CLAIMS

1. A control method for synchronized lighting effects comprising:

~~determining geometric information about respective geometries of respective housings of a plurality of light sources;~~

mapping a lighting effect to a plurality of light sources provided in an environment, based on spatial information, using computer vision techniques, about the plurality of light sources in the environment;

~~determining a photographic representation of an environment in which the plurality of light sources are provided;~~

modulating timing, color and space parameters of the plurality of light sources to smoothly span the lighting effect across the environment;

~~determining spatial information about the plurality of light sources based on the geometric information and based on the photographic representation;~~

determining control information for the plurality of light sources based on the mapping and the modulation~~spatial information~~; ~~and~~

controlling the plurality of light sources based on the control information to create the lighting effect, wherein the plurality of light sources comprises at least one computer peripheral device and at least one ambient light source in the environment; and

determining spatial information about the plurality of light sources based on geometric information about respective geometries of respective housings of the plurality of light sources, wherein the geometric information comprises positions of one or more light elements on each light source of the plurality of light sources.

~~2. The control method of claim 1,~~

~~wherein the plurality of light sources are provided in at least one computer peripheral device.~~

~~3~~2. The control method of claim 1, further comprising:

~~wherein~~ determining the geometric information ~~is determined~~ based on at least one of a database of geometries of housings or a user input identifying types of light sources provided in the environment.

~~4. The control method of claim 1,~~

~~wherein the geometric information is determined based on a user input identifying types of light sources provided in the environment.~~

~~5~~3. The control method of claim 1, further comprising:

determining ~~wherein the~~ spatial information ~~comprises information indicating at least one of a relative position of each light source of~~about the plurality of light sources ~~with respect to at least one other light source of the plurality of light sources, a relative orientation of each light source of the plurality of light sources with respect to at least one other light source of the plurality of light sources, an absolute position of each light source of the plurality of light sources, or an absolute orientation of each light source of the plurality of light sources~~based on a photographic representation of the environment.

~~6~~4. The control method of claim ~~1~~3,

wherein the photographic representation comprises at least one of a two-dimensional scan of an environment in which the plurality of light sources are located or a three-dimensional scan of an environment in which the plurality of light sources are located or a movie of an environment in which the plurality of light sources are located.

~~7~~5. The control method of claim ~~1~~3, further comprising:

detecting a new light source from the photographic representation; determining spatial information about the new light source based on the photographic representation; and updating control information for the plurality of light sources based on the spatial information of the new light source.

~~wherein the control information is determined further based on input from a user of the control method.~~

~~8~~6. The control method of claim 1,

wherein controlling the plurality of light sources comprises controlling the plurality of light sources to operate sequentially such that the lighting effect appears to travel across the plurality of light sources~~the control information is determined further based on a pre-defined animation sequence~~.

7. The control method of claim 1,

wherein the spatial information comprises information indicating at least one of a relative position of each light source of the plurality of light sources with respect to at least one other light source of the plurality of light sources, a relative orientation of each light source of the plurality of light sources with respect to at least one other light source of the plurality of light sources, an absolute position of each light source of the plurality of light sources, or an absolute orientation of each light source of the plurality of light sources.

8. The control method of claim 1, further comprising:

building a three-dimensional representation of the environment, wherein each light source of the plurality of light sources corresponds to a voxel in the representation; and controlling the plurality of light sources based on information pertaining to the voxel in the representation that corresponds to each of the plurality of light sources; wherein the lighting effect is three-dimensional.

9. The control method of claim 1,

wherein the control information is determined further based on at least one of input from a user of the control method or a pre-defined animation sequence~~comprises timing information for each light source of the plurality of light sources for switching on or off the light source~~.

10. The control method of claim 1,

wherein the control information comprises at least one of timing information for each light source of the plurality of light sources for switching on or off the light source, and color information for each light source of the plurality of light sources.

11. The control method of claim 1,

wherein controlling the plurality of light sources comprises controlling the plurality of light sources to obtain at least one of a synchronized lighting effect, a coordinated lighting effect, an animated lighting effect, a propagating wave lighting effect, a breathing lighting effect, or a spectrum lighting effect.

12. A non-transitory computer-readable medium comprising instructions for synchronized lighting effects which, when executed by a computer, make the computer perform a control method, the control method comprising:

mapping a lighting effect to a plurality of light sources provided in an environment, based on spatial information, using computer vision techniques, about the plurality of light sources in the environment~~determining geometric information about respective geometries of respective housings of a plurality of light sources~~;

modulating timing, color and space parameters of the plurality of light sources to smoothly span the lighting effect across the environment~~determining a photographic representation of an environment in which the plurality of light sources are provided~~;

~~determining spatial information about the plurality of light sources based on the geometric information and based on the photographic representation;~~

determining control information for the plurality of light sources based on the mapping and the modulation~~spatial information~~; ~~and~~

controlling the plurality of light sources based on the control information to create the lighting effect, wherein the plurality of light sources comprises at least one computer peripheral device and at least one ambient light source in the environment; and

determining spatial information about the plurality of light sources based on geometric information about respective geometries of respective housings of the plurality

of light sources, wherein the geometric information comprises positions of one or more light elements on each light source of the plurality of light sources.

