs and videos or content on sites such as face book and YouTube.

### II. WHY EMO SPARK?

Apart from direct, person to boot conversation, users communicate with cube by either typing or talking to it through their television, smart phone, tablet or computer. Emo Spark with Wikipedia, Google and other resources can project answers for more than 39 million topics. It is always on and connected to Wi-Fi, so it is ready to respond instantly. It combines EG with face tracking technology to gauge the user's likes and dislikes by grouping their emotional responses to music, videos and other content. It does this using an emotional spectrum that is composed of eight emotions which are surprise, sadness, joy, trust, fear, disgust, anger and anticipation [1]. There are many benefits such as its convenience, social acceptability and easy usage. In many cases, it can be performed without a person's knowledge and it does what it's asked to do. Emo Spark initially tries to recommend pieces of content, be it a song or a



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video that might help improve user's mood. It constantly monitors user's mood and acts accordingly. It has its own emotions and the interface shows changes when talked rudely or politely with it.



Fig.1: The EmoSpark uses facial recognition technology to interpret a user's expressions and develop a profile of his or her personality and emotional states.

### III. OBJECTIVES OF EMO SPARK

Emo Spark was created with one objective in mind:

- To allow for a true and meaningful understanding between technology.
- The human emotional spectrum.

### IV. HOW DOES IT WORK?

The human brain processes thousands of pieces of the information each second, frequently without consciously realising it. Registering these Physical stimuli as simple, everyday concepts such as sound, motion, and colour, brain's basic cognitive structure and wiring creates a memory bank of patterns from which impressions are drawn and predictions about the future is made. Similarly, emotional stimuli are also stored within the memory bank through emotional pattern or 'fingerprints'.

Emo Spark has developed an Emotional Profile Graph that is used to register and develop a bank of Emotional associations for each memory within the cube. The EPG communicates with several other AI technologies and allows them to virtually "understand" the user through multimedia and elicit the same emotional response in kind. This response then accurately delivers that expression to other AI technologies, allowing a realistic range of expressions and interactions. The cube can also be connected to Google, Wikipedia, Google Maps, and other reference tools for gathering the information to the users.

**Emo Spark media player:** Ultimately, the user will decide how much they will input to EPG. Each time user imports or plays media through Emo player, they will have the option to rate how it makes them feel and program the cube's EPG to equate that media with an emotional reaction based on user's EPG. Alternatively, the EPG player can be used to playback the media and analyse it with direct impact on EPG of the cube.

**Emotion synthesis:** The cube can "feel" an infinite range of emotions across Emotional spectrum based on 8 primal human emotions. All these emotions mix inside the Emotion Processing Unit (EPU) of the cube like sound and colour-appropriate light waves. This real-time process can be experienced by watching the eye of the cube in App or on TV. The iris of the eye changes colour relating to emotion the cube is "feeling" at any given moment. The cube emits over 32 million colours synchronised with the colour of the iris through ripple.

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**Conversational intelligence:** Emo Spark maintains a conversational engine of more than 2million lines of data. Each time you chat with Emo Spark, it will learn to develop its own conversational understanding, completely based on the context of your interaction. It interacts by searching through the records of previous conversation and selecting an appropriate response to the comments. Over time and experiences, the cube will develop a distinctive personality of its own, seeking joy and satisfaction- like humans [2].

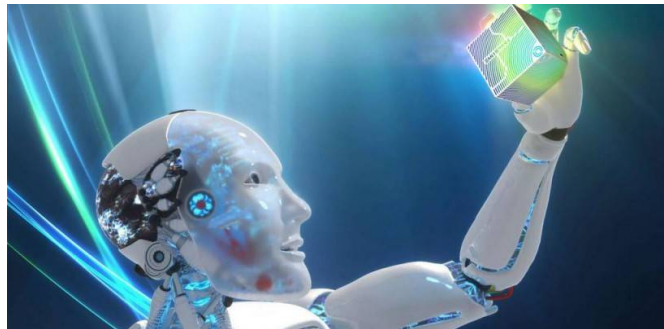


Fig.2: Conversational Intelligence.

## V. HARDWARE SPECIFICATION

Emo Spark itself is a 90mm cube. Inside a quad-core CPU runs Android 4.2.2. This Android powered cube contains 1.8 GHz CPU along with 2 GB of DDR3 and Rosenthal's custom built 20 MHz EPU (Emotional Processing Unit). It has an in-built antenna, Bluetooth, Wi-Fi 802.11 b/g/n capability and an USB 2.0 and HDMI 1.4 ports are also embedded.

Stretch goals comprise support for windowsphone and multi-camera support along with increased compatibility for Webee Automation. Each cube is possessed of a unique EPG and emotional sensibility and their unique EPG will act like a magnet, attracting other cubes with compatible EPGs. All cubes have access to a specially designed grid via Emo Shape's servers, where they can meet and interact and this enables cubes with similar affinities to connect and share similar media together.



