~~**What is claimed is:**~~**Claims**

~~1. A method comprising:~~

~~accessing animation graphics files and a mask graphics file;~~

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

~~outputting the first binary sequences and the second binary sequence to hardware controlling an array of electrical components.~~

~~2. The method of claim 1, wherein outputting the first binary sequences and the second binary sequence comprises transmitting a binary file including the first binary sequences and the second binary sequence.~~

~~3. The method of any of claims 1 to 2, wherein the animation graphics files and the mask graphics file have a common graphics file type.~~

~~4. The method of claim 3, wherein the common graphics file type supports lossless data compression.~~

~~5. The method of any of claims 1 to 4, wherein at least one of the animation graphics files or the mask graphics file has eight bits per color.~~

~~6. The method of any of claims 1 to 4, wherein at least one of the animation graphics files or the mask graphics file has 16 bits per color.~~

~~7. The method of any of claims 1 to 6, wherein at least one of the animation graphics files or the mask graphics file has three planes.~~

~~8. The method of any of claims 1 to 6, wherein at least one of the animation graphics files or the mask graphics file has four planes.~~

~~9. The method of any of claims 3 to 8, further comprising reading a first flag to distinguish the animation graphics files from the mask graphics file.~~

~~10. The method of any of claims 1 to 9, wherein at least one of generating the first binary sequences or generating the second binary sequence comprises reading a second flag indicating processing direction.~~

~~11. The method of any of claims 1 to 10, further comprising operating the array of electrical components using the first binary sequences and the second binary sequence.~~

~~12.~~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 animation graphics files and a mask graphics file;~~

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

~~outputting the first binary sequences and the second binary sequence to hardware controlling an array of electrical components.~~

~~13. A method 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.

~~14.~~2. The ~~method~~ computer program product of claim 1~~3~~, 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.

~~15.~~3. The ~~method~~ computer program product of ~~any of claims 13 to 14~~ 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 ~~method~~ operations further compris~~es~~ adjusting at least one of the first animation graphics file, the second animation graphics file or the mask graphics file.

~~16. The method of claim 15, wherein the array of electrical components includes light-emitting diodes (LEDs), wherein the predetermined electrical threshold value includes an upper current limit, and wherein adjusting at least one of the first animation graphics file, the second animation graphics file or the mask graphics file comprises reducing a brightness value.~~

~~17.~~4. The ~~method~~ computer program product of ~~any of claims 13 to 16~~ 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.

~~18.~~5. The ~~method~~ computer program product of claim ~~17~~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.

~~19.~~6. The ~~method~~ computer program product of ~~any of claims 17 to 18~~ 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.

~~20.~~ The ~~method~~ computer program product of ~~any of claims 13 to 19~~ claim 1, wherein the array of electrical components includes light-emitting diodes (LEDs)~~.~~

~~21.~~7. ~~The method of claim 20~~, 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.

~~22. The method of claim 21, wherein the estimated current for each LED color of the LEDs is at least one of an average or a maximum current.~~

~~23. The method of any of claims 20 to 22, wherein the outcome of the pixel-by-pixel calculations comprises an estimated current for each LED of the LEDs.~~

~~24. The method of claim 23, wherein the estimated current for each LED of the LEDs is at least one of an average or a maximum current.~~

~~25.~~8. The ~~method~~ computer program product of ~~any of claims 13 to 24~~ 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.

~~26.~~9. The ~~method~~ computer program product of claim ~~25~~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.

~~27.~~10. The ~~method~~ computer program product of claim ~~26~~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 ~~method~~ 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.

~~28.~~11. The ~~method~~ computer program product of ~~any of claims 13 to 27~~ 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.

~~29. The method of any of claims 13 to 28, wherein the first animation graphics file, the second animation graphics file and the mask graphics file have a common graphics file type.~~

~~30. The method of claim 29, wherein the common graphics file type supports lossless data compression.~~

~~31. The method of any of claims 13 to 30, wherein at least one of the first animation graphics file, the second animation graphics file or the mask graphics file has eight bits per color.~~

~~32. The method of any of claims 13 to 30, wherein at least one of the first animation graphics file, the second animation graphics file or the mask graphics file has 16 bits per color.~~

~~33. The method of any of claims 13 to 32, wherein at least one of the first animation graphics file, the second animation graphics file or the mask graphics file has three planes.~~

~~34. The method of any of claims 13 to 32, wherein at least one of the first animation graphics file, the second animation graphics file or the mask graphics file has four planes.~~

~~35. The method of any of claims 13 to 34, wherein generating the output comprises presenting a message on a display device.~~

~~36. The method of any of claims 13 to 35, further comprising operating the array of electrical components based on the first animation graphics file and the second animation graphics file.~~

~~37. 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, 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.~~

~~38.~~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.

~~39.~~13. The method of claim ~~38~~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.

~~40. The method of any of claims 38 to 39, wherein combining the portions of the first binary sequences with each other comprises processing a first row of each of the animation graphics files and the mask graphics file, and subsequently processing a next row of each of the animation graphics files and the mask graphics file over multiple iterations.~~

~~41.~~14. The method of claim ~~40~~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.

~~42. The method of any of claims 38 to 41, wherein a series of rows in each of the animation graphics files or the mask graphics file is associated with a temporal flow of a pattern sequence defined by the animation graphics files and the mask graphics file.~~

~~43.~~15. The method of ~~any of claims 38 to 42~~ 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.

~~44. The method of claim 43~~15, wherein each of the combinations corresponds to either a stable state or a transition state~~.~~

~~45.~~16. ~~The method of claim 44~~, 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.

~~46. The method of any of claims 38 to 45, wherein the array of electrical components includes light-emitting diodes (LEDs).~~

~~47. The method of claim 46, wherein transmitting the digital bitstream to control the array of electrical components comprises transmitting the digital bitstream to drivers for respective ones of the LEDs.~~

~~48. The method of claim 47, 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.~~

~~49. The method of any of claims 38 to 48, further comprising generating the first binary sequences using the animation graphics files, and generating the second binary sequence using the mask graphics file.~~

~~50.~~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.

~~51. The apparatus of claim 50~~17, wherein the array of electrical components includes light-emitting diodes (LEDs)~~.~~

~~52.~~18. ~~The apparatus of claim 51~~, 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.

~~53.~~19. The apparatus of claim ~~52~~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.

~~54. The apparatus of claim 50, wherein the array of electrical components includes electric motors.~~

~~55. The apparatus of claim 50, wherein the array of electrical components includes electric heaters.~~

~~56. The apparatus of claim 50, wherein the array of electrical components includes electric actuators.~~

~~57.~~20. The apparatus of ~~any of claims 50 to 56~~ 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.

~~58. A set of graphics files comprising:~~

~~a first animation graphics (AG) file comprising first AG pixels, each of the first AG pixels comprising first AG values;~~

~~a second AG file comprising second AG pixels, each of the second AG pixels comprising second AG values; and~~

~~a mask graphics (MG) file comprising MG pixels, each of the MG pixels comprising MG values, a first MG value of the MG values specifying a first numerical factor for one of the first AG values, a second MG value of the MG values specifying a second numerical factor for one of the second AG values, the MG pixel defining a sum of (i) the first numerical factor multiplied by the one of the first AG values, and (ii) the second numerical factor multiplied by the one of the second AG values.~~