

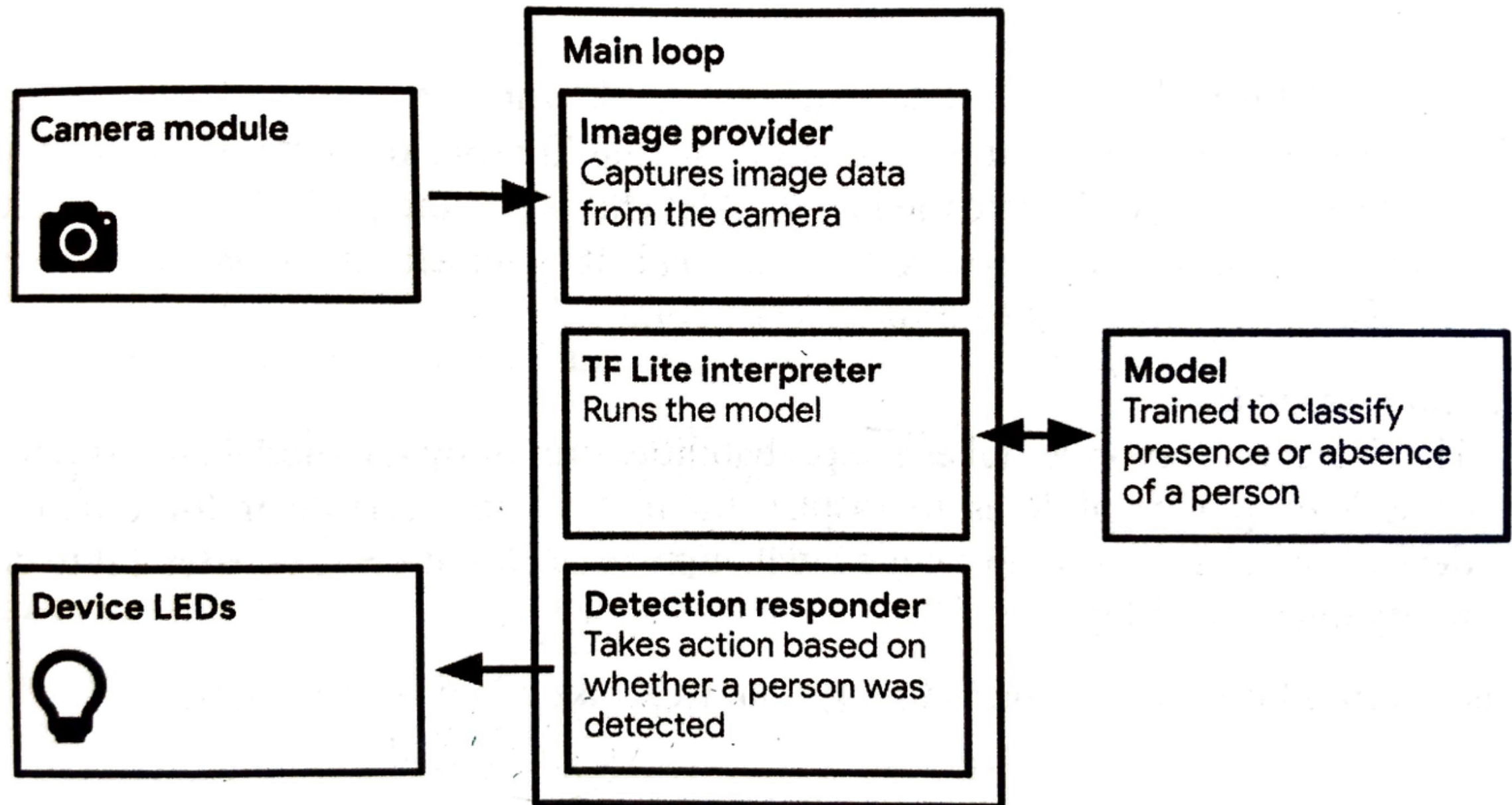
TinyML

Ch.9, 10. Person Detection

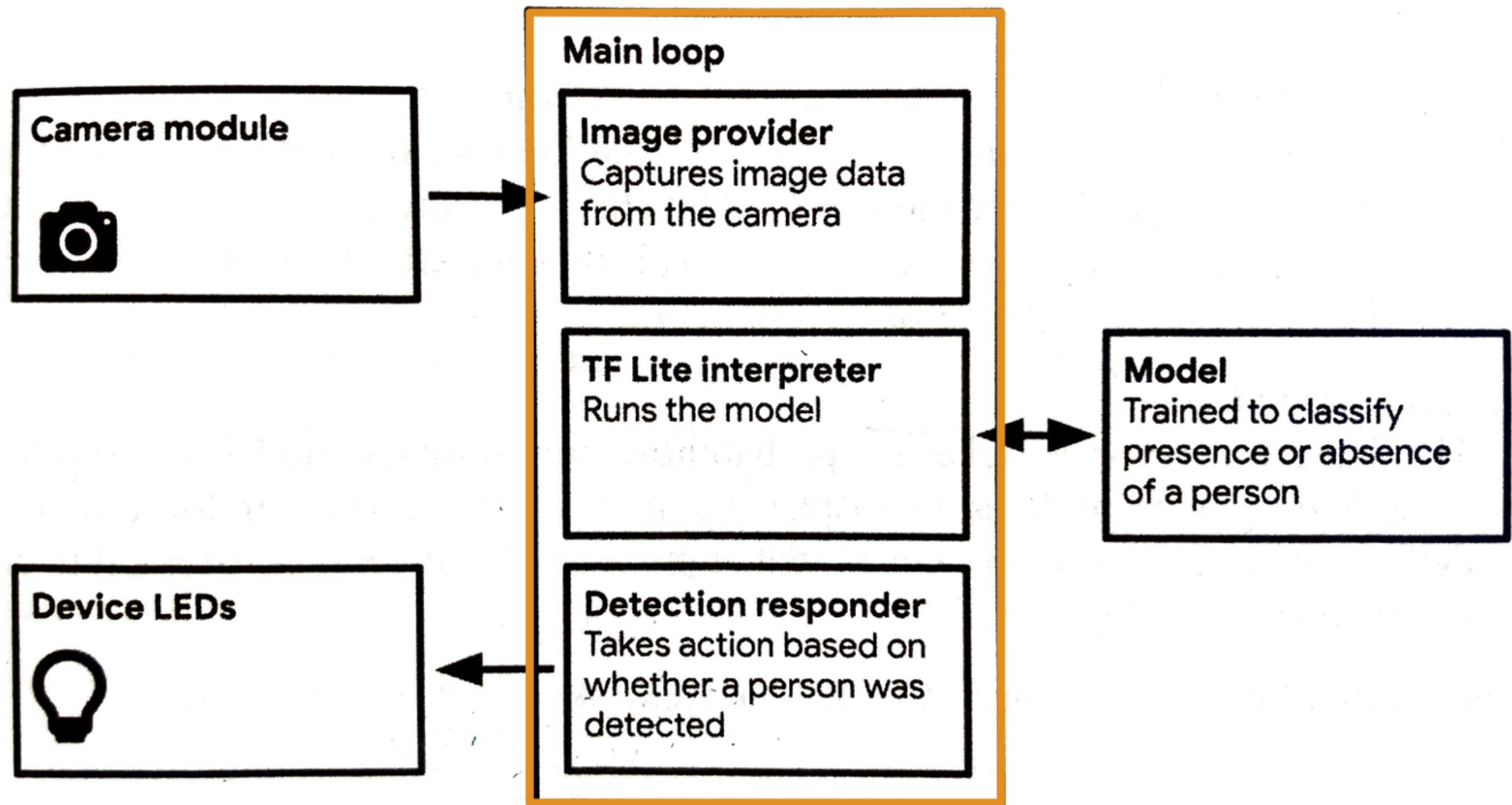
2020.09.17

Peter Cha

The Basic Flow 🏃



The Basic Flow 🏃



The Basic Flow

Sequences:

1. **Image Provider** 's **GetImage()**
takes a picture from the camera. →
2. **tf.lite::MicroInterpreter** ' classifies the input
and returns **output**. →
3. **Detection Responder** runs **RespondToDetection()**

Arduino Algorithm

main.cc

```
#include int main(int argc, char* argv[]) {  
    setup();  
    while (true) {  
        loop();  
    }  
}
```

main_functions.cc

1. Global variables

```
namespace {  
  
  tflite::ErrorReporter* error_reporter = nullptr;  
  const tflite::Model* model = nullptr;  
  
  tflite::MicroInterpreter* interpreter = nullptr;  
  TfLiteTensor* input = nullptr;  
  
  constexpr int kTensorArenaSize = 136 * 1024;  
  static uint8_t tensor_arena[kTensorArenaSize];  
  
} // namespace
```

main_functions.cc

2. void setup()

```
void setup() {  
  
    model = tflite::GetModel(g_person_detect_model_data)  
  
    static tflite::MicroMutableOpResolver<3> micro_op_resolver;  
    micro_op_resolver.AddAveragePool2D();  
    micro_op_resolver.AddConv2D();  
    micro_op_resolver.AddDepthwiseConv2D();  
  
    static tflite::MicroInterpreter static_interpreter(  
        model, micro_op_resolver, tensor_arena,  
        kTensorArenaSize, error_reporter);  
  
    interpreter = &static_interpreter;  
  
    input = interpreter->input(0);  
}
```

main_functions.cc

3. void loop()

```
void loop() {  
    // Get image from provider.  
    if (kTfLiteOk != GetImage(error_reporter,  
                               kNumCols,  
                               kNumRows,  
                               kNumChannels,  
                               input->data.uint8)) {  
        TF_LITE_REPORT_ERROR(error_reporter, "failed.");  
    }  
  
    // Interpreter do the job  
    TfLiteTensor* output = interpreter->output(0);  
  
    // return the result  
    uint8_t person_score = output->data.uint8[kPersonIndex];  
    uint8_t no_person_score = output->data.uint8[kNotAPersonIndex];  
    RespondToDetection(error_reporter,  
                       person_score,  
                       no_person_score);  
}
```


MobileNet? 🤔

