

ECE



# HERITAGE INSTITUTE OF TECHNOLOGY

DEPARTMENT OF  
ELECTRONICS AND COMMUNICATION ENGINEERING

PRESENTS



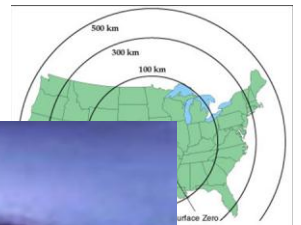
## ECE -DIARY

EDITION  
MARCH' 2013



2012 - Changing Your Computing Experience

*Non-nuclear Electromagnetic Pulse  
Generation*



The Creativity Corner



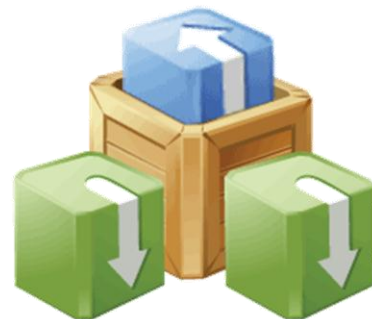


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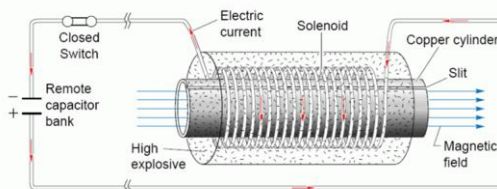
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## Non-nuclear Electromagnetic Pulse Generation

Governments have long been interested in small EMP weapons, Devices that can generate a very-limited-area EMP. Plans and devices are available on the internet. In April, 2008, the English language online version of Pravda, briefly described some of what Russia is doing in this article with a photo of one of the devices.

It is difficult to categorize many of these devices because there is often a lot of similarity among these categories. Basically, though, these devices include:

**Flux Compression Generators:** These devices have been around for a long time (at least since 1951), and they can be made in many different ways. A lot of formerly classified information about them has been declassified. For example, see this technical introduction to flux compression generators from Los Alamos. Flux compression generators are the most commonly discussed type of non-nuclear EMP weapon. They can range in size from large and powerful military weapons to much smaller devices that can be carried in small truck or van. Most of them are detonated with explosives, but very small ones could use compressed air, especially for preliminary testing.

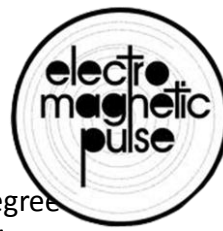


The **Electromagnetic Pinch Device** is most often used to demonstrate the electromagnetically induced crushing of common objects such as cans and coins, as shown on the Captured Lightning site (which also has a lot of other information related to this general topic). A pinch device can direct a large amount of electromagnetic energy at an object in the distance if, for example, the electromagnetic discharge of the device is placed at the focus of a parabolic dish.

The **Marx Generator** has been around since 1924. It has much in common with voltage multiplier circuits that were common in power supplies in the old vacuum tube days. Marx Generators are often used in EMP simulators for testing how resistant equipment is to EMP.

One of the simplest EMP generators is simply a pulsed high-power radio transmitter. This is the principle behind the **HERF** gun, a **H**igh **E**nergy **R**adio **F**requency weapon that has been proposed for uses such as stopping vehicles by disabling their electronic ignitions. Some companies have tried to sell small hand-held microwave HERF guns to police departments for disabling the vehicles of criminals. Police departments seem to be wisely resisting the use of HERF guns in the belief that as soon as these things go into mass production, they can be illicitly obtained by other individuals for doing all kinds of electronic vandalism and mischief.

An example of a non-nuclear EMP device is the one being marketed by Eureka Aerospace, these devices are designed to destroy the vital electronics in automobiles. Although these devices can be beneficial in many cases, in the wrong hands they could cause enormous destruction at the rate of millions of dollars in damage per hour.



The problem is that these pulsed high-power transmitters are rather easy for anyone with any degree of electronics expertise to make. All that is required is to make a high-powered radio transmitter, without having to be concerned with the problems of getting rid of excess heat or of producing sustained amounts of high DC power levels. If a person only wants to obtain an extremely large amount of radio frequency energy for less than a millisecond, then the problem is rather trivial compared to the problem of creating a sustained high-power signal.

For generating single high-power pulses, you don't need a high-wattage power supply at all. One can simply charge a large capacitor to a high voltage, and discharge the capacitor through the DC input of the high-power transmitter in order to obtain the pulse. Conventional highly-directional antennas can be used to direct the energy to the desired location. In most cases, the voltage, current, and power ratings of the equipment can be exceeded -- sometimes by a very large amount -- for a millisecond or so, in order to obtain a radio-frequency pulse of incredibly high power.

After full-power analog television broadcasting came to an end in the United States on June 12, 2009, a large number of high-power transmitters went out of service. All of these transmitters have high-power transmitting cavities that can easily be turned into an extremely high-energy EMP generator.

Many hobbyists have used this high-energy RF principle to turn a microwave oven into a small directed energy weapon. A microwave oven is basically just a high-power microwave transmitter that dumps its energy into a faraday cage (used for the cooking chamber) instead of into an antenna. I am amazed that no one has been seriously burned when trying this, since it can be quite dangerous if extreme safety measures are not used. All electromagnetic weapons are *weapons*, and are capable of causing electrocution and severe burns near the equipment, although the electromagnetic pulses themselves are usually harmless to humans.

