

Edge-Based Controller Assembly Assistant

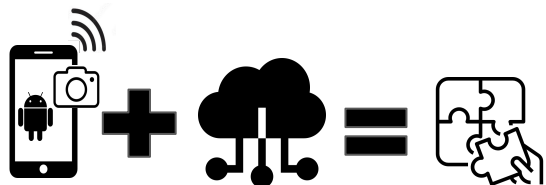
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Problem

- Inexperience or cognitive decline makes certain tasks seem daunting
- Example: Building an item comprised of several parts to be assembled
- Impractical to dispatch human assistance at scale

Proposed Solution

- Cloudlet-backed Android application which guides user through pre-defined assembly process

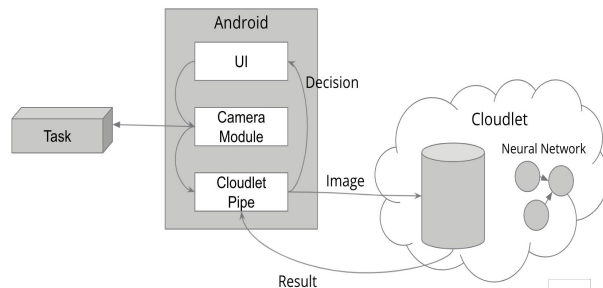


Android App

Cloudlet

Scalable
Cognitive
Assistance

Implementation



Results



Lessons Learned

- Surprisingly few examples from methodical data collection process with little randomness works well
- Relatively few lighting and surface variations produces reasonably well defined behavior
- One shot object detector reasonable at distinct coarse grained level, but fine grained level more challenging (e.g. joystick placement, small parts)
- Latency is an issue for annotated video, but audio feedback acceptable
- Training networks challenging due to Murphy's visits
- Android client energy efficient due to cloudlet offloading