Claims

1. A computer program product stored in a non-transitory medium and including instructions that when executed by a processor cause the processor to perform operations, the operations comprising:

accessing a first animation graphics file, a second animation graphics file, a mask graphics file, and a predetermined electrical threshold value for an array of electrical components;

performing pixel-by-pixel calculations on combinations of rows from the first animation graphics file and the second animation graphics file and the mask graphics file, each of the pixel-by-pixel calculations including determining a first scaled pixel value by multiplying a first animation pixel value from the first animation graphics file with a first mask pixel value from the mask graphics file, determining a second scaled pixel value by multiplying a second animation pixel value from the second animation graphics file with a second mask pixel value from the mask graphics file, and determining a sum of the first scaled pixel value and the second scaled pixel value; and

generating an output that reflects whether an outcome of the pixel-by-pixel calculations exceeds the predetermined electrical threshold value for the array of electrical components.

2. The computer program product of claim 1, wherein performing the pixel-by-pixel calculations comprises performing the pixel-by-pixel calculations on all possible combinations of rows from the first animation graphics file, the second animation graphics file and the mask graphics file.

3. The computer program product of claim 1, wherein the output indicates that the outcome of the pixel-by-pixel calculations exceeds the predetermined electrical threshold value for the array of electrical components, and wherein the operations further comprise adjusting at least one of the first animation graphics file, the second animation graphics file or the mask graphics file.

4. The computer program product of claim 1, wherein the output indicates that the outcome of the pixel-by-pixel calculations does not exceed the predetermined electrical threshold value for the array of electrical components, and wherein the output further comprises a calculated electrical value describing the array of electrical components.

5. The computer program product of claim 4, wherein the calculated electrical value comprises an average total current for all row combinations of the first animation graphics file, the second animation graphics file and the mask graphics file.

6. The computer program product of claim 4, wherein the calculated electrical value comprises a highest total current among all row combinations of the first animation graphics file, the second animation graphics file and the mask graphics file.

7. The computer program product of claim 1, wherein the array of electrical components includes light-emitting diodes (LEDs), and wherein the outcome of the pixel-by-pixel calculations comprises calculating an estimated current for each LED color of the LEDs based on data stored as pixels in the first animation graphics file and the second animation graphics file and the mask graphics file.

8. The computer program product of claim 1, wherein each row in the first animation graphics file and the second animation graphics file is associated with a frame in a pattern sequence defined by the first animation graphics file and the second animation graphics file and the mask graphics file, and wherein each pixel in the row is associated with a respective electrical component of the array of electrical components.

9. The computer program product of claim 8, wherein performing the pixel-by-pixel calculations comprises processing a first row of each of the first animation graphics file and the second animation graphics file and the mask graphics file, and subsequently processing a next row of each of the first animation graphics file and the second animation graphics file and the mask graphics file over multiple iterations.

10. The computer program product of claim 9, wherein at least one of the first animation graphics file, the second animation graphics file or the mask graphics file has a different temporal length than another of the first animation graphics file, the second animation graphics file or the mask graphics file, the operations further comprising beginning another loop of the at least one of the first animation graphics file, the second animation graphics file or the mask graphics file after reaching an end of the at least one of the first animation graphics file, the second animation graphics file or the mask graphics file.

11. The computer program product of claim 1, wherein a series of rows in each of the first animation graphics file, the second animation graphics file and the mask graphics file is associated with a temporal flow of a pattern sequence defined by the first animation graphics file, the second animation graphics file and the mask graphics file.

12. A method comprising:

accessing first binary sequences corresponding to animation graphics files, and a second binary sequence corresponding to a mask graphics file;

combining portions of the first binary sequences with each other according to the second binary sequence, to generate a digital bitstream; and

transmitting the digital bitstream to control an array of electrical components.

13. The method of claim 12, wherein each row in the animation graphics files is associated with a frame in a pattern sequence defined by the animation graphics files and the mask graphics file, and wherein each pixel in the row is associated with a respective electrical component of the array of electrical components.

14. The method of claim 12, wherein at least one of the animation graphics files or the mask graphics file has a different temporal length than another of the animation graphics files or the mask graphics file, the method further comprising beginning another loop of the at least one of the animation graphics files or the mask graphics file after reaching an end of the at least one of the animation graphics files or the mask graphics file.

15. The method of claim 12, further comprising accessing multiple second binary sequences corresponding to respective mask graphics files, and accessing a configuration file specifying combinations, each combination including at least two of the animation graphics files and one of the mask graphics files.

16. The method of claim 15, wherein each of the combinations corresponds to either a stable state or a transition state, the method further comprising regulating change from a first stable state to a second stable state, wherein the configuration file specifies the transition state intermediate the first stable state and the second stable state.

17. An apparatus comprising:

a non-volatile memory storing first binary sequences corresponding to respective animation graphics files, and a second binary sequence corresponding to a mask graphics file;

an array of electrical components; and

hardware that combines portions of the first binary sequences with each other according to the second binary sequence, to generate a digital bitstream for the array of electrical components.

18. The apparatus of claim 17, wherein the array of electrical components includes light-emitting diodes (LEDs), and wherein generating the digital bitstream for the array of electrical components comprises transmitting the digital bitstream to drivers for respective ones of the LEDs.

19. The apparatus of claim 18, wherein transmitting the digital bitstream to the drivers for respective ones of the LEDs comprises transmitting the digital bitstream through a daisy chain of drivers.

20. The apparatus of claim 17, wherein the hardware comprises:

a binary multiplier performing multiplication on at least part of the first binary

sequences; and

a binary adder performing addition on a product generated by the binary multiplier.