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#CES2017  
#Kolibree  
#deeplearning  
#AI  
#IoT  
#brushsmarter

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Kolibree Introduces Ara, the First Toothbrush With Artificial Intelligence

Tech company sets out to show how AI influences oral care

JANUARY 3, 2017 (LAS VEGAS, NEVADA) - Kolibree, a tech company focused on connected solutions in oral health, launches Ara, a CES 2017 Innovation Award Honoree and the first toothbrush with embedded AI (artificial intelligence).

“Patented deep learning algorithms are embedded directly inside the toothbrush on a low-power processor. Raw data from the sensors runs through the processor, enabling the system to learn your habits and refine accuracy the more it’s used,” said Kolibree founder and CEO Thomas Serval. “Ara is Kolibree’s newest innovation for personalized healthcare, with an eye on disease prevention and wellness,” added Serval.

Ara knows precisely where in your mouth you are brushing, even when not connected to the app on a mobile device. Whether brushing on- or offline, brushing data (frequency, duration and brushed areas) is captured in the toothbrush and automatically synced via Bluetooth Low Energy (BLE 4.0) when the app is open. This surpasses the capabilities of any other smart toothbrush. In addition, Ara offers the benefits of an electric toothbrush with bristles and sonic vibrations gentle enough to effectively remove plaque without “overbrushing” that can cause gum recession.

Ara’s advanced “offline mode” is a new step for IoT in oral health. It’s the culmination of studying behaviors, over a three-year period, of more than 10,000 people who have used a Kolibree toothbrush, the first electric connected toothbrush. The company has learned that children are motivated to brush their teeth, and have learned to brush better, when enticed by a mobile game, such as Kolibree’s Go Pirate, which is part of the Kolibree app. Adults, on the other hand, don’t always need to be as engaged with an app. Some days grown-ups are too busy or not in the mood to pull out a smartphone whenever it’s time to brush their teeth, and this is where Ara comes into play.

Developed for adults, Ara will be the subject of a large clinical study in spring 2017. Testing will take place in USA and Europe and aims to show how AI can change people’s daily behaviors and improve oral care.

Ara by Kolibree key features:

- **NEW** - Proprietary AI technology in the toothbrush in addition to 3-D motion sensors, accelerometer, gyroscope and magnetometer
- **NEW** - Offline data capture and analytics include date, time, duration and zones brushed.
- **NEW** - Bluetooth 4.0 (Bluetooth Low Energy) for easy automatic connection and data sync
- **NEW** - Kolibree Index on the mobile app (iOS and Android) displays your personal score based on cumulative online and offline brushing.
- Weighing only 2.5 ounces (70 grams), and with a 2-week battery life, Ara by Kolibree travels easily.
- Weekly e-mail report shows at a glance how well you’ve brushed over the last seven days.
Ara by Kolibree, introductory priced at USD $129, lets you feel totally confident that you’re brushing your teeth well for a healthy mouth and beautiful smile. Pre-orders are accepted at kolibree.com for $79 now through February 28, 2017.

About Kolibree
Kolibree, the smart oral care company, is dedicated to innovation of connected health solutions, such as the first toothbrush with embedded AI, and the first connected sonic toothbrush with 3-D motion sensors. Kolibree uses proprietary technology for data capture and patented M2M technology to provide a personalized, interactive tooth brushing experience for children and adults. Visit kolibree.com, twitter.com/kolibree, facebook.com/sharekolibree, instagram.com/sharekolibree and pinterest.com/sharekolibree.
Kolibree Partners On Clinical Studies in Healthcare IoT

Two studies aim to show how IoT influences oral care behaviors

JANUARY 3, 2017 (LAS VEGAS, NEVADA) – Kolibree, a technology company focused on connected solutions in oral health, is partnering on clinical studies to determine the extent to which IoT can change healthcare behaviors.

Researchers at the University of California at San Francisco (UCSF) School of Dentistry are currently following 40 participants, each of whom is using a Kolibree connected toothbrush to determine the effect of Kolibree’s gaming technology on compliance and effectiveness of tooth brushing among children. Participants are registered patients, ages 6 through 12, at UCSF pediatric dental clinics. The study is funded by Delta Dental Community Care Foundation on behalf of the Dentegra Group, Inc.

“We aim to evaluate the impact on plaque control and motivation for children’s daily tooth brushing by using the Kolibree toothbrush in conjunction with the Go Pirate game on the Kolibree mobile application. We hypothesize that, compared to the use of a sonic toothbrush alone, the use of a sonic toothbrush with Kolibree’s Go Pirate game will result in improved oral hygiene and motivation,” said lead researcher Ling Zhan, DDS, PhD, who is a pediatric dentist known for her work studying the bacterial causes and prevention of tooth decay.