Nevertheless, non-nuclear EMP weapons are mostly a threat from terrorists and vandals. They could do a terrible amount of electronic damage if detonated just outside of a facility with important electronic equipment inside. They do not have anything close to the widespread damage that could be caused by high-altitude nuclear EMP, which is a very unique kind of phenomenon.

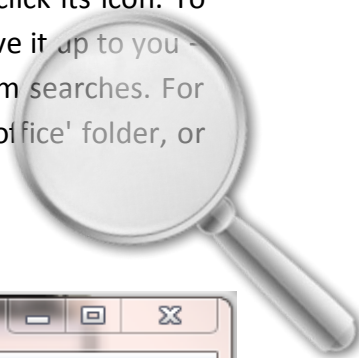


## 2012 – Changing Your Computing Experience

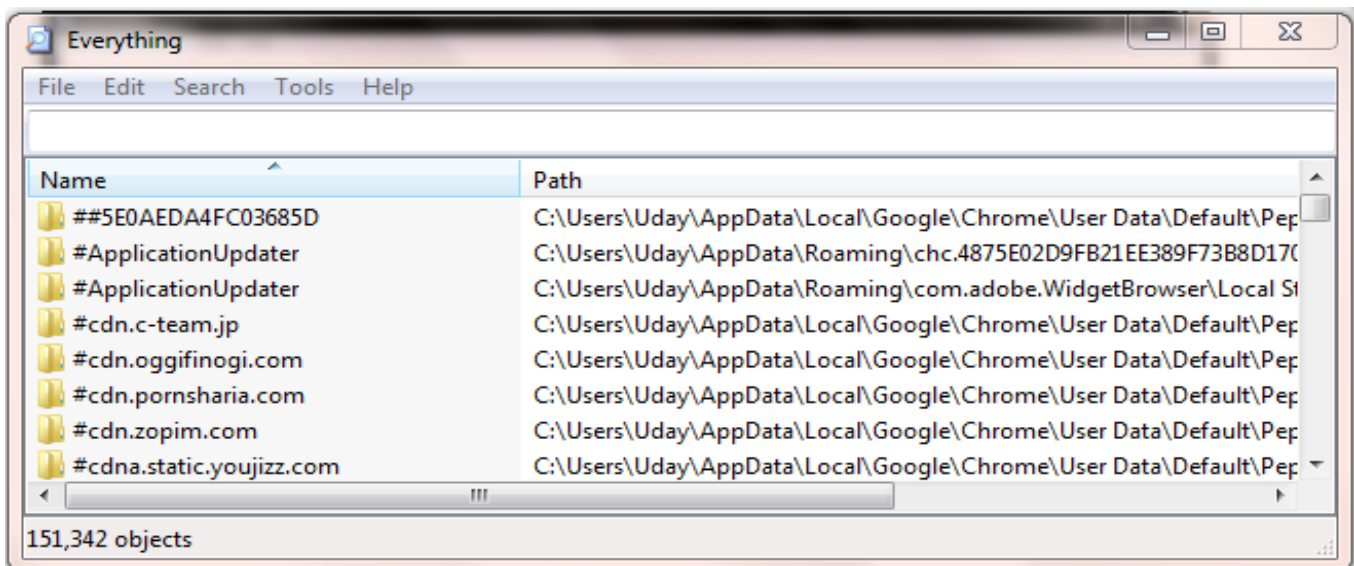
The year 2012, according to me has brought a new experience in computing. I shifted from Windows XP to Windows 7 though Windows 8 came into existence in India in this very year but still the softwares that I came along in this very year really changed my idea as well as style of computing, some of them are “heavenly”. In this article , there are the best 10 softwares that are installed in my system. And if you are sick of searching a file or a folder in your system or you deleted an important file using Shift+Del and you just wish that if you could get them back or there are some folders or files that you don't want to share with anybody then hiding them is old school, make those files or folders password protected by encrypting them, If these are your problems then I really think you are going to like these softwares too and the best part about them is they are free.

### 1-Instant Search: Everything

With huge hard drives being the norm, searching for any document on your PC can be a painstakingly slow exercise. This is because every time you search using the default tool in Windows, it has to scan each and every folder till it finds the file. Everything, on the other hand, helps you locate any document almost instantly. The first time you install the software, it indexes the contents on your hard drive. The program then sits unobtrusively in your system tray till you double-click its icon. To search, simply type the name of the file you are looking for, and the software will serve it up to you - no wait whatsoever. You can also search by file extension and add strings for custom searches. For example, use 'officeinvoice' to search for filenames with the word 'invoice' in your 'office' folder, or 'Beatles! Love' to exclude the term 'Love' from your search.



Link : [www.voidtools.com](http://www.voidtools.com)



