

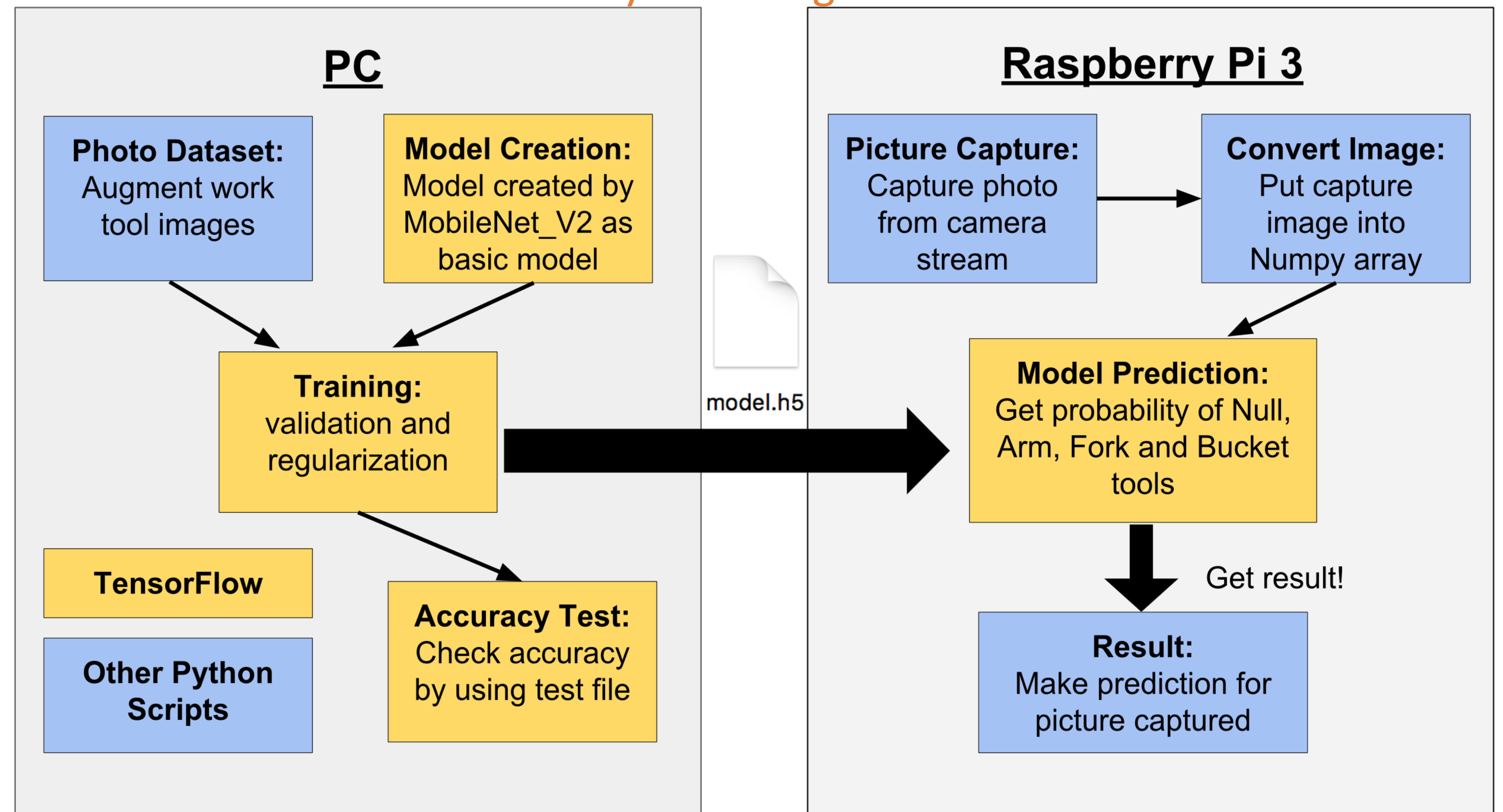
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Problem Statement

Mount a Caterpillar vehicle with a camera so that it can identify different work tools it will use in the field. This will allow the vehicle to automatically change hydraulic parameters to allow for more efficient use of the tool.



System Diagram



Product Requirements

- Recognize 3 work tools w/ 85% accuracy
- Minimum of 1 prediction made per second
- Operate under adverse lighting conditions
- Display which tool was predicted to user

Pi Vision



Technical Achievements

- Recognizing tools w/ white background (>85%)
- Training on augmented images
- Recognizes work tools w/ different backgrounds & lighting (>X%)
- Recognition software works on car and PC
- Recognize tools from 224x224 images (captured from camera)
- Increase prediction rate from .8 Hz to 1.15 Hz