CLAIMS

~~What is claimed is:~~

~~1)~~ 1. An apparatus comprising:

a light sensor, wherein the light sensor comprises a plurality of cells aligned in a plurality of horizontal rows and a plurality of vertical columns;

an optical system configured to provide the light sensor with an overall vertical field of view and an overall horizontal field of view of an external environment of the apparatus, wherein each horizontal row provides a corresponding portion of the overall vertical field of view and each vertical column provides a corresponding portion of the overall horizontal field of view; and

a processing unit configured to:

divide the plurality of horizontal rows of the light sensor into one or more enabled rows and one or more disabled rows; and

obtain image data from the light sensor by sampling one or more cells in the one or more enabled rows without sampling the cells in the one or more disabled rows using a rolling shutter, wherein the rolling shutter enables incrementally sampling the one or more cells according to the plurality of vertical columns such that all enabled cells in a given vertical column are sampled simultaneously, wherein the image data images a portion of the overall vertical field of view, and wherein the imaged portion of the vertical field of view corresponds to the one or more portions of the vertical field of view provided by the one or more enabled rows.

~~2) The apparatus of claim 1, wherein the sampled one or more cells are in one or more columns made available for sampling by a rolling shutter.~~

~~3)~~ 2. The apparatus of claim 1, wherein the processor is configured to select the one or more enabled rows and/or the one or more disabled rows based on map data stored in the memory of the apparatus.

~~4)~~ 3. The apparatus of claim 1, further comprising an inertial measurement unit (IMU) and wherein the processor is configured to select the one or more enabled rows and/or the one or more disabled rows based on data from the IMU.

~~5)~~ 4. The apparatus of claim 1, wherein the processor is further configured to select the one or more enabled rows and/or the one or more disabled rows based on a detected object or potential object in the external environment.

~~6)~~ 5. The apparatus of claim 1, wherein the one or more enabled rows number less than or equal to half of a total number of rows in the light sensor.

6. The apparatus of claim 1, wherein the one or more enabled rows number less than or equal to half of a total number of rows in the light sensor.

7. The apparatus of claim 1, wherein the processing unit is further configured to:

adjust the one or more enabled rows and the one or more disabled rows based on map data such that the image data depicts at least an object as represented by the map data.

8. The apparatus of claim 1, wherein the apparatus is coupled to a vehicle having an inertial measurement unit (IMU),

wherein the IMU is configured to measure a grade of a roadway upon which the vehicle is navigating, and

wherein the processor is configured to adjust the one or more enabled and the one or more disabled rows based on a change in the grade of the roadway such that the one or more enabled rows capture image data of at least a portion of the roadway.

~~7)~~ 9. A method comprising:

receiving light at a light sensor via an optical system, wherein the light sensor comprises a plurality of cells aligned in a plurality of horizontal rows and a plurality of vertical columns and wherein the optical system provides the light sensor with an overall vertical field of view and an overall horizontal field of view of an external environment of the apparatus, wherein each horizontal row provides a corresponding portion of the overall vertical field of view and each vertical column provides a corresponding portion of the overall horizontal field of view; and

obtaining image data from the light sensor by sampling one or more cells in the one or more enabled rows without sampling the cells in the one or more disabled rows using a

rolling shutter, wherein the rolling shutter enables incrementally sampling the one or more cells according to the plurality of vertical columns such that all enabled cells in a given vertical column are sampled simultaneously, wherein the image data images a portion of the overall vertical field of view, and wherein the imaged portion of the vertical field of view corresponds to one or more portions of the vertical field of view provided by the one or more enabled rows, wherein a processor determines one or more enabled rows and one or more disabled rows.

~~8) The method of claim 7, wherein the sampled one or more cells are in one or more columns made available for sampling by a rolling shutter.~~

~~9)~~ 10. The method of claim ~~7~~9, wherein dividing the plurality of horizontal rows is based on map data stored in the memory of the apparatus.

~~10)~~ 11. The method of claim ~~7~~9, wherein dividing the plurality of horizontal rows is based on data from an inertial measurement unit.

~~11)~~ 12. The method of claim ~~7~~9, wherein dividing the plurality of horizontal rows is based on an object detected in the image data.

~~12)~~ 13. The method of claim ~~7~~9, wherein dividing the plurality of horizontal rows comprises increasing a number of enabled rows.

~~13)~~ 14. The method of claim ~~7~~9, wherein a number of enabled rows is less than or equal to half of a total number of rows in the light sensor.

~~14)~~ 15. The method of claim ~~7~~9, wherein the sampling is performed iteratively across the plurality of vertical columns of the sensor.

~~15)~~ 16. A system comprising:

a light sensor, wherein the light sensor comprises a plurality of cells aligned in a plurality of rows and a plurality of columns;

an optical system configured to provide the light sensor with an overall field of view of an external environment of the apparatus, wherein each row provides a corresponding

portion of a vertical field of view and each column provides a corresponding portion of the overall horizontal field of view; ~~and~~

a rolling shutter; and

a processing unit configured to:

enable a subset of the plurality of rows of the light sensor into one or more enabled rows; and

obtain image data from the light sensor by sampling one or more cells in the one or more enabled rows using the rolling shutter, wherein the rolling shutter enables incrementally sampling the one or more cells according to the plurality of vertical columns such that all enabled cells in a given vertical column are sampled simultaneously, wherein the image data images a portion of the vertical field of view, and wherein the imaged portion of the vertical field of view corresponds to the one or more portions of the vertical field of view provided by the one or more enabled rows.~~.~~

~~16)~~ 17. The system of claim ~~15~~16, further comprising an inertial measurement unit (IMU) and wherein the processor is configured to select the one or more enabled rows and/or the one or more disabled rows based on data from the IMU.

~~17)~~ 18. The system of claim ~~15~~16, further comprising a memory configured to store map data, wherein dividing the plurality of rows is based on the map data.

~~18)~~ 19. The system of claim ~~15~~16, further comprising a vehicle.

~~19)~~ 20. The system of claim ~~15~~16, wherein a number of rows is greater than a number of columns.

~~20)~~ 21. The system of claim 1~~5~~16, wherein the processor is further configured to select the one or more enabled rows and/or the one or more disabled rows based on a detected object or potential object in the external environment.