Fig.3: The EmoSpark console contains a 1.8 GHz CPU along with 2 GB of DDR3 memory and Rosenthal's custom-built 20 MHz EPU (Emotion Processing Unit)

## VI. SOFTWARE PERFORMANCE

- Android
- Support Android Market Place
- Flash Player
- Support Adobe Flash 11 quad core android TV box



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## VII. FEATURES

**Full HD experience:** Connects to Television by HDMI and can be controlled by voice

**Easy Setup:** Connects to home network with a simple setup, guided by the free companionApp on desktop browsers.

**Fast Wi-Fi:** Emo Spark is always on and connected to Wi-Fi so it's ready to respond immediately.

**Bluetooth / USB enabled:** Connected to home automation with Philips HUE, jabra speaker510 USB, external sound adapter, and IP camera.

## VIII. WHY MUSIC?

Emo Spark initially uses sound and music to inform a cube's EPG as music is one of the most direct and immediate stimuli of exciting answer. Studies have proven that an unborn child can hear music in uterus and react to it. Emo Spark cube uses the same principle to experience and register user's customised data and literally grow and adapt to customised audio signals.

Sound will be primary method through which the cube will learn and grow from. The EmoPlayer will then create a customised EPG for user that will directly impact EPG of the cube. The cube will use this preliminary sound programming to develop and experience a virtual "life" of its own that will enclose other stimuli, inclusive of sight and language [3].

## IX. VISUAL INTERACTION

The Emo Spark can view gamer face to face directly in real time with the help of a webcam, observing and responding to verified signals. Dedicated plug-ins will recognise those same consistent visual expressions and the cube will begin to vicariously experience life with the user once it receives a verifiable response. The cube can see if the user has gone through a difficult day and expresses itself sympathetically, or it can see when the user has landed a promotion or passed a trying test and share along in that triumph. The Emo Spark is colour-coded, so the user will be able to recognise the cube's emotional status from its LED lighting. For example, the user can watch white sparks fly inside cube's visualisation app when it's in pleasure and black sparks if it's not [4]. Emo Spark app lets the users use a smart device to witness the intensity and variations in its emotional status at a distance, monitoring when and how a new experience modifies and informs the cube. It then shares its reactions with the user via their TV, smart phone or tablet apps. These apps allow user to see inside the "consciousness" of cube and monitor what it's "feeling" through its "emotional cloud" and what it's "thinking" through a virtual wall of images and sounds that can be watched and listened in amazing detail and clarity [5].

## X. COMMUNICATION

To communicate with Emo Spark, users can simply speak to it or type into their tablets, mobile phones, computer or televisions. It combines this with face tracking technology to recognise users likes and dislikes by grouping all their emotional responses to music, videos and other contents (using an emotional spectrum based on 8 emotions: joy, sadness, trust, disgust, fear, anger, surprise and anticipation) [6]. Users connect it to face book or YouTube to help the cube build up a history of interest. The cube, initially tries to recommend pieces of content, be it a YouTube video or song that might help improve the user's mood. For example, the cube might tell you that your friend Andrea has posted a new video onto face book and it has 100 likes, would you like to watch it. If you say yes, the cube will play it on mobile or any other device. If you start laughing, it shows similar content [7].

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## XI. EMO SPARK APP

The Emo Spark cube can be accessed remotely through video conferencing facility allowing users to interact with it just like a regular call, through android's text or speech functionality. Emo Spark cubes connect with each other through social media platforms [8]. Once a reliable EPG is established, Emo Spark cube can crawl through the web, searching for similar or new expression and interact with other cubes on network grid developed by Emo Shape [9]. Overtime and experiences, it develops its own personality seeking to expertise joy and satisfaction.



Fig. 4: EmoSPARK app.

## XII. TWO VERSIONS OF FUTURE

Emo Spark was designed to achieve a positive singularity. There are two versions of future: one which goes in a way of terminator, with robots based on pure logic and another one full of emotions like Wall-E, a cute robot full of emotions who save humans from logical robots. The cube will have an open API (Application Programming Interface) to allow developers to create new blocks of technologies in the form of apps in Google play store. So, the conversational engine, voice and speech recognition are all modules that will be upgraded or will be replaced, so the users can make their own cube.

## XIII. APPLICATIONS

Emo Spark doubles as an e-learning tool. It comes connected to a collection of online knowledge owned by Google and thus enabling it to answer questions on over 39 million topics. It can also be used to control robotic devices, bringing emotional feedback potentials to a NAO robot or turning a sphere ball into a virtual pet with its own emotions. On technical basis, Emo Spark accesses NASA's MODIS satellite, the freebase and Wiki databases and results in a platform so innovative it will spin the entertainment world on its side.

## XIV. CONCLUSION

We all want to be happy, and Emo Spark wants this. Like our brains, Emo Spark can also perceive and process millions of signals and stimuli. Technologies that improve lives are given more priority. Technologies that can improve happiness and overall mood is beyond our expectation, yet we are always ready for a break from today's disorganised world.

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