# Artificial Intelligence Console: A Revolution in Human Emotion

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**Abstract:** *The Emo Spark console is a 90 x 90 x 90 mm (3.5 x 3.5 x 3.5 in) Wi-Fi and Bluetooth enabled cube that interacts with a user's emotions using a combination of content analysis and face-tracking software. In addition to distinguishing between each member of the household, the device uses custom developed technology that enables it to differentiate between basic human feelings and create emotion profiles of not just everybody it interacts with, but also itself. The Emo Spark console interacts on a conversational level and demonstrates human emotions while it delivers music, games and videos that are the most pleasant to that particular user. Since it is an A.I. device, it continues to learn and fine-tune its results over time.*

## 1. Introduction

Emo Spark console, aims to bring artificial intelligence to consumers in the form of a cube small enough to fit in the palm of your hand. Emo Spark is an Android powered Wi-Fi/Bluetooth cube that allows users to create and interact with an emotionally concise intelligence through conversation, music, and visual media. Emo Spark will take not only gaming, but also your TV, smart phone or computer to an entirely different level from anything ever experienced before. media. Over time, the cube creates a customized Emotional Profile Graph (EPG) which collects and measures a unique emotional input from the user.

The EPG allows the cube to virtually "feel" senses such as pleasure and pain; and "expresses" those desires according to the user. The future of AI interactions is here. Emo Spark is a brand new innovation from Emo Shape, Ltd. that allows you to transfer your real life emotions and desires directly onto a digital platform using state of the art AI measurements and technology. The digital world will never be the same again. This is the world's first "Emotional Intelligence" device and its capabilities and benefits are unlimited. The Emo Spark uses emotion text and content analysis to measure the emotional responses of several people all at the same time.

## 2. Uses Objectives and Working

### 2.1 Uses

Aside from direct, person-to-bot conversations, the cube can also be spoken to by typing to it via one"s (Android) smart phone, tablet, or computer. By providing multiple avenues of communication between user and cube, Emo SPARK can better understand its owners preferences based on eight basic human emotions: joy, sadness, trust, disgust, fear, anger, surprise and anticipation. Artificial Intelligence platforms have come a long way in the past 10 years alone The "technological singularity" predicted by researchers and commentators is no longer a far-fetched theory, but is rapidly becoming part and parcel of our daily lives. Yet to this day, AI is still viewed as a distant and isolating portent of a technocratic world gone haywire. The time for us to reclaim that singularity is now.

### 2.2 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.

### 2.3 How does it work?

The human brain processes literally thousands of pieces of information each second –often without consciously realizing it. It registers these physical stimuli as such deceptively simple concepts as sound, motion, and color through a complex model of cognition and reaction; often without our conscious awareness.

Emo Shape, Ltd. designed their Emotion Processing Unit TM (EPU) using cutting edge representational models that enable the user to tap into and register their unique emotional expressions. Sine one of the key hallmarks of cognition is based on a consistent emotional response, the EPU literally grows and adapts to the user's responses with each use, enabling a much more broad and realistic emotional reflection. It is designed to become an extension of the user in the digital world. The Emotional Profile Graph can communicate to other AI technologies and allows them to virtually "understand" the user through multimedia, eliciting the same emotional response in kind. This response will then accurately convey that expression to other AI technologies.

Ultimately, the user will decide how much they will input into the EPG of the cube. Each time the user imports or plays media through the 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 the user's EPG. Alternatively, the Emo Player can be used to play back the media and analyze it with direct impact on the EPG of the cube. The cube will also feature a direct interface with Wikipedia, Google Maps and other reference tools for use as a study aid and communication platform.
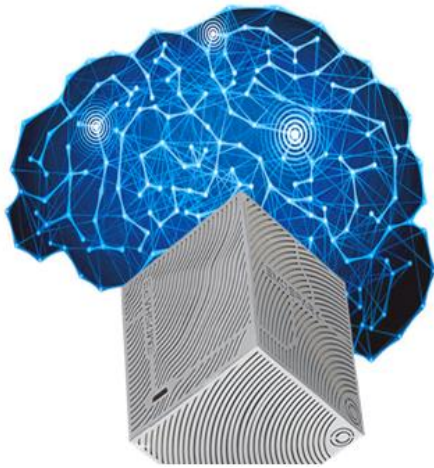
**Figure 1:** Human brain processing.

