PowerAI Vision and iOS

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Agenda

- Why?
- AI Vision
- iOS 101
- Considerations
- Demo
PowerAI Vision

- Automatically build Image Classification and Object Detection models
- Makes the data science easy!
- Curate datasets and train on one platform
- Easily deploy models as a web API
- Handles video and image workloads
XHR

XMLHttpRequest object calls Web Service

/XML/Flights?From=london&to=tokyo

/XML/Flights

XMLHttpRequest response fills up with Web Service response...

From: London
To: Tokyo
Search
Who is Jason?

```json
{
  "classified": {
    "Larus": "1.0000"
  },
  "imageUrl": "https://aivisioninstance.com/api/tmp/img.png",
  "result": "success"
}
```
iOS Application 101

- Swift
- Storyboards
- UI Kit
- iOS Network Stack
Storyboard

- Defines user navigation
- Easily add and manipulate UI Elements
@IBAction func chooseImageFromAlbum(_ sender: Any) {
    let pickerView = UIImagePickerController()
    pickerView.delegate = self
    pickerView.sourceType = .photoLibrary
    self.present(pickerView, animated: true, completion: nil)
}

@IBAction func chooseImageFromCamera(_ sender: Any) {
    let pickerView = UIImagePickerController()
    pickerView.delegate = self
    pickerView.sourceType = .camera
    self.present(pickerView, animated: true, completion: nil)
}
let urlString = "API_URL_HERE"

let boundary = "Boundary-\(UUID().uuidString)"

let imageData = UIImagePNGRepresentation(image)!
let fileName = "upload.png"

let fullData = photoDataToFormData(data: imageData, boundary: boundary, fileName: fileName)

request.httpShouldHandleCookies = false
let jsonResponse = try JSONSerialization.jsonObject(with: data, options: .allowFragments) as! [String: Any]
guard let classification = jsonResponse["classified"] as? [String: AnyObject] else {
    print("Could not find classification")
    return
}

let responseClass = Array(classification.keys)[0]
let responseConfidence = Array(classification.values)[0]
let responseConfidenceString = responseConfidence as? String ?? ""

// Update Labels
performUIUpdatesOnMainThread{
    self.classificationLabel.text = responseClass
    self.confidenceLabel.text = responseConfidenceString
}
Design Choices

• Inference – Native or Network?
  • Where will your users be?
  • How quickly do they need a response?
  • How much do I care about their battery?
  • How much space do I want on the device?
• XHR – Native or Library?
Live Demo

What can possibly go wrong?

- Build dataset in AI Vision
- Train Model in AI Vision
- Deploy AI Vision Web API
- Build iOS App
- Connect to API
- Test iOS App
All you need to change...

// URL for your AI Vision instance and model
let urlString = "API_URL_HERE"

// Set up HTTP Request Object
var request = URLRequest(url: URL(string: urlString)!
request.httpMethod = "POST"
let boundary = "Boundary-
(request.setValue("multipart/form-data; boundary="boundary), forHTTPHeaderField: "Content-Type")
request.setValue("gzip, deflate", forHTTPHeaderField: "Accept-Encoding")

let imageData = UIImagePNGRepresentation(image)!
let fileName = "upload.png"
let fullData = photoDataToFormData(data: imageData, boundary: boundary, fileName: fileName)

request.setValue(String(fullData.count), forHTTPHeaderField: "Content-Length")

request.httpBody = fullData
request.httpShouldHandleCookies = false
BeerAI
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- http://poweraicommunity.com
- http://meetup.com/topics/powerai
- https://github.com/chrisparsonsdev/vision_ios