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The many flavours of QA

Introduction

- Speakers
- Company
- Topic



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Data

Data acquisition, Classification and Annotation

Images

Obtaining images



It's all about images

- Classification and annotation
- Machine Learning System



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Models

Research

Testing & Evaluation | Research

- Final data validation
- Testing prototypes
- Evaluation
- Development branch vs. master/stable



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Testing in development

Testing in Development

- 0. Code review
- 1. Unit testing
- 2. Integration tests
- 3. Functional tests



Unit Testing

- Isolated units of code
- Black box vs. Glass box testing

Every time a unit is added!



Integration Tests

- Several units working together

Every time a unit is (meant to be) integrated



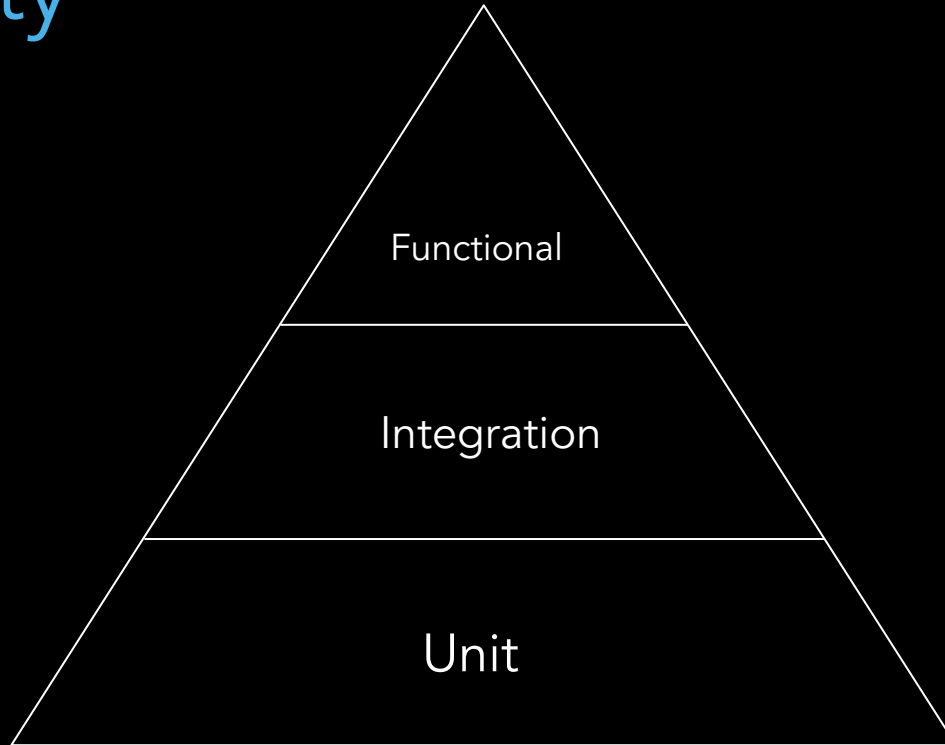
Functional Tests

- Functionality of “the whole”

Every time new, uncovered functionality is added/changed



The Trinity



Code Coverage

- How well are statements, branches, paths covered

Periodic



Domain Specific

- C++
 - memory leaks, memory errors, undefined behavior
 - Memcheck, ASan, UBSan...

Pre-production runtime checks



Regression

- Soft or hard conditions (evaluation vs. testing)
- "Did we break something?"
- "How much did we break something?"
- Ranges - dangers of mounting tolerance