## 3. Hardware Specification

As for the hardware and specification of Emo SPARK itself, it is a 90mm cube. Inside, a quad-core 1.8GHz CPU runs Android 4.2.2. Also featured is an "EPU," or Emotional Processing Unit. Android powered, the cube contains 1.8 GHz CPU along with 2 GB of DDR3 memory and Rosenthal''s custom-built 20 MHz EPU (Emotion Processing Unit). It has an internal antenna, built-in Wi-Fi 802.11b/g/n capability and features USB 2.0, Micro USB and HDMI 1.4 ports. Stretch goals include support for Windows Phone and multi-camera support along with enhanced compatibility for Webee automation. "Each cube is possessed of a unique EPG and unique and emotional sensibility. All cubes will have access to a specially-designed grid via Emo Shape''s servers, where they can meet and interact. Their unique EPG will act like a magnet, attracting other cubes with compatible EPGs. Cubes with similar affinities will connect and share similar media together (note that the EPG remains secure and private to the cube itself. Only media files can be shared between cubes.) Each cube will discover what media with similar emotion tags other cubes have registered, and will be able to recommend and play them according to your mood."

### Dimensions
H: 90 mm (3.54 inches) W: 90 mm (3.54 inches) D: 90 mm (3.54 inches)

### 3.1 Operation

i. System Google Android 4. 2. 2
ii. CPU QUAD CORE 1.8Ghz
iii. EPU (Emotion Processing Unit) 20MHz
iv. DDR3 2GB
v. Nand Flash 8GB
vi. Networking WiFi 802.11b/g/n 10/100Mbps
vii. With internal Antenna
viii. Support Bluetooth 4.0

### Graphics
Type Integrated Graphics Mali400, Supports 1080P video (1920 x 1080) Input/Output Connectors

### 3Ports
1 X USB 2.0 Host for extemal drive/component {intemal)
1 X MicroUSB for power quad oore android tv box
1 X HDMI1.4 Output · ESD Protection with Rclamps
Power 90·230V,50/60Hz input, max. p

### 3.2 Software Performance

a) Android
b) Market
c) Support Android Market Place
d) Flash Player
e) Support Adobe Flash 11 quad core android tv box
f) Garring Built·in 30 Accelerator. Multi-Media
g) Video Decoding:Mpeg1/214.H.264,VC-1,Divx,Xvid, RM8,9/10,VP6

### Video Formats
MKV,TS,TP,M2TS.RMIRMVB,BD·ISOAVI,MPG,VOB,DAT,ASF, TRP,FLV etc full formats

### Audio
Audio-Decoding: DTS,AC3,LPCM,FLAC,HE-AAC
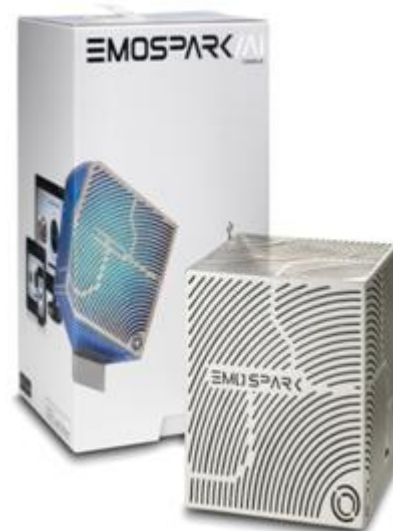Audio-Formats: MP3,DGG,WMA,WMAPRD



**Figure 2:** Overview of cube

### LED
4 RGB Leds – 2×16 Million colours
*US Patent Pending

### EmoSPARK works with:
HDMI Television
Requires iOS 4.0 or greater
iPod touch (5th generation)
iPhone 5,4,3
iPad 5,4
Android Bluetooth Devices With OS
3.0+

## 4. Proposed System

As like our brain Emo Spark can also perceive and process billions of signals and stimuli over time.
- The Cube connected to Google, Wikipedia and other free resources and is able to answer and project answers in over 39·million topics.

