CLAIMS

What is claimed is:

1. A distributed robot management system, comprising:

a first fleet of robots at a first facility; and

a robot management server system remote from the first facility and communicatively coupled with the first fleet of robots via a network, wherein the robot management server system is configured to:

provide configuration information to the first fleet of robots, wherein the configuration information comprises neural network weights of a model by which at least some robots in the first fleet of robots are to be controlled,

maintain a remote representation of state of robots in the first fleet of robots,

receive and store data from the first fleet of robots, and

provide computing resources by which robots in the first fleet of robots are trained.

2. The system of claim 1, wherein:

the system comprises a second fleet of robots at a second facility that is remote from both the robot management server system and the first fleet of robots, the first fleet of robots being associated with a first tenant account and the second fleet of robots being associated with a second tenant account;

the robot management server system is configured to:

provide configuration information to the second fleet of robots,

maintain a remote representation of state of robots in the second fleet of robots,

receive and store data from the second fleet of robots, and

provide computing resources by which robots in the second fleet of robots are trained;

the first fleet of robots comprises more than 5 humanoid robots; and

the second fleet of robots comprises more than 5 humanoid robots.

3. The system of claim 1, wherein providing configuration information to the first fleet of robots comprises providing respective hardware and software configurations specific to each robot model in the first fleet and each instance of the respective robot model in the first fleet.

4. The system of claim 1, wherein providing configuration information to the first fleet of robots comprises providing task information describing configuration, assets, and dependencies required to execute a task with robots in the first fleet.

5. The system of claim 1, wherein providing configuration information to the first fleet of robots comprises:

receiving a request for configuration data from a given robot in the first fleet of robots;

authenticating the request with public key cryptography as being from the given robot in the first fleet of robots;

determining that that the given robot is authorized to access the configuration information and, in response, providing the configuration information.

6. The system of claim 1, wherein maintaining the remote representation of state of robots in the first fleet of robots comprises:

providing, for at least some robots in the first fleet, manufacturing dates, model numbers, geolocations, power state, configurations, and data indicative of tasks respective robots are capable of performing.

7. The system of claim 1, wherein receiving and storing data from the first fleet of robots comprises:

receiving and storing information gained by at least some of the robots in the first fleet of robots while operating.

8. The system of claim 7, wherein the information gained by at least some of the robots comprises data based on sensor traces from sensors of the at least some of the robots and data indicative of a context in which the sensor traces were obtained.

9. The system of any one of claims 1-8, wherein a given robot in the first fleet of robots is configured to provide at least some of the data from the fleet of robots to the robot management server system, wherein providing the at least some of the data to the robot management server system comprises:

applying an experience filter to data indicative of runtime experiences of the given robot;

grouping the data indicative of runtime experiences into groups;

compressing the data indicative of runtime experiences; and

purging the data indicative of runtime experiences from memory of the given robot after sending the groups to the robot management server system.

10. The system of any one of claims 1-8, wherein a given robot in the first fleet of robots comprises a robot computer configured to operate as a client to the robot management server system and:

control the given robot during runtime performance of tasks;

configure the given robot in cooperation with the robot management server system; train the given robot; and

provide state and experience data to the robot management server system.

11. The system of claim 10, wherein:

the robot computer is configured to control more than 20 servo motors of the given robot via a reinforcement learning model configured to take as input a latent embedding space representation of a time slide of sensor data from at least five sensors of the given robot.

12. The system of claim 10, wherein:

the robot computer is configured to host a web application or application program interface accessible to a native mobile application on a user's mobile computing device; and

the web application or native application provides a user interface by which the given robot is trained or configured by the user.

13. The system of claim 10, wherein the given robot is coupled to an auxiliary computing device, different from the robot computer, configured to present visualizations of robot performance while the given robot is operating.