A larger study involving 10,000 of Kolibree’s soon-to-be-released Ara toothbrushes with artificial intelligence (AI) is scheduled to begin in the spring of 2017. This study will include participants in the United States and Europe, is to see how IoT influences behaviors across a broad-based population by using something so universally common as tooth brushing. Protocol is now being developed to evaluate data in the upcoming study with the University of Manchester, England, having the largest medical faculty in Europe.

“If we can do this with a toothbrush, just think of the implications for other lifestyle behaviors that encourage disease prevention and indicate risk assessment,” said Kolibree founder and CEO Thomas Serval.

Although largely preventable, tooth decay (dental caries) remains the most common chronic disease of children and adolescents and affects 9 out of 10 adults over the age of 20, according to the Center for Disease Control and Prevention (2015). Ara by Kolibree will be introductory priced at USD $129. Pre-orders are accepted now through February 28, 2017 for USD $79 at kolibree.com

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Kolibree Platform Gets Support From Game Developer Ubisoft®

New toothbrush games in perspective

JANUARY 3, 2017 (LAS VEGAS, NEVADA) #CES2017 – Ubisoft, one of the world’s leading game publishers, has announced the continuation of the partnership with Kolibree to help both kids and parents brush their teeth longer and better.

“After three years analyzing data from thousands of Kolibree users, we learned that most kids like toothbrush games, while many adults prefer app-freedom when they brush. For these adults we developed Ara, the AI toothbrush and CES 2017 Innovation Award Honoree that doesn’t need an open app to collect data,” said Thomas Serval, founder and CEO, Kolibree.

“We also learned that many adults want more FUN app-based motivation and guidance for their children when they brush their teeth. We took this feedback to Ubisoft® to brainstorm so they could develop new content to enrich the Kolibree platform,” added Serval.

“For 30 years, we’ve been creating rich and engaging worlds. Our ambition is to bring these worlds beyond video games and create new interactive and immersive experiences for a wide audience,” said Deborah Papiernik, Vice President, New Business Development, Technology and Strategic Alliances, Ubisoft®.

“We’re happy to apply our vast expertise in the field to support Kolibree and develop fun ways to engage with Kolibree’s community.”

The Ubisoft®-Kolibree partnership began in 2016 with the launch of Ubisoft®’s Rabbids® Smart Brush, an interactive mobile game that engages the player with Ubisoft®’s irreverent rabbit-like characters through an obstacle course. The better you brush, the better your chances of being first to the finish line. It’s the first time a third-party developer created a toothbrush app designed to prevent cavities and improve dental hygiene, while exemplifying Kolibree’s strategy to offer a complete platform to its community.

Kolibree’s open SDKs and APIs welcome developers and partners to create interactive educational applications aligned with Kolibree’s mission to improve healthy behaviors.

About Ubisoft
Ubisoft is a leading creator, publisher and distributor of interactive entertainment and services, with a rich portfolio of world-renowned brands, including Assassin’s Creed, Just Dance, Tom Clancy’s video game series, Rayman, Far Cry and Watch Dogs. The teams throughout Ubisoft’s worldwide network of studios and business offices are committed to delivering original and memorable gaming experiences across all popular platforms, including consoles, mobile phones, tablets and PCs. For the 2015-16 fiscal year Ubisoft generated sales of €1,394 million. To learn more, please visit www.ubisoftgroup.com.

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Kolibree Chooses STM32 Microcontroller From STMicroelectronics for Ara, the First Toothbrush With Embedded Artificial Intelligence

JANUARY 3, 2017 (LAS VEGAS, NEVADA) #CES2017 – With growing demand for smart products in healthcare and the electronic beauty market, Kolibree, the smart oral care company, introduces Ara, the first toothbrush with embedded artificial intelligence (AI).

The toothbrush brains are new-generation deep learning algorithms running in a microcontroller embedded in the toothbrush handle. It is the latest evolution for the Kolibree brand since the company’s 2014 launch of the first electric toothbrush connected to a unique content platform.

“An electronic toothbrush with embedded AI is a highly innovative example of creating an Internet of Things (IoT) product by applying ST’s semiconductor technologies, including processing and connectivity solutions, to make ‘Things’ smarter and life better – in this case by improving oral health,” said Jacky Perdrigeat, Vice President Microcontroller Marketing, EMEA Region, STMicroelectronics.

Toothbrush AI means that Ara knows exactly where you’re brushing, even when not connected to an app on a mobile device. To track personal performance and improve dental hygiene, just open the Kolibree app to synchronize your toothbrush.

