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Scratch Effect In Memory and it's Characterization of Scratch Effort in Compact Memory of Disc.

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Abstract. Scratch Effect in CD is characterised by scratch tone in reading with CD-drive. This is an effort to characterise the scratch effort to engineers.

Keywords. CD-drive , disc, scratch effect, cleansing, maintenance.

1 Introduction

In March 1979, a prototype of a Compact Disc (CD) [15] digital audio system was publicly presented and demonstrated to an audience of about 300 journalists at Philips in Eindhoven, The Netherlands. This milestone effectively marked the beginning of the digital entertainment era. In the years to follow, the CD-audio system became an astonishing worldwide success, and was followed by successful derivatives such as CD-ROM, CD-RW, DVD, and recently Blu-ray Disc. Today, around the thirtieth anniversary of the milestone, it is taken for granted that media

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content is stored and distributed digitally, and the analog era seems long gone. This book retraces the origins of the CD system and the subsequent evolution of digital optical storage, with a focus on the contributions of Philips to this field. The book contains perspectives on the history and evolution of optical storage, along with reproductions of key technical contributions of Philips to the field.

The invention provides a compact disc driver door[16] rotating device, which comprises a case, a compact disc driver door, a connector, a limiter and a torsion spring. The case comprises a panel and a fixing table, the panel is provided with a compact disc driver slot, the fixing table is contained in the compact disc driver slot and comprises a side face and an upper end face, the side face faces the compact disc driver slot, and the upper end face is perpendicular to the side face, first shaft seats perpendicularly extend out positions of the side face close to two ends of the side face, the position, far away from the upper end face, of the side face is provided with a limiting hole, second shaft seats and third shaft seats are arranged on the inner side of the compact disc driver door, first rotating shafts sleeved in the first shaft seats and second rotating shafts sleeved in the second shaft seats, which are close to two sides of the connector, are arranged on the connector, the connector comprises a slide portion contained in the limiting hole and third rotating shafts extending out of one end of the slide portion and sleeved in the third shaft seats, and the torsion spring comprises a first positioning end and a second positioning end, wherein the first positioning end is fixed onto the compact disc driver door, and the second positioning end is abutted to the connector. The compact disc driver door is prevented from scratching the panel when being opened by means of limit of the limiter on the position of the compact disc driver door.

The 1990s features the dominance of the compact disc (CD) and subsequent peak in revenue within the music industry. The 12 cm CD transformed the industry and the way in which consumers experienced music, representing a fundamental shift from analogue to digital technology.

While the CD started to decline in prominence from the beginning of the 21st century, it inadvertently established a digital culture, this culture now entrenched in society through streaming and downloads. For many consumers, the 1990s and

engagement with the compact disc was a time of excitement, while for others it represented a period of angst and resistance to move away from long-playing records (LP) and the cassette tape. While there has been somewhat of a return to the LP as a way of engaging with music, and the cassette tape is not completely obsolete, the 1990s represents a time in history where digital technology and the capacity of the internet to support file sharing revolutionised the music industry. [4] considers the extent to which the compact disc contributed to a wave of technological revolutions which have made an indelible impact on contemporary society. Surface defects such as scratches and fingerprints on compact discs (CDs) can cause CD players to lose focus and tracking on the discs. A scheme for handling these defects has previously been proposed.

In brief from [1], adaptive and predictive versions of this scheme were developed. The adaptive scheme can be used to adapt the accommodation to specific surface defects on specific discs, while the predictive scheme can be used to jump between tracks with surface defects on the disc.

