

DIGITAL SMELL TECHNOLOGY

A SEMINAR REPORT

SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

MASTER OF COMPUTER APPLICATIONS

UNDER

**APJ ABDUL KALAM TECHNOLOGICAL
UNIVERSITY**

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KUTTIPPURAM, MALAPPURAM - 679 582

June 2022

MES COLLEGE OF ENGINEERING
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(AN INSTITUTION WITH NBA ACCREDITED DEPARTMENTS,
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DEPARTMENT OF COMPUTER APPLICATIONS

CERTIFICATE

This is to certify that seminar entitled **DIGITAL SMELL TECHNOLOGY** has been prepared and presented by **SOORAJ M (University Register No: MES20MCA-2052)**, fourth semester student of the department, during the academic year 2020-22, in partial fulfillment of the requirements for the award of *Degree of Master of Computer Applications* under *APJ Abdul Kalam Technological University*.

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ACKNOWLEDGEMENT

My endeavor stands incomplete without dedicating my gratitude to a few people who have contributed towards the successful completion of my seminar. I pay my gratitude to the Almighty for His invisible help and blessing for the fulfillment of this work. At the outset I express my heart full thanks to our **Head of the Department, Prof.Hyderali.K** for permitting me to present this seminar. I take this opportunity to express my profound gratitude to **Assistant Professor Mr.Muhammad Jabir C**, my guide **Assistant Professor Ms.Febin Aziz**, for her valuable support and help in presenting my seminar. I am also grateful to all our teaching and non teaching staff for their encouragement, guidance and whole-hearted support. Last but not least, I am gratefully indebted to my family and friends, who gave me their precious help in presenting my seminar.

Sincerely,
SOORAJ M
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SYNOPSIS

So far the technology has targeted mainly our sense of sight and sound. To further enhance the virtual reality experience and another flavour to it ,technology is now targeting our nose and tongue. The Digital Smell Technology mainly focused on olfactory experience. The application area of virtual reality is vast- from normal entertainment to the Internet and e-commerce application. The technology initially targeted on allowing any individual to smell product before buying them online. With the help of digital smell technology users were capable of digitally sensing, transmitting, reproducing and recapturing smells and fragrances through the internet. The technology also made them capable of smelling burning tires in racing games, smelling a perfume online, or sent scented e-cards from scent enable websites. The technology was a failure due to lack of demand and the company ran out of capital.

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Chapter 1

INTRODUCTION

The technology has so far targeted mainly our sense of sight and sound. To further enhance the virtual reality experience and another flavor to it, the Digital Smell Technology mainly targeted the olfactory experience of the user. The application area of virtual reality is vast- from normal entertainment to the Internet and e-commerce application. The technology mainly focused on smelling the product before buying them online. California-based Digiscents Inc. has developed the iSmell personal scent synthesizer in the year 2000, which scent-enables web sites, e-mails, interactive games, on-line advertising, and many more. The iSmell is a personal synthesizer that emits a broad range of fragrances. The iSmell Digital Scent Technology was a complete solution for the digitization, broadcast and synthesis of smells to accompany all forms of media! iSmell was a plug-in computer accessory that contains a basic palette of scented oils from which a bouquet of different smells can be created.

Digital smell technology helped the users in cases like digitally sensing, transmitting, reproducing and recapturing smells and fragrances through the internet. The technology also made them capable of smelling burning tires in racing games, smelling a perfume online, or sent scented e-cards from scent enable websites. The technology was a failure due to lack of demand and the company ran out of capital.

Chapter 2

DIGITAL SMELL

The digital smell is basically a hardware software combination. The hardware part of digital smell will produce the smell. The software part will evaluate the smell equation and generate specific signals for specific smell and finally that smell will be produced by the device.e. The hardware device was a device like speaker, like speaker this device was also connected to the computer system. For this device there is also a driver program which can evaluate the digital equation for generating specific gas.

Coding of aromas could be downloaded to computer similar to graphics images as audible sounds. Ultimately users will be able to create and modify their own fragrances and post them on the internet. Digital smell made it possible to send and receive scented e-mails and to add scent elements to Web sites, to name just a few of its applications .The company expected these devices will play very well role in people's daily life, such as in Theater, Televisions, internet etc.