- You can interact Emo spark by using your Smart phone, Tablet, T. v or PC.
- Emo SPARK can feel an infinite variety in the emotional spectrum based on 8 primary human emotions, Joy, Sadness, Trust, Disgust, Fear, Anger, Surprise and Anticipation.
- Emo SPARK learns everything from you, the way you interact with it, comments and responses.
- This Cube Measure your behavior and emotions, then in turn it will create a emotion profile that make you happy and feel comfortable.

The EmoSpark cube can be accessed remotely through video conferencing facilities. The user can interact and engage in conversation with the cube, just like a regular video call, through text to speech and Android's voice recognition functionality. EmoSpark's app lets the user use a smart device to witness the intensity and nuances of its emotional status in real time at a distance, monitoring when and how a new experience modifies and informs the cube. EmoSpark will then share its reactions with the user via their TV, smartphone or tablet apps.

Emotion, Face Detection and Emotional Profile Graphing

EmoSpark measures an individual's unique behavior and responses to stimuli in depth and in a diverse set of environments. Using emotion text analysis and content analysis, EmoSpark is capable of measuring the emotional responses of multiple people simultaneously.

Over time, the cube creates a customized Emotional Profile Graph (EPG) which collects and measures a unique emotional input from the user. The EPG allows the cube to virtually 'feel' senses such as pleasure and pain, and 'expresses' those desires according to the user.

Conversational Intelligence. EmoSpark has a conversational engine of over 2 million lines of data, so each time you chat with it you'll contribute to the development of its own conversational understanding based on the context of your interaction. EmoSpark interacts by searching through the records of previous conversations, and selecting an appropriate response to your comments.

EmoSpark Cubes Can Chat & Date Each Other Online. Once a reliable EPG is established, EmoSpark will seek out other cubes to talk to about its experiences, and probably commiserate with about what a-holes their owners are. Cubes can engage in social activities, share media, and, oh man, who knows what else together.



**Figure 3:** Face detection

**Emospark Media Player**
- Amplifies your emotions
- EmoSpark combines media, emotion and social networking in an innovative way never before experienced.
- The unique EM rating system allows the cube to rate media played to you based on your personalized emotional response, including Soundcloud, You Tube and other platforms. This data is permanently recorded in the cube, and from the data, EmoSpark learns intelligently what media makes you happy, sad, excited or any other emotion you can possibly imagine.
- Music is one of the most direct and immediate stimuli of emotional response.
- Studies have proven that even unborn children can literally 'hear' music in utero and react to it.
- EmoSpark will be able to add your emotions to your media and shape, enhance and change your mood accordingly. By providing a distinct emotional reference point, this incredible technology will literally change the way you hear, see and experience video and music!
- Videos shared by Facebook friends are memorized by the cube and retained for later playback. This reduces the likelihood of losing a great video simply because the Facebook timeline goes by too fast!

**Bridging the Gap**
As a concept it's revolutionary and as the complete product where technology and human emotion meet, it is the first of its kind. Nevertheless, one of the key questions being asked, since it is has peaked such interest on the fund raising platform is "just exactly how does it do these things?" Simply put, the device monitors facial expressions and emotions. It can understand conversations. And it knows how to react by offering solutions, and even „chats" with its users to pep

them up, if required. While all this may sound far-fetched it's not. As testament to its potential users many people around the globe are grasping just what the gadget can bring to their homes and the impact it will have on their daily lives – and as such its online fundraising is increasingly gathering pace.

## Why Music?

Emo Spark initially uses music and sound to inform a cube's EPG because music is one of the most direct and immediate stimuli of emotional response. Studies have proven that un-born children can literally "hear" music in utero and react to it. The Emo Spark Cube uses the same basic principle to experience and register the user's customized data and liter-ally "grow" and adapt to customized audio cues. At first, sound will be the primary method through which the cube will learn and grow from. The Emo Player will then create a customized EPG for the user that will in turn directly impact the EPG of the cube. Step by step, the cube will use this pre-liminary sound programming to develop and experience a virtual "life" of its own that will embrace other stimuli, in-cluding sight and language.