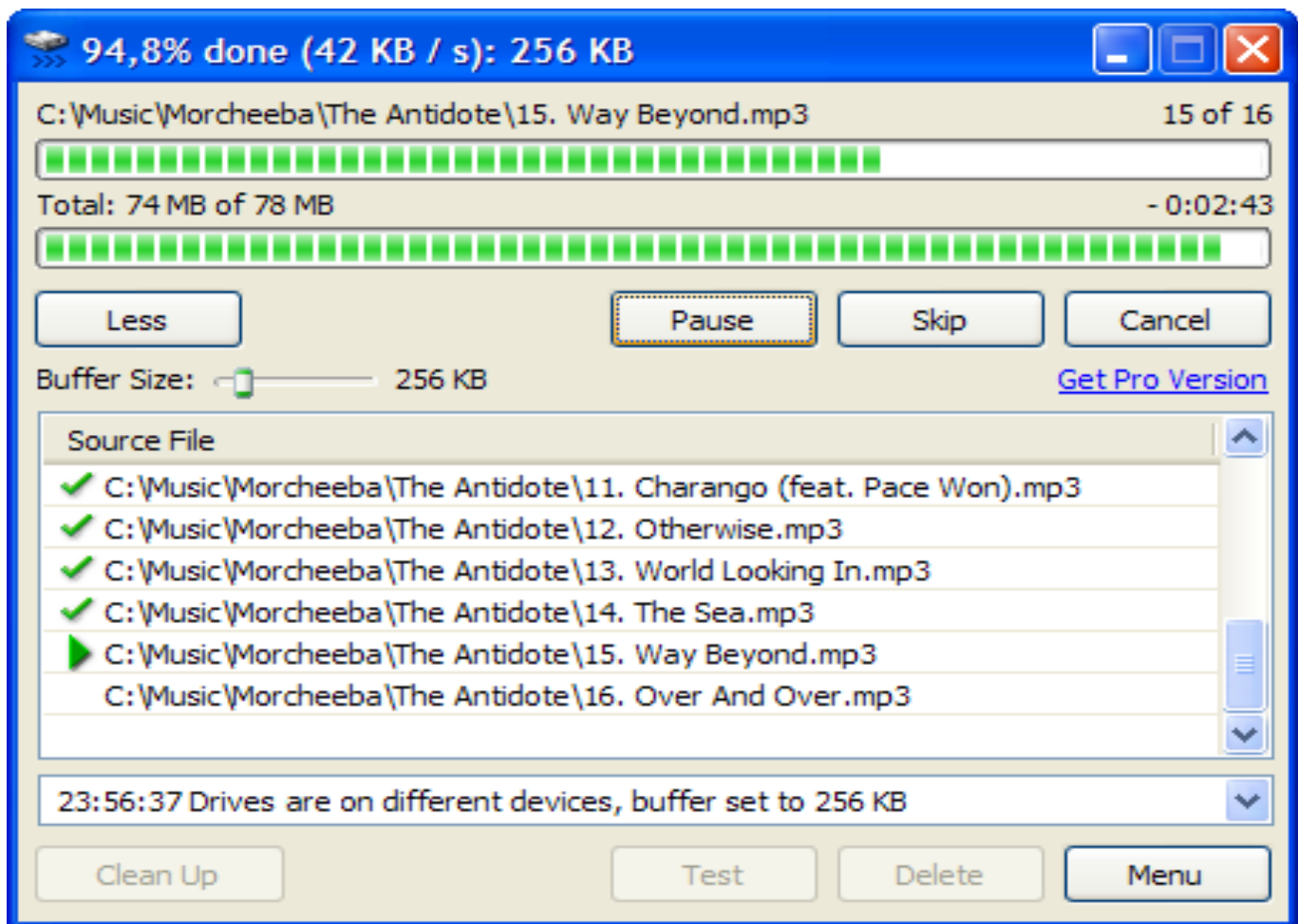




## 2-Better File Copy: TeraCopy

The default copy tool in Windows is bothersome if you deal with huge files. If there's an error while copying multiple files, it'll abort the whole job. Also, there's no way to pause and resume a transfer. And did you know that Windows doesn't actually copy files at the fastest rate possible? TeraCopy to the rescue. The software features full shell integration, which means that it replaces the default Explorer copy tool so you don't have to start the program each time you are copying files. While transferring, if there is an error, TeraCopy will try multiple times to copy that file - and if that doesn't happen, the file is skipped and the rest of the data is copied. At the end of the process, you can see which files posed a problem and try copying them again. What's more, you can even pause and resume the process if you need to run a more resource intensive program alongside. And yes, the software is optimized to get the fastest possible transfer speed on your computer.

Link : [codesector.com/teracopy](http://codesector.com/teracopy)

