Review: Biological Memory

Johan Sunnanväder

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Is Biological Memory the next step in the evolution of storage devices?

This review of the biological memory, BioMem, will discuss the most important features of a storage device and how the BioMem compares to conventional storage devices in these areas.

Introduction

Imagine a biological entity such as a brain, but used solely for storing information. Does the positive aspects of this kind of storage device outweigh the negative? Here follows a list of the important aspects to consider when evaluating a storage device and how well the BioMem performs in these areas.

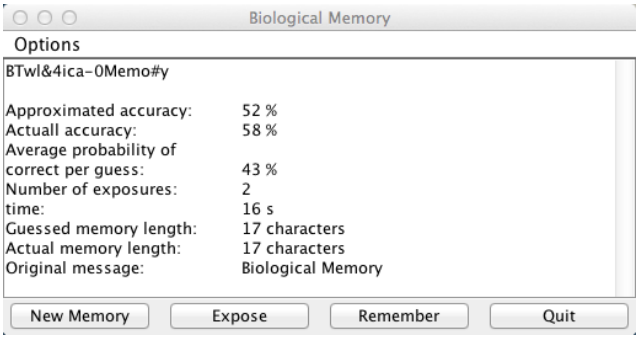

Figure 1: A simulation program of the BioMem.

Review

Area	Negative	Positive	Comment
1. Accuracy	It is hard to trust the accuracy of the BioMem.	It is possible for the BioMem to evaluate the accuracy of each recreated data sequence.	Even though the accuracy may be hard to trust it is possible for the BioMem to reduce this negative aspect by evaluating the accuracy.
2. Storage Capacity	The amount of data stored at one time will influence the short term accuracy.	The ultimate capacity has no known limit. There are even indications that storing large amount of data over time will increase the overall accuracy.	This is one of the greatest positive aspect of the BioMem. If handled correctly the BioMem may have a huge potential when it comes to storage capacity.
3. Formatting Properties	There is no simple way to format the BioMem without damaging it.	Files that have been successfully stored for a long time will almost always be restorable if temporarily lost.	This may be a problem when handling secret data. It means that every BioMem containing secret information must be destroyed before being exposed to unauthorized people. Although, since storing new data does not seem to affect the previously stored data, it means that no information will be completely lost.
4. Capability	It would require a specific interface to be able to communicate with conventional computer devices.	It may be possible to communicate with other Biological Entities in an effective way.	This could make it complicated to integrate BioMem into everyday devices, which means that the transition between conventional storage mediums to BioMem will require a great investment.
5. Speed	The speed of the BioMem will be slow when it comes to writing and reading when compared with conventional memory storage devices.	The BioMem may be fast at locating data. Although, the speed will be determined by a number of aspects such as the frequency with which the specific data is requested and the time since the specific data was requested last.	This could be a great disadvantage.

6. Survival	It would need external support at all time to stay functional. If the BioMem is damaged or destroyed due to a failing external support it will most certainly be impossible to repair it and the data will be lost.	The data will not be wiped out by electromagnetic radiation.	This makes the BioMem ideal for applications where indispensable information is to be stored or if one need a secure way to store information in a place that is exposed to high levels of electromagnetic radiation.
7. Mobility	It may be complicated to transport the device safely since it would need constant external support to stay "alive".	-	This will make it complicated to create commercially succsesfull applications for small portable devices such as mobile phones and music players.
8. Intelligence	-	It may be possible to implement intelligence in the BioMem which could improve the performance in areas such as speed and short term accuracy.	How the BioMem would be "programmed" in practice is unknown.
9. Size	It may be hard to create the BioMem small enough to match the conventional portable memory storage devices.	It may be possible to create the BioMem in arbitrary shapes for easier integration into portable devices.	Even though the BioMem may be possible to create in a shape to match a certain device it will still be hard to compete with the size of conventional portable storage devices.
10. Ethics	It is uncertain whether it is possible to create the BioMem in a way that is considered ethical.	-	It is unknown if it is possible to create the BioMem with the necessary features without the device having a conscience, in which case it could be considered unethical.

1 Conclusion

The BioMem is not yet fit for applications where speed, size and mobility is essential. Therefor the BioMem will probably not replace conventional storage devices in small portable electronic equipment any time soon.

Although, the BioMem is more or less unaffected by electromagnetic radiation which would wipe out the data of any digital storage device. This makes the BioMem ideal for situations where it is impossible for conventional storage devices to perform in a reliable way. This could be in situations where vital information is to be transported under the threat of an EMP (Electro Magnetic Pulse). Or possibly on space missions when the memory storage device could be exposed to cosmic electromagnetic phenomena such as solar flares.

The BioMem can also be used when storing certain large databases. As long as the BioMem gets enough time to store information it has a large capacity. The BioMem is fast when it comes to locating information and will automatically learn to locate the most frequently requested data faster. In some databases 100 % accuracy is not vital which gives the BioMem the possibility of making mistakes without fatal consequences.

In conclusion there seem to be areas in which the BioMem can outperform conventional storage devices and there are possible applications that may become important. But given the negative aspects when it comes to speed, size and mobility it is assumed that the BioMem will not be replacing the storage devices of the average consumer any time soon.