“Ara uses AI to learn your brushing habits, which leads to greater accuracy in a personalized oral health improvement plan to reduce risk of cavities or gum disease. This enhanced risk assessment capability is of particular interest to insurers and dental professionals who see Kolibree’s new AI toothbrush as a way to transform client/patient relationships,” said Kolibree founder and CEO Thomas Serval. “The potential to change the business model of insurers is precisely what seduced RBM Salute, one of the most innovative European health insurers, to become one of the first to deploy Ara for its clients,” Serval added.

Ara by Kolibree is introductory priced at USD $129. Pre-orders are accepted at kolibree.com for $79 now through February 28, 2017.

#ces2017 #kolibree #deep learning #AI

About Kolibree
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Frequently Asked Questions

How does AI, artificial intelligence, apply to a toothbrush?
Ara by Kolibree uses a new generation of deep learning algorithms that follow, in real-time, the position of the toothbrush in 16 zones of the mouth – even when not connected to the Kolibree app.
Kolibree’s AI algorithm is embedded on a low-power processor inside the toothbrush!
Kolibree’s AI is predictive and prescriptive:
- Predictive - Ara learns previous brushing patterns to estimate, in real time, the location of the brush in 16 zones of the mouth, to indicate risk of cavities in each zone.
- Prescriptive - Ara recommends where and how you should brush better next time, helping to improve your dental hygiene.

What’s the difference between AI (artificial intelligence) and IoT (Internet of Things) when it comes to a toothbrush?
IoT, Internet of Things, is the process of connecting devices to the Internet. This was Kolibree’s initial toothbrush technology. Our raw brushing data collected in the cloud, allowed Kolibree engineers to train our AI to better predict user behavior and quality of brushing. Ara has ported this artificial intelligence from the app to the toothbrush itself. Brush your teeth normally (with or without app guidance) and Ara will tell you which area of your mouth you have missed.

All AI needs behavioral data from IoT in order to function properly, but not all IoT has AI.
Basically, while IoT gathers data, AI is able to use that data.
AI can be predictive (based on past historical behaviors/observations) and/or prescriptive (recommending a user to adopt a new behavior.) Ara is both.

What is the “Kolibree platform”?
The Kolibree platform is a solution provided to dentists, toothbrush manufacturers and application developers as part of a new ecosystem of oral disease prevention and preventive care. It consists of the Kolibree chip, the Kolibree cloud platform and the Kolibree application.

The Kolibree chip (Kolibree module) can be embedded in any kind of toothbrush. It runs a powerful AI software that analyzes the quality of the brushing and transmits this data to the Kolibree cloud platform via Bluetooth. Inside the Kolibree cloud platform you will find all the necessary services to run an efficient IoT infrastructure – from device management, to over-the-air upgrade and analytics for dental professionals (Kolibree Pro) and a set of apps that allows end-users to analyze their brushing data, play educational games, or watch motivational content to improve personal brushing behavior.

In order to provide a scalable service, the Kolibree platform/cloud platform includes an API (application program interface) and SDK (software development kit) for developers who want to create apps in alliance with Kolibree’s mission, which is to help improve healthcare behaviors through patented AI technology. The Kolibree Platform has the capability to allow dentists and patients to share personalized brushing data as a way to encourage preventive oral health and minimize tooth decay and gum disease. Software developers are welcome to create toothbrush games and content that are motivational and educational in nature.
Is Ara compatible with iOS and Android?
Ara is compatible with iOS at launch at the end of February 2017, and will be compatible with Android in March 2017.

Are all the games on the Kolibree platform compatible with Ara?
*Go Pirate*, the flagship game on the free Kolibree app, is compatible with Ara. *Rabbids Smart Brush™* will be compatible for iOS users in Q2 2017. New games and motivational content will come in Q3 2017.

What is Ara’s battery life? When fully charged, the charge on Ara by Kolibree should last for 10 days (with three minutes brushing twice a day). It takes about 5 hours to gain a full charge on Kolibree’s induction charger.

Is the Ara toothbrush waterproof? Ara by Kolibree is rated as IP67 and is designed to be waterproof.

The brush head seems smaller than most other electric toothbrushes. Why is this? Designed in consultation with dentists, the brush head is designed to provide easy access to all areas of the mouth that are often missed with “normal” brushing. These areas include the very back of the molars on the upper and lower teeth and the inside areas toward the back of the mouth.

What is the benefit of a sonic toothbrush? A sonic electric toothbrush uses vibration to effectively remove plaque while being gentle on the gums, which is very important for adults with sensitive or receding gum lines, and for young children, too. Ara by Kolibree averages 15,000 vibrations per minute, depending on the amount of pressure applied by the user. This is considered to be gentler than some other sonic toothbrushes.

How much does the Ara toothbrush weigh?
2.5 ounces, which makes Ara the lightest smart toothbrush on the market, and very easy for travel.