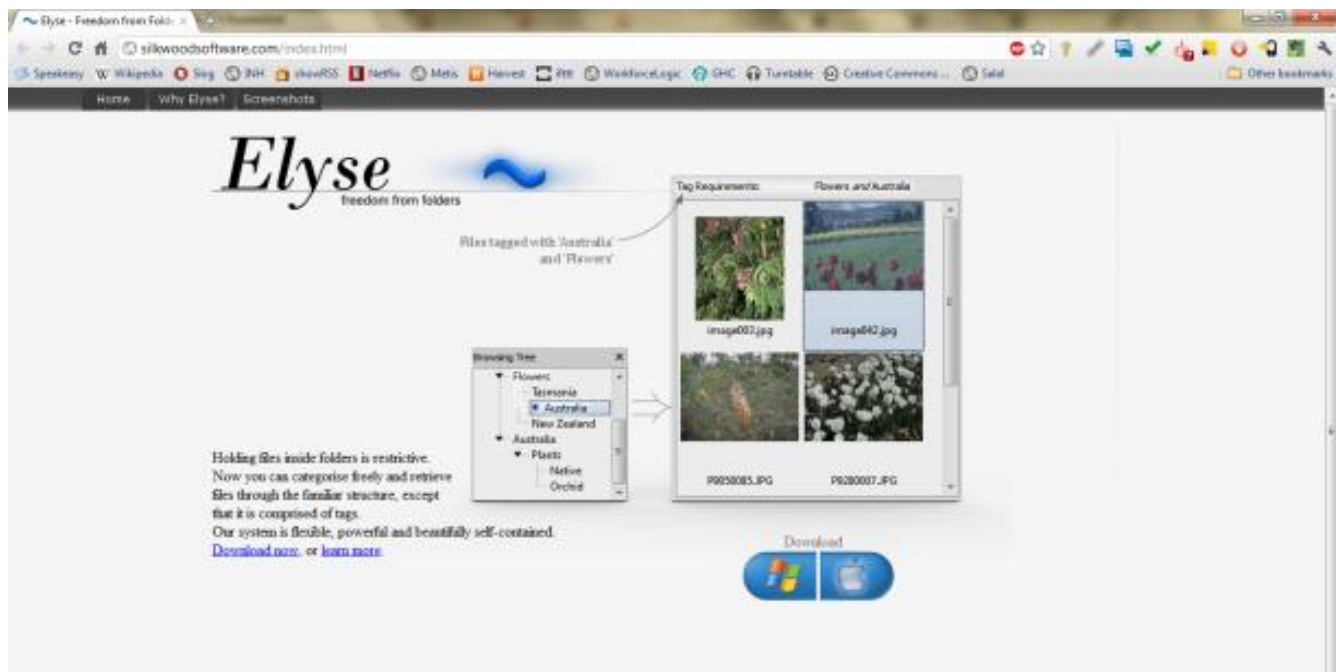




### 3-Tag Files: Elyse

Sometimes, the same file can fit in different folders. For example, a photo can find place in a folder for profile pics, the party it was clicked in, or by date. Instead of keeping multiple copies of the file, Elyse brings a smart 'tagging' system. The idea is to store your files anywhere, but classify them with tags to find them easily. Just point Elyse to a folder and then you can start creating as many tags as you want. After that, just drag-and-drop files to the tag. It's handy for office use (different projects that use the same documents) as well as personal data (tagging photos or videos). It's not easy to use initially, but once you get accustomed to it, Elyse works splendidly.

Link : [silkwoodsoftware.com](http://silkwoodsoftware.com)



### 4-Folder Lists: Filelist Creator

When a friend asks you to send him a list of the MP3 songs you have, it would be downright ridiculous to sit and type the name of each file. If only there was a way to make a list of all the files in your folder. Well, meet Filelist Creator. Point the program to the folder to start. You can choose to search all sub-folders if you want. Next, select which parameters of the files you want to be included: name, format, file size, path, date, etc - all of which can be seen live in the preview window. Filelist Creator lets you choose formatting options too, such as the header, spacing, grouping and the order of the columns as well. Once you've had your pick, choose whether you want a text file, CSV, HTML or image and save it.

Link : [www.sttmedia.com/filelistcreator](http://www.sttmedia.com/filelistcreator)

