CLAIMS

1. A method for executing computer programs in a trusted execution environment of a device comprising:

retrieving a genomic differentiation object corresponding to a set of one or more computer programs including a computer program;

modifying the genomic differentiation object based on genomic regulation instructions (GRI) to obtain a modified genomic differentiation object;

executing a first executable instruction of the computer program, wherein executing the first executable instruction includes:

retrieving first encoded data that is input to the first executable instruction;

extracting a first sequence from first metadata associated with the first encoded data;

generating a first genomic engagement factor (GEF) based on the first sequence, the GRI and, and the modified genomic differentiation object;

decoding the first encoded data based on the first GEF to obtain first decoded data;

executing the first executable instruction using the first decoded data; and

executing a second executable instruction of the computer program, wherein executing the second executable instruction includes:

retrieving second encoded data that is input to the second executable instruction;

extracting a second sequence from second metadata associated with the second encoded data;

generating a second GEF based on the second sequence, the GRI and, and the modified genomic differentiation object;

decoding the second encoded data based on the second GEF to obtain second decoded data; and

executing the second executable instruction using the second decoded data.

2. The method of claim 1, wherein executing the first executable instruction further includes:

obtaining output data resulting from execution of the first executable instruction;

generating a third GEF based on a third sequence corresponding to the output data, the GRI, and the modified genomic differentiation object;

transforming the output data into third encoded data based on the third GEF, and

writing the third encoded data to memory.

3. The method of claim 2, further comprising writing the third encoded data to memory.

4. The method of claim 2, wherein the third sequence is extracted from metadata corresponding to the output data, wherein the metadata includes one or more of random-access memory (RAM) metadata, application metadata, operating system-application metadata, and filesystem metadata, the method further comprising executing a third executable instruction of the computer program by:

retrieving the third encoded data that is input to the third executable instruction;

extracting the third sequence from a value representing the metadata corresponding to the output data;

generating the third GEF based on the third sequence, the GRI and, and the modified genomic differentiation object;

decoding the third encoded data based on the third GEF to obtain the output data; and

executing the first executable instruction using the output data resulting from execution of the first executable instruction.

5. The method of claim 4, further comprising executing a third executable instruction of the computer program by:

retrieving the third encoded data that is input to the third executable instruction;

extracting the third sequence from a value representing the metadata corresponding to the output data;

generating the third GEF based on the third sequence, the GRI and, and the modified genomic differentiation object;

decoding the third encoded data based on the third GEF to obtain the output data; and

executing the first executable instruction using the output data resulting from execution of the first executable instruction.

6. The method of claim 1, wherein the first metadata from which the first sequence is extracted and the second metadata from which the second sequence is extracted includes one or more of random-access memory (RAM) metadata, application metadata, operating system-application metadata, and filesystem metadata.

7. The method of claim 1, wherein generating the first GEF includes:

generating a sequence conversion vector (SCV) based on the first sequence and the first GRI;

mapping the modified genomic differentiation object based on the SCV to obtain a mapped modified genomic differentiation object; and

generating the first GEF based on the mapped modified genomic differentiation object.

8. The method of claim 7, wherein generating the SCV includes combining the first sequence and the GRI.

9. The method of claim 8, wherein generating the SCV further includes applying one or more computational functions to the combination of the first sequence and the GRI to obtain the SCV.

10. The method of claim 1, wherein decoding the first encoded data includes decrypting the first encoded data using the first GEF and decoding the second encoded data includes decrypting the second encoded data using the second GEF.

11. The method of claim 1, wherein decoding the first encoded data includes disambiguating the first encoded data using the first GEF and disambiguating the second encoded data includes decrypting the second encoded data using the second GEF.

12. The method of claim 1, wherein the genomic differentiation object is an ZNA object.

13. The method of claim 12, wherein the ZNA object is an N x M binary matrix.

14. The method of claim 12, wherein a VDAX of the device generates and assigns the ZNA object to the computer program.

15. The method of claim 1, wherein the device is: a server computing device, a mobile computing device, a personal computing device, a vehicle, a gaming device, an internet of things device, a sensor device, a video recording device, a wearable computing device, a smart appliance, or a network router.

16. The method of claim 1, wherein the computer program is: a software application, a middleware application, a firmware application, or an operating system.