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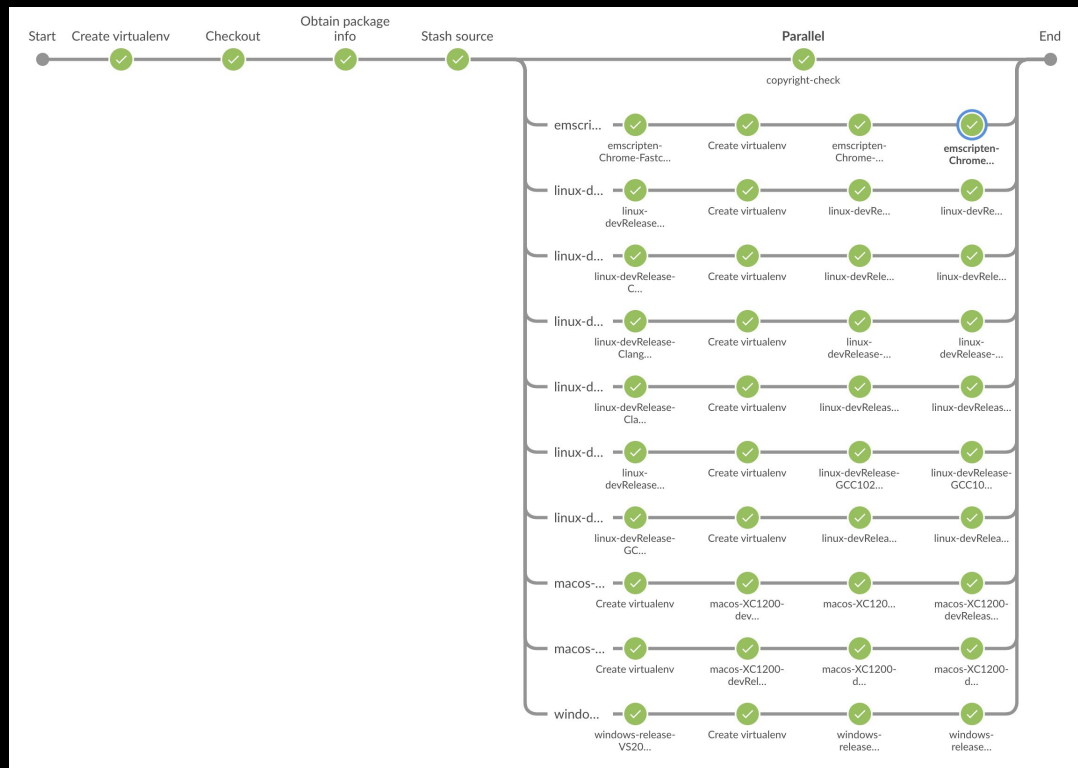
Tools & Software Infrastructure

Tools & Software Infrastructure

- Build & Testing
 - Jenkins - build/test/deploy automation
 - Pull request checks - dev branch/master/stable
 - Conan package management
- Build matrix setup
 - Linux, Windows, MacOS, iOS, Android
 - Browsers
 - Debug, Release, DevRelease
 - master/stable checks

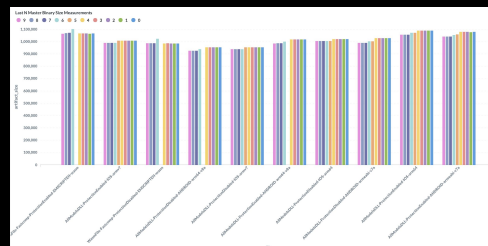
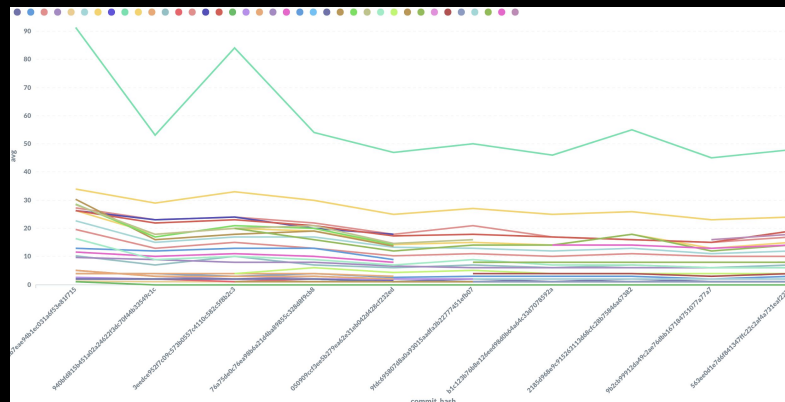


Small Execution Pipeline



Tools & Software Infrastructure

- Testing devices
- Benchmarks
 - Mobile
 - Server runs
 - Browsers on all devices