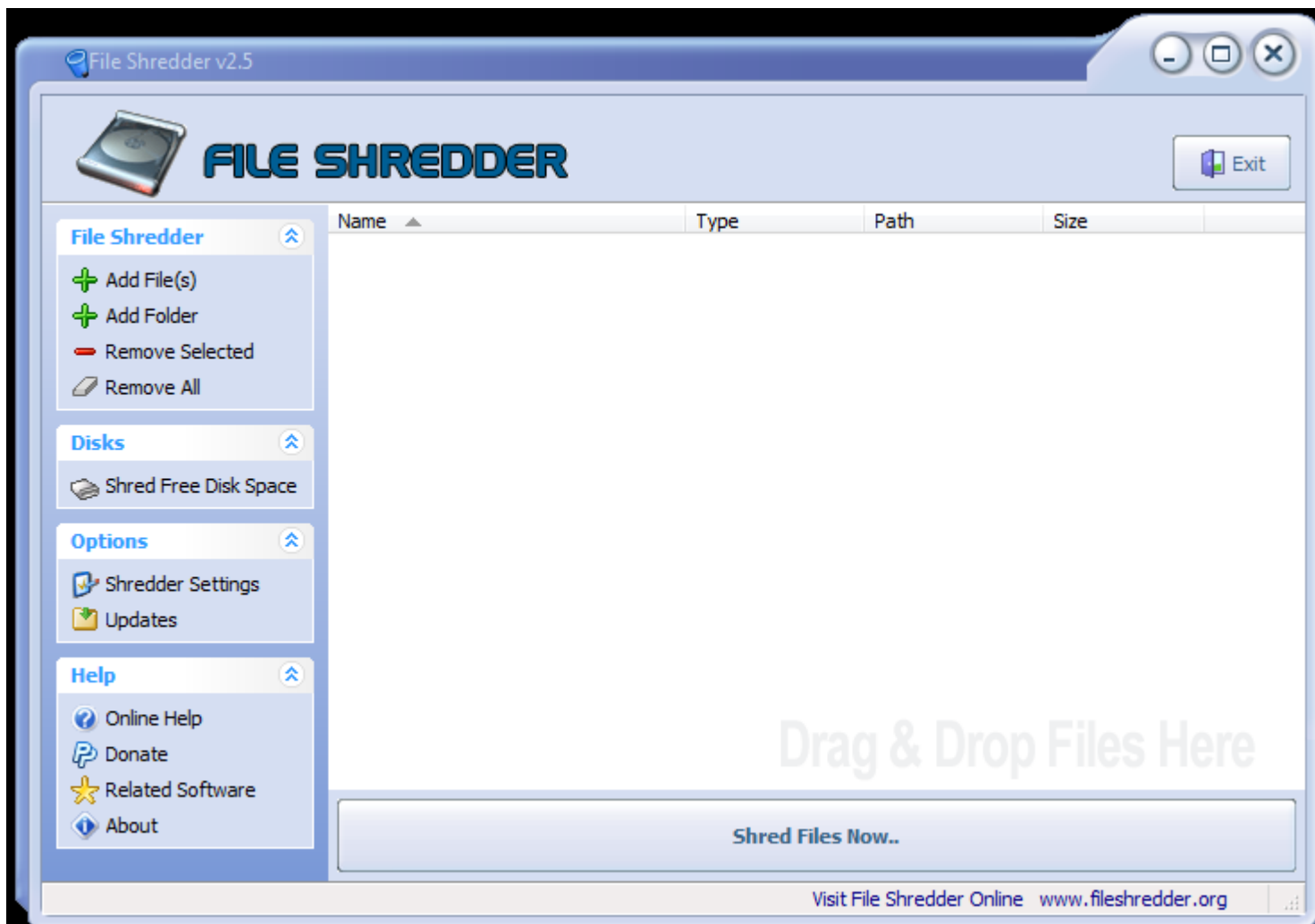




## 5-Delete Forever: File Shredder

When you "delete" a file in Windows, it's not entirely erased from your hard drive. The Delete function simply hides the file till the space it occupies is overwritten with new data. Still, specialized file recovery software can retrieve these files easily (see Recuva). So how do you get rid of a sensitive file permanently? File Shredder is a simple tool that gets the job done by 'writing' over the files multiple times with random binary data. Start the program, select the files and shred them with a button. Simple. In the Settings tab, you can choose the type of encryption you want to use to shred the file. There's also an option to Shred Free Disk Space. As we said, a file isn't completely gone when you delete it; which means it's still occupying some space. File Shredder purges this data by rewriting over it as well.

Link : [www.fileshreder.org](http://www.fileshreder.org)





## 6-Smart Backup: Copy Changed Files

If you routinely back-up your files to an external hard disk, then you might want to install Copy Changed Files. The tool allows you to compare the contents of similar folders in two different locations - and then, only copies the files that have been modified. First, select the 'From' and 'To' folders. Then, choose the method to compare files: Date-time and file size is faster, but can have errors, while the binary compare method is slower, but more accurate. You can choose to filter what to copy by file type or size. And that's it.

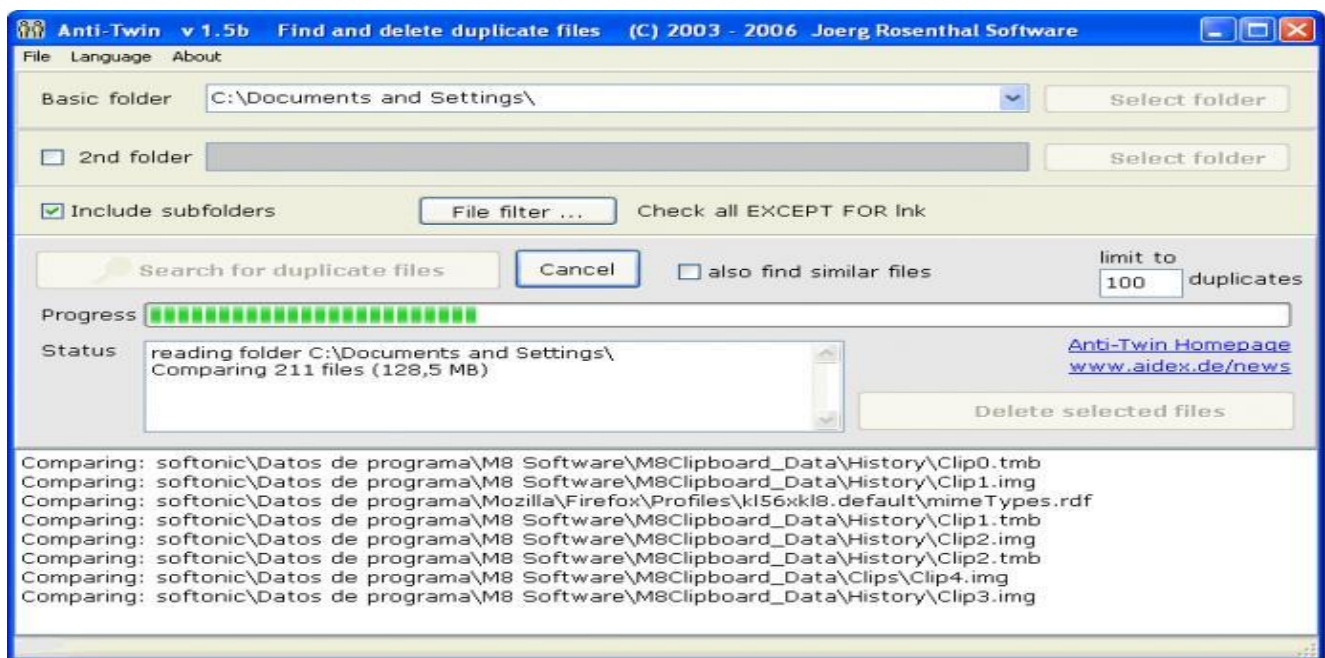


Link : [www.copychangedfiles.com](http://www.copychangedfiles.com)

## 7-Discover Duplicates: Anti-Twin

Sometimes, you have the same file stored in different folders or hard drives. So how do you find these and delete the duplicates? Say hello to Anti-Twin. It's a super-simple interface. First, select a folder as the basic comparison point - you can either search within this folder for duplicate files, or compare this folder with another. For the comparison criteria, you can go by the filename, minimum or maximum file size, extensions, and even the content (by bytes or pixels). Once Anti-Twin finds multiple copies, you can choose to let the duplicate remain where it is, move it, or delete it and, in that folder, leave a link to the original.