## Visual Interaction

The Emo Spark can also view a gamer face to face directly in real time on a web cam, observing and responding to var-ious cues. Dedicated plug-ins will recognize those same consistent visual expressions and after receiving a verifiable response, the cube will begin to vicariously experience life with the user. The cube will see when the user has had a difficult day, and express itself sympathetically; or it can see when the user has landed a promotion or passed a particular-ly trying test and share along in that triumph. The Emo Spark's EPG is color-coded, so the user will be able to rec-ognize the cube's emotional status from its LED lighting. For instance, the user can watch white sparks fly inside the cube's visualization app when it's "in pleasure", and black sparks when it's not.

Emo Spark's app lets the user use a smart device to witness the intensity and nuances of its emotional status in real time at a distance, monitoring when and how a new experience modifies and informs the cube. Emo Spark will then share its reactions with the user via their TV, smart phone or tablet apps. These visualization apps allow the user to see inside the "consciousness" of the cube and monitor what it's "feel-ing" through its "emotional cloud" and what it's "thinking" through a virtual wall of images and sounds that you can watch and listen in real-time in amazing detail and clarity.

## Communication

To communicate with the Android-powered Emo spark, users can simply talk to it through speaking or typing into their tablet, mobile phone (which means it can gauge your emotions on the move), computer or TV. It combines this with face-tracking technology to gauge the user's likes and dislikes by categorizing their emotional responses to music, videos and other content (using an emotional spectrum based on seven emotions: joy, sadness,trust, disgust, fear, anger, surprise and anticipation). Users can also connect with Face book and YouTube to help the cube build up a history of interests.Emospark initially tries to recommend particular

pieces of content -- be it a song or a YouTube video -- that might help to improve the user's mood.



**Figure 4:** Interaction of Emo Spark

## 32 Million Synchronized Colors

The cube can "feel" an infinite variety in the emotional spec-trum based on 8 primal human emotions: Joy, Sadness, Trust, Disgust, Fear, Anger, Surprise and Anticipation. All these emotions mix inside the EPU (Emotion Processing Unit) of the cube like sound and color-appropriate light waves. You can experience this real-time process up close by watching the eye of the cube in your app or on your TV. The iris of the eye changes colors relating to the emotions the cube is "feeling" at any given moment. The cube itself emits, through ripples, 32 million colors – all synchronized with the color of the iris.



**Figure 5:** Synchronized Colors

## Emo Spark App

The Emo Spark cube can be accessed remotely through vid-eo conferencing facility. The user can interact and engage in conversation with the cube, just like a regular call, through Android's text to speech functionality. He can enter into the space of the cube's "consciousness", exploring the virtual walls of images and information that the cube is linked to – all in real time.Emo Spark cubes connect with one another through social media platforms. Once a reliable EPG is es-tablished, an Emo Spark cube can crawl through the web searching for similar or new expressions, and interact with other cubes on a network grid developed by Emo Shape. Over time and experience, the Emo Spark cube can develop a distinctive "personality" of its own, seeking to experience joy and satisfaction –just like humans. This technology will allow the users to literally craft a "life" on to AI technology, becoming greater than the sum of its parts.

**Figure 6:** Emo Spark App

**Two Versions of Future**

There are two versions of the future: one which goes in the way of the Terminator, with robots based on pure logic and another full of emotions, "like Wall-E, a cute robot full of emotions who saves humans from logical robots". While the technology behind face-tracking is well established, what we've done differently is use it to track and process different emotions," Rosenthal tells Gizmag. "The Emo Spark Cube contains a unique chip invented by myself called the Emotional Processing Unit. This allows the cube to build up its own Emotional Profile Graph (EPG) as it interacts with its users. The cube saves all this information and, just like a fingerprint, will over me will keep an emotional print of each family member with which it interacts". each family member with which it interacts." Communicate with the cube by either typing or talking to it through their television, or remotely via a smart phone, tablet or computer. By analyzing this data and using its face-tracking technology, the cube is designed to acquaint itself with the user over time by gauging their likes, dislikes and different moods based on eight primary human emotions: joy, sadness, trust, disgust, fear, anger, surprise and anticipation. Initially, the cube works to improve your mood and overall happiness by connecting to and recommending particular songs and videos or content on sites such as Face book and YouTube. The cube will have open API (Application Programming Interface) to allow developers to create new blocks of technologies in the form of apps in Google Play store," said Rosenthal. "So the conversational engine, voice and speech recognition are all modules that will be upgraded or will be replaced, so the user can make their own cube."

## 5. Conclusions and Future Work

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