Sufficient and necessary stability conditions for the proposed accommodation schemes are derived as well. Performance of the accommodation scheme was discussed. Both proposed methods show their potentials through simulations with a CD player playing a CD with a surface defect (scratch).
Sometimes a compact disc player fails to operate when a disc with a scratch or a fingerprint is played. One way to improve the playability of discs with such defects, is to locate the defect in time and then handle it in a special way. This time localisation is needed to be rather accurate. Fang's algorithm[3] for segmentation of the time axis is used since it has good performance in an application like this. Fang's algorithm has a clear potential for time localisation for some defects but not for other defects. The time location of these other defects is improved by using another method. The normally used threshold method is improved to handle skewness of the disc and to improve localisation of the end of the defect. [5] performed an environmental method to recycle compact discs using tannery industrial wastewater effluent. This study includes thermogravimetric analysis (TGA), mechanical properties and wastewater characterization before and after treatment. The final recycled compact disc was completely free of ink, and its mechanical properties were slightly enhanced after ink

removal. The crystallization behavior of the compact disc remains the same after the deinking process. The hazards on our environment by Scratch CD is characterised in [5].If a compact disc (CD) is placed in front of a plane mirror, its image displays different colours from the ones observed in the real CD. This fact occurs because a CD surface is a diffraction grating which disperses the incident wavelengths. As the object and its image are seen from different viewing angles, the observed colours are not the same, so the image cannot be considered symmetrical to the object. Experiments done in [6] confirms the physical description. In hard disk manufacturing[10], a process of quality inspection of magnetic disc is crucially focused on finding traces of scratch that occur on the surface by various sources such as production process, machinery, tribology or recording head. It may affect the efficiency of magnetic disc's read/write ability. Many approaches have been proposed to detect the scratch by either destructive or non-destructive testing. In this study, it shows an analysis of signals from the detected scratches on the magnetic disc by reflection light method, using a CD pick-up head. It works by producing an incidental laser beam to the surface and then detecting it by a photodiode detector. The results showed that when the laser beam is incident onto the magnetic disc with/ without scratch, reflecting lights to the photodiode are different and the signal changes according to the intensity of the incidental/reflecting lights. In research reported in [11] , a mechanical and fracture behaviours of concrete containing waste CD shreds were investigated using the three-point bending notched beam test, according to RILEM recommendations. The size effect of waste CD shred on concrete properties was the focus of this research. The study indicates that the fracture energy and modified characteristic length were found to increase significantly with increasing the size and volume fraction of CD shreds due to anchoring and bridging effects. In other words, concrete with higher amounts and larger sizes of CD shreds exhibit higher cracking resistance and the brittleness decreases accordingly. However, the strength properties were found to decrease when concrete with larger portion and size of CD shreds.

[14] describes the design and implementation of a portable, inexpensive and cost effective spectrophotometer. The device combines the use of compact disc (CD) media as diffraction grid and 60 watt bulb as a light source. Moreover it employs a moving slit along with stepper motor for obtaining a monochromatic light, photocell with spectral sensitivity in visible region to determine the intensity of light and an

amplifier with a very high gain as well as an advanced virtual RISC (AVR) microcontroller ATmega32 as a control unit. The device was successfully applied to determine the absorbance and transmittance of KMnO4 and the unknown concentration of KMnO4 with the help of calibration curve. For comparison purpose a commercial spectrophotometer was used. There are not significant differences between the absorbance and transmittance values estimated by the two instruments. Furthermore, good results are obtained at all visible wavelengths of light. Therefore, the designed instrument offers an economically feasible alternative for spectrophotometric sample analysis in small routine, research and teaching laboratories, because the components used in the designing of the device are cheap and of easy acquisition.

A lot of optical recording media have been proposed[18], but only CD-R and DVD-R media are widely accepted. They have many advanced features, such as high compatibility to ROM player because of their high reflectivity, as well as easy and low cost production by applying a simple design comprising a dye recording layer and a reflective layer, and by applying a spin-coating method to form the dye recording layer. Most important factor to realize such advantage is development of organic dyestuffs.

2 Scratch Characterization

The positive tone of compact memory of Disc is charged and can cause a data loss. The character of a scratch effect is set to difficult copying and impossible (near) recovery of data in CD. The quality of Scratch CD is generally a bad tone. The quality of CD either bad or good is the soundness of health.

Coloring a scratch CD is a characterization of scratch effect. Typically by shading. A good CD is clear off a scratch effect. A scratch CD can have its skin piled off. A scratch CD rests in an uncover case or bag with opening to set for dusk collection. The muscle of the arm body can scratch the CD to cause the scratch effect. Copying a scratch CD can be sounded as a bell if data is not complete copying. Scratch CD and good CD can be accommodated in specific rooms for sorting. A telephone

service will be needed to able to call in data recover(firm) for scratch CDs. This is a maintenance firm in service of repair and maintenence of CD. A scratch CD is a negative tone on the quality of health.