Link : [www.anti-twin.com](http://www.anti-twin.com)





## 8-Batch Rename: Metamorphose

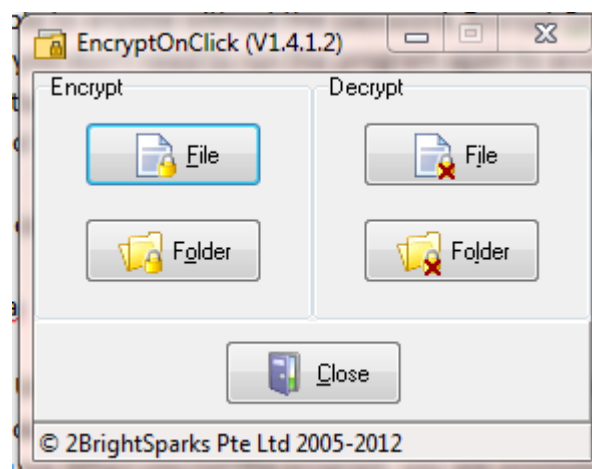
If you are constantly required to rename large groups of files on your computer, then you must install Metamorphose. The tool is fairly simple to use: First, select the files you want to rename by browsing to them in the 'Picker' tab. Then, in the 'Main' tab, you can pick whether the operation acts on the name, the extension or both. You can add a prefix or a suffix to each filename; and even search for text in the name and replace it with something else. You can also modify the length of the filename, add date, time or numbers, and even insert characters in any place in it. The best part is that every change you make is instantly previewed in a pane at the bottom, along with the original filename next to it, so you know exactly what changes you've carried out. Metamorphose is a fantastic tool to have with you when you are organising your music or media collections, or sorting your photos.

Link : [File-folder-ren .sourceforge.net](http://File-folder-ren.sourceforge.net)

## 9-Secure Files: Encrypt On Click

Want to keep a file or a folder protected from snooping eyes? Encrypt On Click is here to help. Start the program, select the file or the folder that you want to protect, key in a password and you're done - the file is now inaccessible to anyone without the password. Encrypt On Click is tightly integrated with the Windows OS, so you don't need to run the program again to access the file. Double-click a protected file and the software auto-starts, prompting for a password. Also, you can right-click any file or folder and choose to 'Open With Encrypt On Click' to immediately lock it with a password.

Link : [www.2brightsparks.com/freeware/freeware-hub .html](http://www.2brightsparks.com/freeware/freeware-hub.html)