Chapter 3

INVENTION OF DIGITAL SMELL

3.1 Founders

Founders Dexter Smith and Joel Lloyd Bellenson, experts in bioinformatics and genomics, started from the following idea: “If we can find the essence of a biological smell and build a profile, we can digitalize and broadcast it.” They came up with the idea for the company while they were in South Beach. Using their scientific knowledge, they indexed and analyzed natural smells said to be common to South Beach such as flowers, salt water, and suntan lotion.

3.2 Invention

The basic idea for this was given by the perfume making companies for the advertisements of their perfumes. Digiscents was an American company specialized in the “perfumed web”. Their digital fragrances software makes it possible for beauty websites, for instance to let their visitors smell their perfumes and beauty products. Digiscents introduced the iSmell synthesizer in October 2000. The size of a small loudspeaker, the machine is linked to a computer and recognizes hidden instructions from a web-page or a games console to reconstruct a smell from its scent-based of 128 essential oils, and transmit it.

Chapter 4

SMELL SYNTHESIZER

Smell synthesizers are the device which can be used to generate the smells. In case of the Digital Smell Technology a device called ismell is used to produce the gas using computer. There are various types of smell synthesizers available in the market, but for computer the smell synthesizer is made by digiscents industry.

4.1 I-Smell Synthesizer

The iSmell was a peripheral device, about the size of a PC speaker that connects to a PC via a serial or USB port. It uses consumable cartridges which are used and replaced similar to the way ink jet printers use ink cartridges. It emits scent into the user's personal space. ISmell was triggered either on demand by the user via a keyboard or mouse action or via a timed or programmed response.

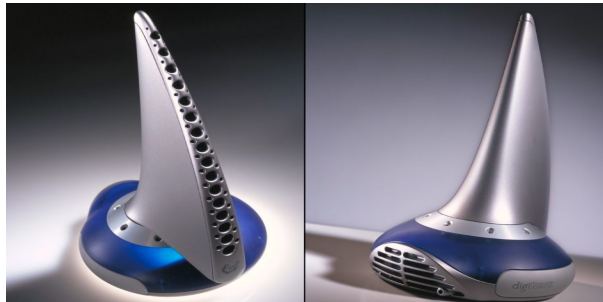


figure:iSmell Device

4.2 Cartridge

The cartridge will contain chemicals either natural oils or synthetic fragrances that will be activated by either heat or air pressure, when you send a signal from your computer. 128 chemicals are stored in a cartridge which is similar to an ink jet printer, those oils form the core of a replaceable cartridge, which is inserted in the company's iSmell device. The oils are electrically stimulated in different combinations to create specific smells in response to software prompts programmed into applications such as Web site features, computer games and movies.



figure:iSmell Device

Chapter 5

SCENTOGRAPHY

Scentography is the technique of creating and storing odor by artificially recreating a smell using chemical and electronic means. Scentography added a new dimension and richness to web pages and virtually any other form of electronic/digital communication. These Process includes various steps.

5.1 Digitization Of Scent

A scent is indexed along two parameters, its chemical makeup and its place in the scent”spectrum”, and then digitized into a small file.

5.2 Broadcast

The digital file made via digitization of scent is attached to the web content which needed enhancement .

5.3 Synthesize

DigiScent’s iSmell, which connects to the user’s computer, synthesizes the smell by following the guidelines of the digital file. It reads the digital scent file and creates a smell from odours stored in a cartridge, which wafts into the air with a small fan.

Chapter 6

SCENTWARE

Scentware is a combination of SoftWare and Hardware which allows the developers to receive the codes for scent and also allows the developers to design their own custom fragrances. The design software is often as simple as a web page with pictures of familiar scents (apple pie, popcorn, fresh rain, flowers) that the developers can drag with their mouse into a virtual beaker and mix. The combinations that the developer's choose can be saved as a custom fragrance, which gets stored as "codes" to be passed to a spray device. The spray device is a piece of hardware that can be plugged into one of the serial ports of your computer, the way a printer plugs in. This device has a disposable cartridge with a number of chambers inside, each containing a chemical compound that can be mixed with others to match the custom scent they've created.