How do I know if I am truly brushing correctly?
Check the app. The “Check Up” feature will display a personalized color-coded diagram of your mouth to show how well each of 16 zones has been brushed. You can also opt-in to receive your Kolibree Weekly Report via email.

The AI in the Ara toothbrush analyzes data from a 9-axis sensor (i.e., gyroscope, accelerometer and magnetometer) to track in real-time the position of the brush in your mouth. It reports the quality of brushing to your app dashboard/check-up, either in real-time after using the Coach feature, or when you sync your app (every week for example). To sync your Ara, you just need to open the Kolibree app and wait for the seamless synchronization to be completed over Bluetooth.

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www.kolibree.com
Milestones – The Kolibree Journey

January 3, 2017
Kolibree launches Ara, the first toothbrush with embedded AI (artificial intelligence), with more accurate data capture (and without connecting to an app) for preventive dental care. Predictive deep learning algorithms improve dental health behaviors by making recommendations based on personalized brushing habits. Ara is a product created by consumer demand based on analytics gathered over three years, following 10,000 people and more than 500,000 hours of tooth brushing data.

Ara by Kolibree is named a CES 2017 Innovation Award Honoree in the Fitness, Sports and Biotech category.

November 2016
Kolibree commits to provide 10,000 Ara AI toothbrushes for a clinical study involving adult participants in the USA and Europe. Researchers will examine the extent to which AI has the ability to influence healthcare behaviors, using a daily routine as universal as tooth brushing.

October 2016
Kolibree extends collaboration with game developer/publisher Ubisoft to develop new games for the Kolibree platform to keep families brushing longer and better.

Kolibree partners with America’s Tooth Fairy, one of America’s largest not-for-profit dental organizations, to distribute 1,700 connected toothbrushes to dental practices and patients.

Kolibree signs a pre-order agreement with RBM Salute, one of the leading healthcare insurers in Italy, to purchase 10,000 Ara AI toothbrushes. The insurer is very interested in Kolibree’s patented AI algorithms for oral health risk assessment.

June 2016
Kolibree enters into a clinical study with UCSF (University of California at San Francisco) School of Dentistry. Researchers aim to learn to what extent mobile games motivate children toward tooth brushing compliance, and if this has an actual effect on prevention of cavities. The study is funded by Delta Dental Community Care Foundation on behalf of the Dentegra Group, Inc. Results are expected January 2017.

February 2016
Kolibree studies data from 270 parents of children using a Kolibree toothbrush. The majority stated that game apps motivate their children toward better compliance with dentist recommendations for brushing frequency and time.

January 2016
Kolibree announces collaboration with game developer Ubisoft to develop a mobile game to improve motivation among children to brush their teeth. Rabbids Smart Brush is the first third-party app developed for the Kolibree platform.
December 2015
Kolibree welcomes a new investor group, bring the total capital raised to over USD $4 million.

May 2015
Kolibree toothbrush becomes available on the consumer market.

April 2015
Kolibree raises first round of investment. (VC)

January 2015
Kolibree’s Kickstarter campaign ends and production begins.

December 2014
Kolibree receives financial support from an investment group comprised of dentists in France.

March 2014
Kolibree’s Kickstarter campaign begins.

January 2014
Kolibree introduced the first electric connected toothbrush with 3D motion sensors.

Kolibree was founded by Thomas Serval after realizing that his children liked playing with his iPhone instead of brushing their teeth. (lightbulb moment)

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www.kolibree.com
Thomas Serval, Founder and CEO

Thomas Serval is among the first wave of visionaries who anticipated the arrival of the connected home. He holds 17 patents for connected objects and wireless technology.

As founder and CEO of Kolibree, the smart oral care company dedicated to innovation of connected health solutions, Thomas is bringing dentists, health insurers and patients together with Ara, the first toothbrush with embedded artificial intelligence (AI). Thomas is instrumental in paving the way for clinical studies that show the potential of AI and the extent to which it can influence healthcare behaviors in regard to improving healthy habits for disease prevention and wellness.

Preventive oral care for children and adults is at the forefront of Kolibree’s mission, with dental caries (aka cavities) being named as the leading chronic preventable disease in the USA among both children and adults, according to the Centers for Disease Control and Prevention.

Having worked with Google (Media Mobile and Platform Managing Director for SEEMEA) and Microsoft France (Director of Developer Platform and Ecosystem Division), Thomas also serves as founder/CEO of Savoirweb, an accelerator and holding company dedicated to digital transformation through IoT and Big Data.

Thomas SERVAL is a graduate of Ecole Normale Supérieure and holds a Master in Business Law degree and an Engineering degree from French National School of Economics and Statistics (ENSAE). He earned his PhD in Internet Economics from Harvard University.