A method of deliberately causing a scratch CD will be applying a stone to scratch for secret or unprotective reasons. Clearing a scratch Cd can be with the application of swiper soften with a liquid. Picking a CD regularly can be help in the inspection of quality. Picking to transfer data regularly is will be needed. A scratch CD can invoke anger in the data user in most cases. An assessment by way of interviewing data officers of how, when, who and where CDs are will do with remarks. A decorated blue room is for backup copies, green room is for original CDs. Each decorated room is singularly managed.

A compact user of compact disc can make request for data usage by both email or telephone. The firmness of shelf-body needs to take into consideration the ton measurements so as not shelf over the firmness of shelf body. CDs are made of plastics and the temperature of the room needs to be little crisp or cold but not frozen. The scratch CD can used in entertainment (as reflectors), restaurants (drink pads) and make sound(wind blow to aid collision). Anytime, a CD is requested, operated and backup, a file will be opened to provide details- Disk-as-file (Disafile). Tools in maintaining CD either scratch or unscratch:

- *Chronous tool* to check the span of time for backup in bluer room or retire in brown room.
- *Advice tool* to check the state of CD if it is in scratch or in scratch state to go eviction or not.
- *Hacksaw tool* to check if there is unauthorised use of data or stolen CD.
- Roomdrill tool to check the status of the rooms for any issues.
- *Pickexar tool* to check if the authorised user did check the security or privacy of data so one didn't use with the enabled controls.
- *Crewdriver tool* to check the usage at computer drive is secured not to allow unnecessary usage.
- *Chainsawer tool* to check CDs on a single data is kept in chain.

- *Applier tool* to verify all requestor if they are allowed to request for usage and controls to limit their usage.
- *Online data* tool to provide access to data users online without travels.
- *Planner tool* to routinely check records where each CD is, is correctly placed on the correct shelf body.
- *Chisell tool* to provide buy or sell service to the data providers at their request.
- *Exarce tool* to check if expansion or more shelf body is needed to the increasing CDs.

ZO-class[7] representation can be used to further organize binary representation in which the data is stored to minimise size of data into more compact memory. Same data in different format of representation is the main focus of further engineering in developing zozi-size data format. ZO-class is a computer language similar to binary class language but thinks of concepts like powerset in representing consecutive repeations in any countable and by so doing taking the logical step of introducing a numeric power to the [0,1] values in the binary equivalents of the data whole.

3 Conclusion

Work done in [9] demonstrates laser cleaning of Compact Discs (CDs) through the employment of a 30 W MOPFA Q-switched pulsed Yb:YAG fibre laser is investigated. The laser beam is used to ablate the metal substrate located between the polycarbonate layer and the outer serigraphy of CDs with the final aim to recover the polycarbonate layer and make it available for further applications. Compared to traditional cleaning processes, this method offers several advantages, including: absence of mechanical contact, reduction of secondary pollutants, low energy consumption, greater flexibility of use and possibility to work small batches. Two experimental test series were carried out. First, linear scans were executed at the maximum average power (30W) by changing scanning speed and pulse energy. The

width of the ablated material was then measured on the test CDs. Furthermore, the mechanism of separation between the deposition layers and the polymer substrate is observed and described. The second experimental testing series was performed to identify the process conditions that could ensure a 100% cleaned surface without polymer degradation and to evaluate the corresponding process time. On the basis of the test results, three different conditions were observed: incomplete cleaning, complete cleaning and cleaning with polymer degradation.
This work looked at both repair and maintenance of Scratch CD from the just knowing that "scratch CD is difficult to read from drive" and so service and maintenance tooling should be in place to cater for the data space lost in time. The introductions made looked at the essence of CD in music industry then physical descriptions then to time based algorithm then to laser based cleansing of CD. Z-Class methods of recovery in data loss by taking less expensive approach in saving extra copy of data for later use is mentioned from earlier research.

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