CLAIMS

1. A method for generating map data comprising:

Training a generator neural network by

Acquiring training data elements for a generative adversarial network, each training data element comprising a satellite image of a geographical area, a road usage image of the geographical area which shows routes in the geographical area which may be used for driving a vehicle and a map data image of the geographical area; and

Training a generative adversarial network comprising the generator neural network using the training data elements, comprising training the generator neural network to generate, for a satellite image and a road usage image of a training data element, the map data image of the training data element; and

Generating map data for a geographical region by

Acquiring road usage information specifying which parts of a geographical area have been used for driving a vehicle;

Acquiring a satellite image of the geographical area;

Forming a road usage image of the geographical area which has pixels, each pixel corresponding to a respective part of the geographical area, such each pixel has a pixel value indicating whether the part of the geographical area, to which the pixel corresponds, is specified by the road usage information to have been used for driving a vehicle; and

Feeding the satellite image and the road usage image to the trained generator neural network.

2. The method of claim 1, wherein in at least some of the training data elements, the satellite image shows routes which are not shown in the road usage image.

3. The method of claim 1 or 2, wherein in at least some of the training data elements, the road usage image shows routes which are not shown in the satellite image.

4. The method of any one of claims 1 to 3, wherein the map data image is a visual map of the geographic region.

5. The method of any one of claims 1 to 4, wherein the map data image specifies a road network of the geographic region.

6. The method of any one of claims 1 to 5, wherein the generator neural network comprises a U-Net.

7. The method of any one of claims 1 to 6, wherein the generator neural network comprises an image concatenation layer for concatenating the satellite image and the road usage image.

8. The method of any one of claims 1 to 7, wherein training the generative adversarial network comprises training a discriminator of the generative adversarial network to decide whether map data image fed to the discriminator is a real map data image for a satellite image fed to the discriminator or a fake map data image for the satellite image.

9. The method of any one of claims 1 to 8, wherein the generative adversarial network comprises a discriminator comprising a convolutional network.

10. The method of claim 9, wherein the discriminator comprises an image concatenation layer for concatenating a satellite image and a map data image which is fed to the discriminator to have the discriminator decide whether it is a real map data image for the satellite image or a fake map data image for the satellite image.

11. The method of any one of claims 1 to 10, wherein forming the road usage image comprises assigning a first pixel value of two predetermined pixel values to a pixel if the pixel corresponds to a part of the geographic area which is specified by the road usage information to have been used for driving a vehicle and assigning a second pixel value of two predetermined pixel values to a pixel if the pixel corresponds to a

part of the geographic area which is not specified by the road usage information to have been used for driving a vehicle.

12. The method of any one of claims 1 to 11, wherein the road usage information is positioning system traces of vehicles.

13. The method of any one of claims 1 to 12, wherein acquiring road usage information comprises acquiring positioning system traces of vehicles of a transport service.

14. The method of any one of claims 1 to 13, further comprising navigating one or more vehicles by the generated map data.

15. The method of any one of claims 1 to 14, further comprising transmitting the generated map data to a vehicle and controlling the vehicle using the map data.

16. A server computer comprising a radio interface, a memory interface and a processing unit configured to perform the method of any one of claims 1 to 15.

17. A computer program element comprising program instructions, which, when executed by one or more processors, cause the one or more processors to perform the method of any one of claims 1 to 15.

18. A computer-readable medium comprising program instructions, which, when executed by one or more processors, cause the one or more processors to perform the method of any one of claims 1 to 15.