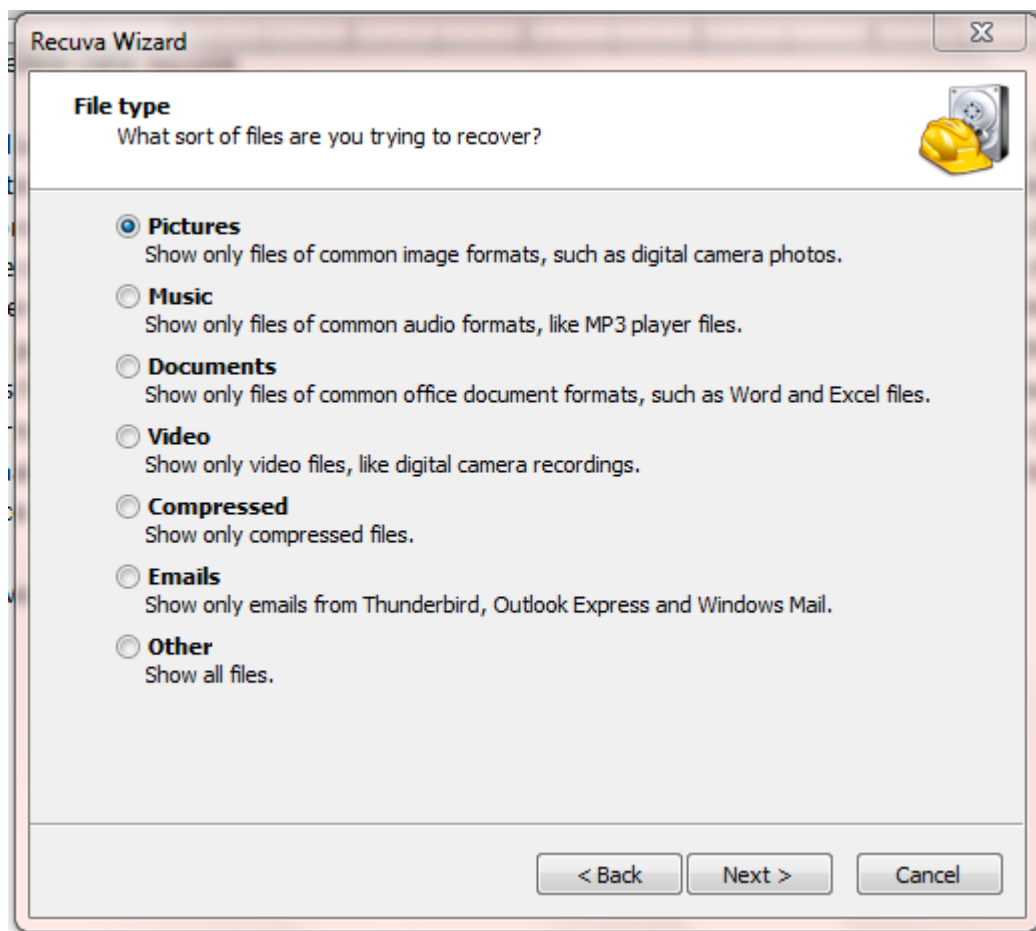


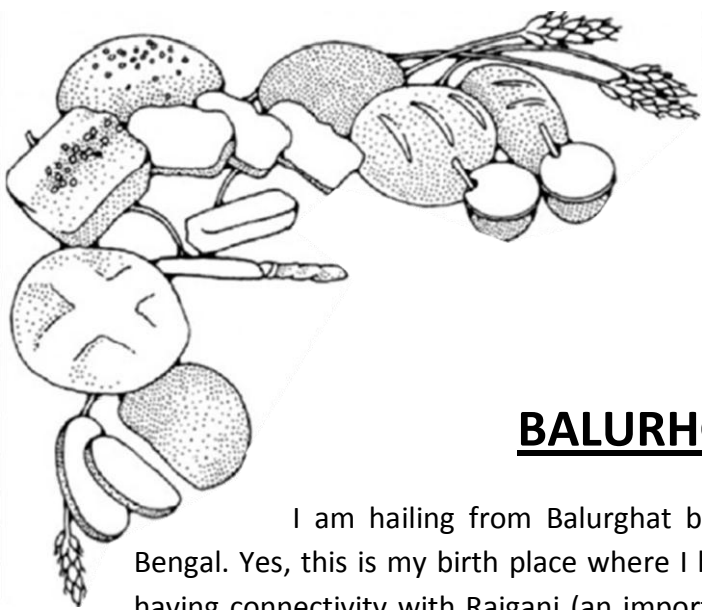


## 10-Undelete Data: Recuva

Deleted a file by mistake? Unfortunately, there's no 'undo' button for that. But don't worry, it's not completely gone. Unless you used a shredding tool (see File Shredder), the file can be recovered with a nifty program called Recuva. When you run the program, you are prompted by a pop-up to choose the type of file you're looking to 'undelete', whether pictures, music, documents, etc. Next, choose the drive where it was located or the whole PC itself. Before finishing, you will be asked whether you want to perform a 'deep scan' - check this option only if Recuva is unable to find your file in the first try. Files found in the scan are marked either green (easy to recover), yellow (difficult to recover) or red (permanently deleted). Sometimes, the file's name might not be identifiable, but you can try the thumbnail preview or use your own judgment to figure out whether that's the file you were looking for. Once you locate your file, click 'Recuva' and save it to your hard drive.

Link : [www.piriform.com/recuva](http://www.piriform.com/recuva)





## **BALURHGAT IN MY MEMORY**

I am hailing from Balurghat being an important Municipal town in remote corner of North Bengal. Yes, this is my birth place where I have been born and brought up. It is a medium-sized long town having connectivity with Raiganj (an important town) and Malda famous for Gour Bangla. The span of the town is not rather of significant quarter as compared to its length because of the existence and demarcation of Bangladesh Border on either side. The town being a small town is lovable and attractive for the river Atrayee which circumscribes almost all over the town. Yes Atrayee river- the name is a very sweet one and is well known to almost all. The town and its surrounding peripheral areas in and around are quite nice and the town itself has got beauties and charm of specialty to me no doubt.

Balurghat in fact happens to be the HQR of South Dinajpur district (erstwhile West Dinajpur) created in 1992. Balurghat carries the old legacy and culture which can hardly be forgotten. The South Dinajpur district with its HQR at Balurghat is a small one with eight Block Divisional offices and panchayats, one outline subdivision at Buniadpur and two Municipalities. But small is beautiful and precious to me and to all obviously. This small town is in possession of greeneries, forest areas and is have a good ambience and peaceful and congenial atmosphere. I have studied from The Atrayee English Medium School which is a notable one in the area and got immeasurable love, support and proper guidance although from the teachers whose sacrifice, devotion and dedication towards the students in general are really memorable. It is because of their guidance and support, I have made good and sound achievement in the exams.

The people of Balurghat are sociable and loveable to each other. They are very much friendly, affectionate and love mental proximity with each other. Wholehearted relationship, compassion and feeling of attachment and attitude of rendering help and support to each other is really noteworthy. A centre of old tradition of parentage and of moral values are still existing in our area. We generally addresses seniors as "Jethus & Kakus" and treat our mates as brothers.

The memories of my school days are still fresh in my mind. Nice and enjoyable days I had amidst my mates. I had been a serious and sincere student and laboured hard. Again to come our teachers' support and dedication. Really I treat them as gurus and were no less than our parents. I shall remain highly indebted to them throughout my life. I vividly recall the company of my friends who were very good and cooperative and I try my level best to keep in touch with them. I had very but free can't honily relation their families too. Can I forget those glorious days and the nice company of my mates in my school as well as in my locality? I really miss all of them very much as because I can't stay at Balurghat now. Moreover the school days are over and after completion of my higher studies I am now absorbed in the busy life at Kolkata and can't

frequently come over the place .But the sweet remembrance of the bygone days and of my beloved place sometimes make me feel alone in Kolkata. My parents are aging and they feel lonely too and are suffering from ailments. I feel deeply for them from Kolkata where I have to stay generally . The sweet moments and memories haunt me although when I drop at Balurghat railway station. I feel nostalgic of the place and old days in school.

Meanwhile the developments have taken place in Balurghat. I have noticed and I feel over joyous as it is my grassroot place where I have been born and brought up and been educated Although the onslaught of old traditional culture gradually in my era pains me a lot, my emotional attachment for the place will always be there.



