in the left upper corner of the image. If one of the key postures was recognized, the `posture` string contains the identifier string of the detecting cascade (see also Section 4.2.9).

Gesture events

The client-server architecture sends events from the computer vision module to any connected gesture event listener, somewhat similar to the VRPN server [169]. VRPN is a VR periphery system that makes device differences between conventional UIs and trackers transparent to the clients.

The gesture event server component is currently implemented within the platform-specific WinTk, but plans are for its inclusion into the library in a platform-independent manner. The server opens a TCP/IP port (default port is 7045) and runs the accept-loop in its own thread, accepting an arbitrary maximum of five concurrent clients. The blocking send commands are invoked from the main application thread. Thus, the client applications should read events promptly from their sockets.

The protocol is a unidirectional stream of events. Each event is a string of ASCII characters, delimited by a carriage return and a line feed. The current protocol version is 1.2, which has the following format.

```
1.2 tstamp id: t, r, "posture" (x, y) [s, a]\r\n
```

Where

- `1.2` is the protocol version number,
- `tstamp` is a long integer timestamp of the respective image capture time, in milliseconds starting with the first seen frame,
- `id` is an identifier for which object this event belongs to, currently fixed to 0,
- `t` is 1 if the object is being tracked, 0 otherwise,
- `r` is 1 if one of the key postures was recognized, 0 otherwise,
- `posture` is a string identifier of one of the six recognized postures, or the empty string “”,
- `x, y` are the tracked location in relative image coordinates, the image origin is in the top left,
- `s, a` are currently unused but will eventually contain a scale identifier and a rotation angle.