CLAIMS

1. A method of localizing a device, the method comprising: receiving, during a period of time, by a wireless reference point, a communication signal from the device; generating a sequence of values from the communication signal, as received by the wireless reference point during the period of time, the generating of the sequence of values comprising: periodically sampling, during the period of time, a characteristic of the communication signal from the device to produce a sequence of samples; and encoding the sequence of samples to generate the sequence of values; supplying the sequence of values to a learning model configured to generate an output based on past values of the sequence of values and at least one predicted future value of the sequence of values relative to a current value of the sequence of values; and estimating, during the period of time, using at least one hardware processor, a current location of the device based on the output of the learning model.

2. The method of claim 1, wherein the sequence of values is based on received signal strength indicator values of the communication signal as received by the wireless reference point.

3. The method of claim 1, wherein the sequence of values is based on at least one of a link quality and a channel quality of the communication signal as received by the wireless reference point.

4. The method of claim 1, further comprising: receiving, by the wireless reference point, an identifier for the device; determining whether a device-specific model for the device exists; and generating, based on the device-specific model for the device not existing, the device-specific model for the device, wherein the learning model comprises the device-specific model.

5. The method of claim 4, wherein the identifier for the device comprises a media access control address of the device.

6. The method of claim 1, wherein the generating of the sequence of values further comprises: sorting the sequence of samples into a plurality of intervals according to a magnitude of each of the samples; wherein the encoding of the sequence of samples to generate the sequence of values is based on the sorted sequence of samples.

7. The method of claim 1, wherein the sequence of values comprise sparse distributed representations of the sequence of samples.

8. The method of claim 1, wherein the learning model comprises a machine learning model.

9. The method of claim 1, wherein the at least one predicted future value of the sequence of values comprises a future value of the sequence of values at a predetermined number of values ahead of the current value of the sequence of values.

10. The method of claim 1, wherein the learning model is configured to generate the output based on the past values of the sequence of values without a previous site surveying operation.

11. The method of claim 1, wherein: the wireless reference point comprises a first wireless reference point, the sequence of values comprises a first sequence of values, and the learning model comprises a first learning model corresponding to the first wireless reference point; the method further comprises receiving, during the period of time, by at least a second wireless reference point, the communication signal from the device; generating at least a second sequence of values from the communication signal, as received by the at least second wireless reference point, during the period of time; and supplying the at least second sequence of values to at least a second learning model corresponding to the at least second wireless reference point and configured to generate at least a second output based on past values of the at least second sequence of values and at least one predicted future value of the at least second sequence of values; and the estimating of the current location of the device is based on the output of the first learning model and the at least second output of the at least second learning model.

12. The method of claim 11, wherein the estimating of the current location of the device comprises triangulating the current location of the device based on the output of the first learning model and the at least second output of the at least second learning model.

13. The method of claim 11, wherein the estimating of the current location of the device is based on an output of a third learning model comprising the first learning model and the at least second learning model.

14. A non-transitory computer-readable storage medium comprising instructions that, when executed by at least one hardware processor of a machine, cause the machine to perform operations comprising: receiving, during a period of time, by a wireless reference point, a communication signal from a device; generating a sequence of values from the communication signal, as received by the wireless reference point, during the period of time, the generating of the sequence of values comprising: periodically sampling, during the period of time, a characteristic of the communication signal from the device to produce a sequence of samples; and encoding the sequence of samples to generate the sequence of values; supplying the sequence of values to a learning model configured to generate an output based on past values of the sequence of values and at least one predicted future value of the sequence of values; and estimating, during the period of time, a current location of the device based on the output of the learning model.

15. The non-transitory computer-readable storage medium of claim 14, wherein the operations further comprise: receiving, by the wireless reference point, an identifier for the device; determining whether a device-specific model for the device exists; and generating, based on the device-specific model for the device not existing, the device-specific model for the device, wherein the learning model comprises the device-specific model.

16. A system comprising: at least one hardware processor; and memory comprising instructions that, when executed by the at least one hardware processor, cause the system to perform operations comprising: receiving, during a period of time, by a wireless reference

point, a communication signal from a device; generating a sequence of values from the communication signal, as received by the wireless reference point, during the period of time, the generating of the sequence of values comprising: periodically sampling, during the period of time, a characteristic of the communication signal from the device to produce a sequence of samples; and encoding the sequence of samples to generate the sequence of values; supplying the sequence of values to a learning model configured to generate an output based on past values of the sequence of values and at least one predicted future value of the sequence of values; and estimating, during the period of time, a current location of the device based on the output of the learning model.

17. The system of claim 16, wherein the operations further comprise: receiving, by the wireless reference point, an identifier for the device; determining whether a device-specific model for the device exists; and generating, based on the device-specific model for the device not existing, the device-specific model for the device, wherein the learning model comprises the device-specific model.

18. The method of claim 16, wherein the generating of the sequence of values further comprises: sorting the sequence of samples into a plurality of intervals according to a magnitude of each of the samples; wherein the encoding of the sequence of samples to generate the sequence of values is based on the sorted sequence of samples.