

- a) **Optitrack Mocap system** (cameras surround the working space and motion markers are attached to the human body. The system is used to capture the full-body posture of the human coworker)
- b) **Delsys Trigno Avanti Platform** (EMG sensors are attached to the human body and the base station is placed outside the working space for receiving the signals of the muscle activities transmitted from the EMG sensors)
- c) **Kistler force plate** (placed on the floor in the working space (movable) or mounted into the floor (fixed) for measuring the reaction forces exerted at the feet of the human coworker)
- d) **Motion insole sensor** (wearable insole sensors for measuring the reaction forces at the feet, applied to the cases where the human coworker has to walk outside the limited force plate measuring area)
- e) **The AnyBody Modeling System** (biomechanical modelling and analysis software for reconstructing the musculoskeletal models of human coworker and conducting relevant analyses by utilizing the biomechanical information measured from the aforementioned devices)
- f) **Collaborative Robots** (Cobots) the Cobots I used before are Kuka robots (shown in pic below), but we have Franka Panda in our current lab, and we also have Kuka iiwa.

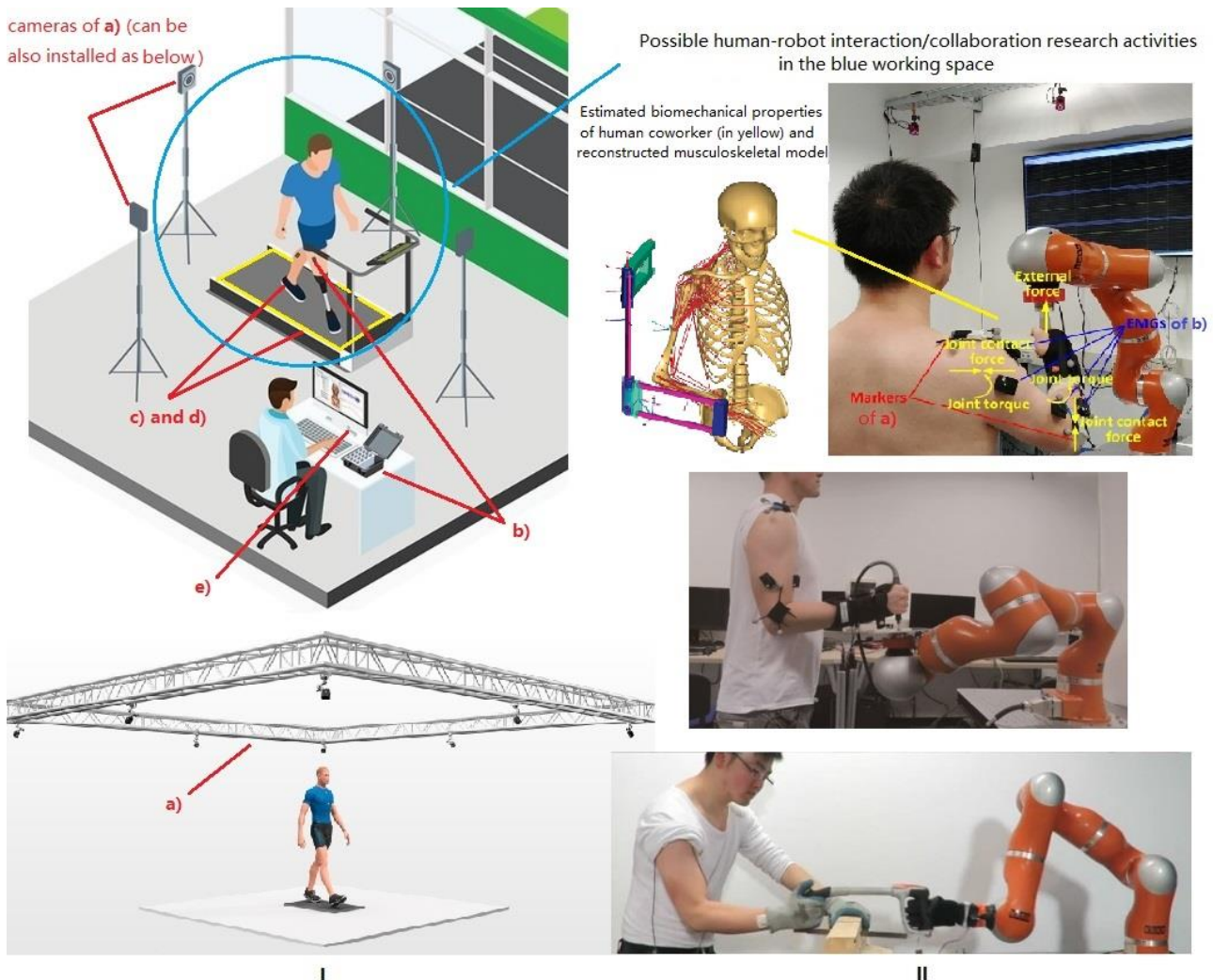


Figure 1. Layout diagram of the proposed work cell for human-robot interaction/collaboration research. I. The hardware setting of the platform, and II. the related research activities in the working area (e.g., the estimation of the biomechanical information of human coworker, collaborative polishing and collaborative sawing).