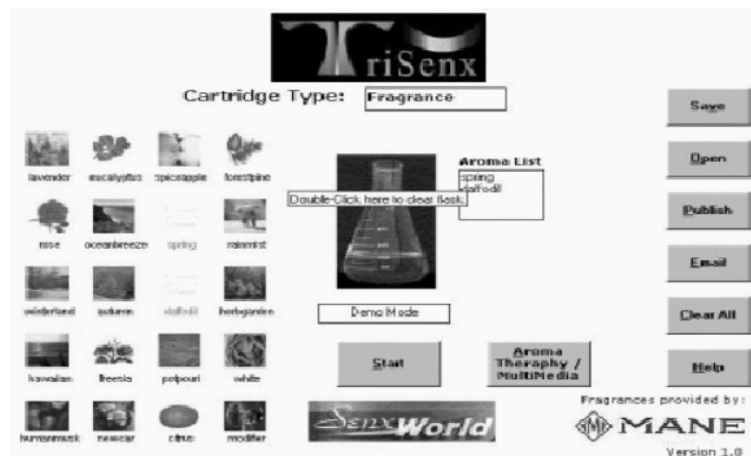


figure:Scentware Interface

Chapter 7

APPLICATION

7.1 Marketing

Perfume manufactures targeted this technology initially to sell their perfumes online by giving scent samples in their website. Thus the users can smell the perfumes or other beauty product through online.

7.2 Entertainment

The technology had its application in areas like games with scented environment, movie scenes triggered by sound tracks in theaters, scented DVDs etc.

7.3 Communication

Scent offers developers as well as consumers another medium for creativity and self expression. Scented web sites, electronic greeting cards and e-mail made all e-communication more entertaining.

7.4 Education

It enhances the classroom experience. Virtual field trips became an invaluable tool for bringing important experience into the classroom where time or

geography may otherwise prevent them. The addition of Smell was acknowledged as a tool that enhances the memory of that experience, and amount of knowledge that is retained because of it.

7.5 Medical

It was used for therapies related with olfactory disorders. Also aromatherapy was considered as one of the big drivers for this technology. Thus is this technology listed in list of tools for increasing personal wellbeing. The benefits of aromatherapy considered to be go beyond personal pleasure.

Chapter 8

LIMITATIONS

More than benefits the technology had various number of limitations which created a great negative shade in the performance of the device. Due to those limitation the technology had become a great failure and the company shut down due to the lack of funding.

The major limitations of the technology were -:

- High Cost
- Aren't capable of reproducing the very complex protein level of molecule.
- Timing and distribution of scent became difficult.
- Lack of understanding, research about basic scents and mixing of scents.
- The cartridges need to be swapped every so often once the scents inside are used up

Chapter 9

SMELL-O-VISION

The first development ever had in the smell technology field was known as Smell-O-Vision. Smell-O-Vision was a system that released odor during the projection of a film so that the viewer could "smell" what was happening in the movie. The technique was created by Hans Laube and made its only appearance in the 1960 film *Scent of Mystery*, produced by Mike Todd Jr. The process injected 30 odors into a movie theater's seats when triggered by the film's soundtrack. Smell-O-Vision did not work as intended. Variety aromas were released with a distracting hissing noise and audience members in the balcony complained that the scents reached them several seconds after the action was shown on the screen. In other parts of the theater, the odors were too faint.



THE BRAINS OF SMELL-O-VISION—Michael Todd, Jr. (left) sits beside master control and scent energizer of the Smell-O-Vision system with its inventor Hans Laube. Latter points to the multitude of vials each containing a different scent which is selectively projected through tubes to every seat in theatre on signal triggered from picture's sound track.

figure:Smell-O-Vision

Chapter 10

OVR TECHNOLOGY

Olfactory virtual technology was founded by Aaron Wisniewski, Matt Fle-goin the year of 2017, based in Burlington, Vermont. This technology is the latest development happened in the field of smell technology. Olfactory Virtual Reality technology is compatible with all existing VR headsets and can be applied to any VR content via their universal software plugin. Just like the Digital Smell Technology the scent is generated from a replaceable scent cartridge that contain an array of compounds, applicable to a wide variety of virtual experiences. All of these scent are released and then immediately cleared so rather than smells being produced and lingering in the air which can decrease quality of experience. This technology is a developing technology which will be widely in the market sooner.



figure:OVR Technology

Chapter 11

CONCLUSION

A Scent has a strange power over human beings. It can create a mood, such as foreshadowing or ambiance. It can intensify emotions such as fear or love. It can also give the sensation of virtual reality and suspension of disbelief. “The Sense of smell is closely tied to memory and emotion, making scent a powerful way to reinforce ideas”. There are several streams over which this digital smell can be used, Such as over the television, theater and the web. Hence reaches in a conclusion that this smell technology will revolutionized the world by enhancing virtual experience.

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