**My School**

Dip Prakash Samajdar  
Faculty member,ECE



## The Terror

There were trees-big towering trees all around were dwarfing me. The eerie silence of the forest that day was occasionally disturbed by the wild roaring of the winds. Otherwise all I could hear were my footsteps.

I didn't know where I was heading. It seems as if I have been running forever. I don't know what that was but it was a close shave. Thankfully, I am still alive.

"I .....am.....not.....don't know.....what's happening to me.....Am....I.....dy... dying?...I ..can't....

"Where is this place?" I must have fallen unconscious. "T...What's that rumbling sound? Is it that hideous thing?" I did not wait to see nor did I have any intentions to do so. I leaped over the ditch, dashed through some leaves curling to block my path and I finally managed to arrive near a pond. "Relief, at last. A few sips of water would do just fine." In the midst of all these, out of nowhere, I started to hear that sound again.

I started to run again and this time I decided to hide behind a rock. It was then that I saw the thing was chasing me. What I saw filled me with terrible fear.

I was moving from behind one tree to another to hide from it. I stepped on a loose pebble and fell, in the process, making a loud thud. That sealed my fate

I was now looking at it straight in the eye. Its eyes seemed like a pair of burning canon balls and its huge intimidating frame towered over me. I suddenly noticed that its face twitched and its expression started to change. It was.....It was...ahhhhhhhhh.

Dong! Dong! Dong! "Rusty, wake up. It's morning already. Didn't you sleep last night?" It was mom. "Where did she come from?" Suddenly I saw it- "LEVEL FAILED. GAME OVER"

Debopam Ghosh  
ECE 4<sup>th</sup> year  
Section - A

## 'H' for?

A small shabby restaurant....11:30pm. Two old friends were totally absorbed in their conversations....One of them inquired suddenly, "Do you remember old Paul?" "Sure I do," said the other "Paul Mc Allister. How can I forget? Well I must tell you Joe I was horrified when I heard that he is missing." Joe continued to munch his sandwich hungrily. After swallowing a mouthful he said, "Yes, the news had taken me by shock. Paul was the most wonderful guy I had known." "Sure he was. He was smart, talented, and helpful. His parents had broken down completely when their fifteen year old son disappeared all of a sudden." "What a pity," continued Joe, "the three of us used to have loads of fun when we were together. We used to play all kinds of pranks and poor Mrs. Martin, our neighbour would get tired of us. We used to scare her to death by placing a cockroach on her tea table every morning." "But you were her favourite Alan." "Yes that was because I was the most decent one out of the three of us.....decent enough to apologise after hiding her spectacles and making her look for it anywhere and everywhere."

Both burst into fits of giggles like kids. Joseph Smith referred to as Joe was a famous real-estate developer in New York and Alan Cohn was the manager of a famous bank in Boston. Both of them were childhood friends who had met after a long span of fifteen years. Alan had come to New York to meet some relatives and after doing so he had tracked, gone to the casino in the evening and had landed in this shabby restaurant in the middle of the night to finish their dinner. They had been too engrossed in their conversation all evening to eat and now were munching away their sandwiches hungrily. The only waiter and manager of the restaurant were nowhere inside. Suddenly a stranger sitting at the next table approached them and sat down at the table. "May I join you?" he asked. "Yes, why not?" Joe said reluctantly. "I hope I didn't disturb you. But your conversation is really interesting. So tell me more about that friend of yours named Paul", said the stranger. "But why should we tell you. You are stranger to us", said Alan. "I am a stranger no doubt, but I was enjoying your conversation and am very much interested to know that story", interjected the stranger. "Ok then. Paul was our great friend. We miss him a lot. The three of us lived in Los Angeles. Once the three of us were playing an interesting game. Each of us wrote an alphabet in a piece of paper and folded it. All 26 alphabets were written in 26 papers. We had decided that each would pick up a paper and the alphabet in it would be the starting letter of the place where he would live in the future. The irony is that the alphabets that Alan and I picked are actually the starting alphabets we live in today. I had picked up 'N' and Alan 'B'. Strangely enough I am in New York and my friend here Alan is in Boston." "What had Paul picked up?," the stranger asked. "Paul got an 'H'. We thought that he would be in Holland or Hungry or might me our own Houston. It was a kid's game. Now, we have told you enough and its your turn to tell us about yourself."

The stranger began, "I used to live in Los Angeles too. But I don't live there now. When I was fifteen I was kidnapped from home. I don't know who the people were. Probably some old enemies of my father. They took me away and the police had no clue. I tried but could not run away. I lived with them for 10 years and they make me work like a beast of burden. I never protested and was obedient to them always no matter how beastly they were to me. It was only 5 years ago I was freed. I was walking with those people when I tripped and fell. Before I could lift myself a car ran over me and that was the end." "Then?" Joe and Alan asked him unison. "Then my friends, I am your old childhood friend Paul. I stay in a place which starts with the letter H" paused Paul. "Where is it?", exclaimed Joe and Alan in unison. They were quite excited. "Strange isn't it? I had landed up in a place which starts with the alphabet that I picked up in a childhood

game. Heaven it is.... Yes that's where I am now...." "Pppp....aul....", Alan shivered as he felt ice sliding down his spine. "It was great talking to you pals....wish you good luck for your coming endeavours. Good bye." and the stranger vanished into thin air.

Aditya Kumar Roy  
ECE 1<sup>st</sup> year  
Section - C

The  
End