Three pages by Bernard Stiegler

Non-conclusion

I am not fully convinced that, when discussing the issues of calculability, Stiegler took into account the specific features of neural networks. A neural network doesn't calculate, it learns, that is, it adapts, which is very different. The outcome of learning in a neural network is not deterministic, but statistical. As regards calculations, it is generally expected that multiple runs of the same calculation performed on the same data will produce identical results. It is not the case and it cannot be the case with regard to learning, because learning is on the contrary a progression, an evolution, a refinement a gradual approximation. Therefore, at the end of a learning process, there is always some uncertainty about the results of the pattern recognition operation performed by a neural network (since this is the main type of applications for which they are used).

The situation is comparable to that of testifying in a court case. A witness claims to have seen or observed this or that fact, but everyone knows that he is a human being, that he is therefore fallible and that his testimony is hence equally so. If another witness to the same facts gives a different testimony, the testimony of both witnesses will appear for what it is, which is a probability.

The same is true of the police use of neural networks based on their facial recognition capabilities. The accuracy of the facial recognition performed, only makes sense with an assessment of its uncertainty. And its validity shall obviously be lower than the probability of success evaluated during the network calibration that is performed at the end of the training process. Residual uncertainty is inevitable because this uncertainty is at a minimum related to the randomness that occurred when selecting the (usually huge) data set used for training the network.

However, learning, recognizing a shape (or more exactly *creating* a shape), does not consist in identifying this shape within a set of already listed data, but in identifying *a new shape, an unknown and never seen shape*, which does not belong to the set of data that was used during the learning process. Hence, neural networks work beyond the realm of the calculable, and would then be usable in the open field of the type of surrealism envisioned by Stiegler, because when properly used, they are capable of creating forms unknown to humans.

Used in *symbiosis* with human minds, they may, by stimulating the form recognition capabilities of human minds, expand the inventive capacities of human brains in a process – a closed loop process as is the case with any symbiosis – where the uncertainty, of which we have seen that it is irreducibly rooted in the very core of the learning process, may be used against what Stiegler calls computational capitalism ...