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Preparation for platforms

Product

Product Team

- Dedicated QA
 - Feature testing
 - Pre-release checks
- Ultimate functional tests for all products
- Evaluation
 - New features (Should release? Beta?)
 - “Measures” regression
 - Hard & soft boundaries



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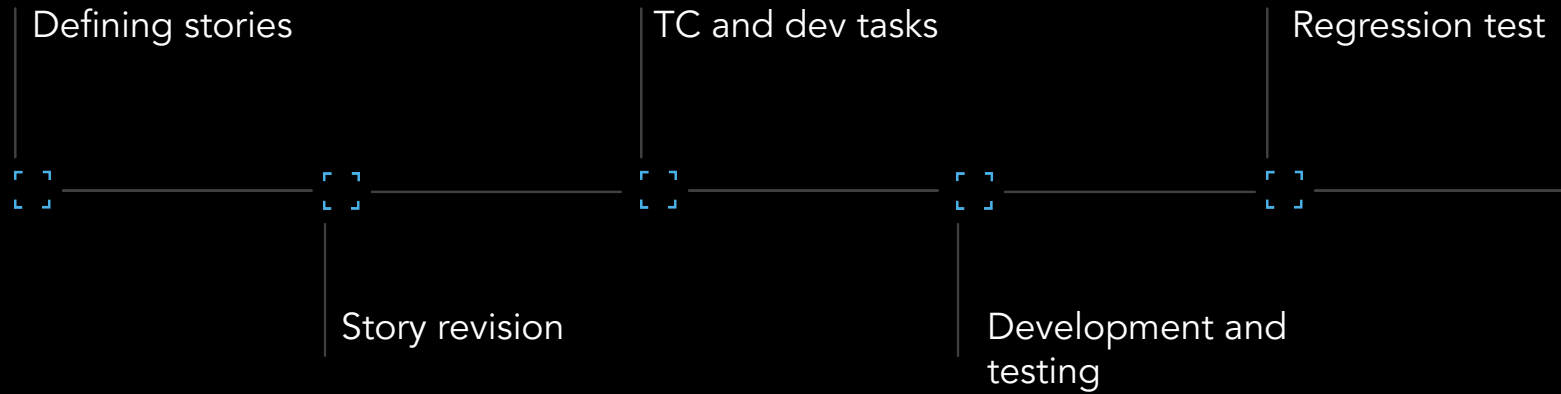
See beyond.



Platforms

Mobile, Web, Core Solutions

Mobile



Web

- Self-hosted API
- Cloud API
- In-browser SDK
- Challenges



Web

Per Valid Segment Result Views

Only images with recognition state VALID and segments with matches in annotations

| Eval Job Id ^ | Recognizer Id ↓ | Recognizer Name ⇅ | Segment Id ⇅ | Segment Name ⇅ | Match ⇅ | No Match ⇅ | Not Detected ⇅ | Total Count ⇅ | Match Perc ⇅ | No Match Perc ⇅ | Not Detected Perc ⇅ |
|---------------|-----------------|-------------------|--------------|--------------------------|---------|------------|----------------|---------------|--------------|-----------------|---------------------|
| 25951 | 2 | Blink Id combined | 1018 | DocumentAdditionalNumber | 100 | 0 | 6 | 106 | 94.34% | 0% | 5.66% |
| 25951 | 2 | Blink Id combined | 1001 | DocumentNumber | 105 | 0 | 3 | 108 | 97.22% | 0% | 2.78% |
| 25951 | 2 | Blink Id combined | 1009 | ExpiryDate | 102 | 3 | 3 | 108 | 94.44% | 2.78% | 2.78% |
| 25951 | 2 | Blink Id combined | 1003 | FirstName | 104 | 1 | 3 | 108 | 96.3% | 0.93% | 2.78% |
| 25951 | 2 | Blink Id combined | 1008 | IssueDate | 102 | 0 | 6 | 108 | 94.44% | 0% | 5.56% |



Software supports business

- For sale vs for internal use



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Wrap up

... but not the end of the story

- Room for improvement
- Takeaway



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Thank you!