Future Scope

Forensic investigation is a complicated science with its own history, implications and future. It is not sufficient merely to consider it a branch of criminology, or the study of cyber criminal behavior, or research into the relationship between the causes of tech related crime and social policies. For cyber criminals, their knowledge and their crimes are bound together. The possible suspects are rich in knowledge and technical skills. They have mastered the technology better than the technology's creators, and they know how to use technology against technology.

A multidisciplinary approach is required to fully foresee the future of forensics. It requires a team of specialists from different disciplines within the IT industry and related industrial and social segments such as telecom and law. However, in this article the author looks at the future of forensics based on his knowledge and experience in this field.

Forensics for Governments

Forensics at the governmental level will be more complicated in the future. Governments will need to turn more to their national security organisations to hunt down cyber criminals. In addition, they will need to invent anti-forensic tools and methods to keep their activities and information assets secret.

Cyberspace security and computer related technologies will be a real challenge for governments. The platforms and protocols for computer related technologies may have both domestic and international uses. Therefore, it will be difficult for governments to reach an agreement for international cyber security policies.

At the same time, some countries are the technology owners and this intellectual property ownership will give them an advantage compared to other countries without such a privilege. The technology ownership issue will force the other countries to utilise the open source platforms to develop their own customised operating systems and software.
Forensics for Corporates

Currently a few companies have dominated the forensic markets. These are the pioneers in forensics and analysis. They have the tools and the solutions for cyber forensic investigation. They train law enforcement agencies to use their tools and solutions and some of them even have special tools just for governmental use.

There are also many small companies with one or two consultant partners who are either retired law enforcement officers or former IT professionals from Fortune 500 companies. These people use their contacts and credentials to achieve some market share. However, in the future, forensics at the corporate level will be diversified to education and certain specialties and products. It will be difficult for small companies to build a team with the right core competencies. In addition, due to security clearance requirements and national security interests, most of these companies will only practice in their country of origin.

Furthermore, information security standards such as ISO27001 and ITIL will be implemented more in medium to enterprise size companies. Realistically, only these companies can afford the cost of compliance implementation. Therefore, it will be necessary for them to have proper incident response procedures and the corresponding forensic investigation capabilities. These companies may well have their own forensic investigation units.

Forensics in Professional Institutions

Forensics is a new battleground for professional institutions. Currently, there is no real internationally recognised authority to govern forensics practices, regulations and certification. Therefore, professional institutions are offering forensic investigation training programs, certifications and conferences. Currently, some of these institutions are forming alliances (as trade and training partners) to achieve their sales targets. In the future, it is likely that these institutions will start to attack each other to gain market share.
Chapter 5: Future Scope

Forensics in Universities
It is sad to note that more and more often information technology advances are coming from industry rather than universities. Within IT, a few companies dominate the industry and therefore the innovations. It will be the same for forensics; the companies with market share have the money for research and development. The main issue with academic institutions is their approach, which is slow and traditional compared to the faster speed of development and implementation found in industry.

Furthermore, the training programs in universities are not aligned with the current job market and industry needs. The university students have a lack of practical knowledge compared to the IT professionals who are in the industry (and possibly without academic studies). This is the major reason why students choose further training to achieve professional certification and so distinguish themselves from other graduates.

Forensics in the Media
There will be more magazines, websites and blogs specialising in forensics and analysis. They will be the voice of the industry with the power to review, promote and criticise books, products, solutions and training programs. They will sell advertising and help vendors sell their products. Whoever has more marketing budget and better relations will be the most successful in the forensics industry. Nevertheless, there will be one or two magazines and websites that will remain independent, but they will find it difficult to survive in such a tough market.

Forensics and Technical Trends
The market will be divided to four main segments with specialised service providers for each segment. The segments are: Microsoft Windows related products, UNIX & Linux related products, Apple related products and computer network & telecom related products.

The solution providers will create more comprehensive tools and solutions to gain better market share. The technology will transform their solutions into a set of tools for non-IT professionals. It will also try to make their tools web based, for remote forensic investigations.
Chapter 5: Future Scope

The open source community will be active for the UNIX & Linux platforms to accrue required legislation to accredit the open source tools in the various countries and judicial systems.

Apple created a giant market for those who want to develop Apple device related tools and solutions. This will be a new era for the professionals who are working in forensics. Cloud computing, cellular networks, WiMax and virtualization will be the other areas of the interest for study and product development. It is obvious that everything is merging towards IT and cyberspace plays an important role in the near future. This will lead governments and authorities to pursue other methods of intelligence gathering, such as web and data mining, to protect their interests.

This will lead to the biggest privacy issue in history. All the data communication, of all users, will be logged at the carrier level. Then the authorities will use data mining tools to identify suspicious behavior of a particular user or users in their own or an allies' territory. All this information will be saved in massive databases and then the commercial, financial and personal information, in addition to the communication records and social behaviors, will be linked together.

All this will ultimately lead to a new chapter in the history of forensics, namely Applied Artificial Intelligence in Forensics.

The scope for CPR and SPD

With reference to the detection methods of study, there is a scope in following areas:

1. JPG Detection: Though JPG is lossy method, the algorithm can be modified to obtain the similar detections is JPG files as that in BMP files.

2. Optimization: The images used in the research work are of around 100x100 pixels, consuming about 2 to 4 second for detections, due to pixel comparisons in terms of thousands. The programs can be modified to eliminate unneeded comparisons.

3. Platform independence: The system requirement for the methods used here comprises of Windows OS based MATLAB. The common program such as Java can be useful in order to avoid specific OS requirement.