Week5: Basic robot vision

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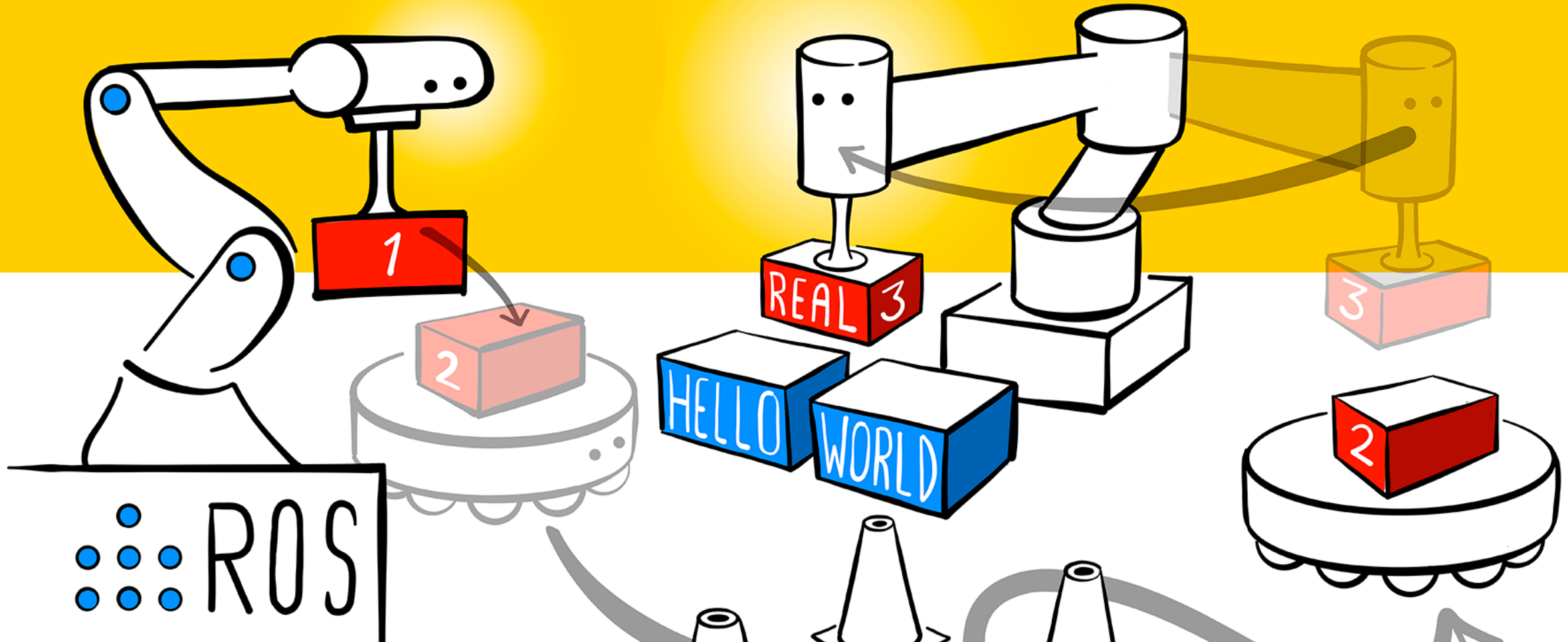

Robot vision - preamble

- Turtlebot - autonomous navigation
  - "See" environment and obstacles with a camera.
- Manipulation - Robot arms moved to pre-programmed pick and place locations
  - traditional automation (Ex. car manufacturing).
  - fixed/static environments.
- Manipulation in dynamic environments
  - use cameras to detect, recognize and estimate the poses of objects of interest.

Robot vision - main idea

- Robot vision (perception): inspired by image processing in computer science
  - detection, recognition and pose estimation using cameras (2D/3D).
  - other edX MOOCs: Vision Intelligence and Machine Learning.
- This course: **Logical camera** in factory simulation
  - detects, recognizes and provides **pose of the object of interest**.
  - integrate this information with the simple pick and place pipeline with **ROS TF** package.

Robot vision - Goals for this week

- Add (a) logical camera(s) to the factory environment
  - Inspect and use the logical camera data.

- Basic concepts of ROS TF package
  - specify poses in a **reference frame**.
  - create and view the ROS **TF tree**.
  - **transform pose** from a given reference frame to a desired reference frame.