~~13. The computer-readable medium of claim 12,~~

~~wherein the plurality of light sources are provided in at least one computer peripheral device.~~

~~14. The computer-readable medium of claim 12,~~

~~wherein the geometric information is determined based on a database of geometries of housings.~~

~~15. The computer-readable medium of claim 12,~~

~~wherein the geometric information is determined based on a user input identifying types of light sources provided in the environment.~~

~~16. The computer-readable medium of claim 12,~~

~~wherein the spatial information comprises information indicating at least one of a relative position of each light source of the plurality of light sources with respect to at least one other light source of the plurality of light sources, a relative orientation of each light source of the plurality of light sources with respect to at least one other light source of the plurality of light sources, an absolute position of each light source of the plurality of light sources, or an absolute orientation of each light source of the plurality of light sources.~~

~~17. The computer-readable medium of claim 12,~~

~~wherein the photographic representation comprises at least one of a two-dimensional scan of an environment in which the plurality of light sources are located or a three-dimensional scan of an environment in which the plurality of light sources are located or a movie of an environment in which the plurality of light sources are located.~~

~~18. The computer-readable medium of claim 12,~~

~~wherein the control information is determined further based on input from a user of the control method.~~

~~19. The computer-readable medium of claim 12,~~

~~wherein the control information is determined further based on a pre-defined animation sequence.~~

~~20. The computer-readable medium of claim 12,~~

~~wherein the control information comprises timing information for each light source of the plurality of light sources for switching on or off the light source.~~

~~21. The computer-readable medium of claim 12,~~

~~wherein the control information comprises color information for each light source of the plurality of light sources.~~

~~22. The computer-readable medium of claim 12,~~

~~wherein controlling the plurality of light sources comprises controlling the plurality of light sources to obtain at least one of a synchronized lighting effect, a coordinated lighting effect, an animated lighting effect, a propagating wave lighting effect, a breathing lighting effect, or a spectrum lighting effect.~~

~~23~~13. A controller for synchronized lighting effects comprising:

~~a geometry determination circuit configured to determine geometric information about respective geometries of respective housings of a plurality of light sources;~~

~~an imaging circuit configured to determine a photographic representation of an environment in which the plurality of light sources are provided;~~

~~a spatial information determination circuit configured to determine spatial information about the plurality of light sources based on the geometric information and based on the photographic representation;~~

~~———~~a control information determination circuit configured to determine control information for ~~the~~ a plurality of light sources provided in an environment, wherein the control information determination circuit is configured to determine the control information by mapping a lighting effect to the plurality of light sources based on ~~the~~ spatial information, using computer vision techniques, of the plurality of light sources in the environment, and modulating timing, color and space parameters of the plurality of light sources to smoothly span the lighting effect across the environment; ~~and~~

a control circuit configured to control the plurality of light sources based on the control information to create the lighting effect, wherein the plurality of light sources comprises at least one computer peripheral device and at least one ambient light source in the environment; and

a geometry determination circuit configured to determine geometric information about respective geometries of respective housings of the plurality of light sources, wherein the geometric information comprises positions of one or more lighting elements on each of the plurality of light sources.

~~24~~14. The controller of claim ~~23~~13, further comprising:

an imaging circuit configured to determine a photographic representation of the environment

~~wherein the plurality of light sources are provided in at least one computer peripheral device~~.

~~25~~15. The controller of claim ~~23~~13, further comprising:

a spatial information determination circuit configured to determine spatial information about the plurality of light sources based on the geometric information

~~wherein the geometry determination circuit is configured to determine the geometric information based on a database of geometries of housings~~.

~~26~~16. The controller of claim ~~23~~13, further comprising:

a spatial information determination circuit configured to determine spatial information about the plurality of light sources based on the photographic representation

~~wherein the geometry determination circuit is configured to determine the geometric information based on a user input identifying types of light sources provided in the environment~~.

~~27. The controller of claim 23,~~

~~wherein the spatial information comprises information indicating at least one of a relative position of each light source of the plurality of light sources with respect to at least one other light source of the plurality of light sources, a relative orientation of each light source of the plurality of light sources with respect to at least one other light source of the plurality of light sources, an absolute position of each light source of the plurality of light sources, or an absolute orientation of each light source of the plurality of light sources.~~

~~28. The controller of claim 23,~~

~~wherein the photographic representation comprises at least one of a two-dimensional scan of an environment in which the plurality of light sources are located or a three-dimensional scan of an environment in which the plurality of light sources are located or a movie of an environment in which the plurality of light sources are located.~~

~~29. The controller of claim 23,~~

~~wherein the control information determination circuit is configured to determine the control information further based on input from a user of the control method.~~

~~30. The controller of claim 23,~~

~~wherein the control information determination circuit is configured to determine the control information further based on a pre-defined animation sequence.~~

~~31. The controller of claim 23,~~

~~wherein the control information comprises timing information for each light source of the plurality of light sources for switching on or off the light source.~~

~~32. The controller of claim 23,~~

~~wherein the control information comprises color information for each light source of the plurality of light sources.~~

~~33. The controller of claim 23,~~

~~wherein the control circuit is configured to control the plurality of light sources to obtain at least one of a synchronized lighting effect, a coordinated lighting effect, an animated lighting effect, a propagating wave lighting effect, a breathing lighting effect, or a spectrum lighting effect.~~