Visual Layer

From Mosquitoes to Trash Bins: Unbelievable Computer Vision Use Cases

Danny Bickson, Visual Layer

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Joint Work

Dr. Danny Bickson

Co-founder & CEO

Co-founder and VP EMEA of Turi (acquired by Apple). CMU Researcher. Sr. Mgr at Apple.

Dr. Amir Alush

Co-founder & CTO

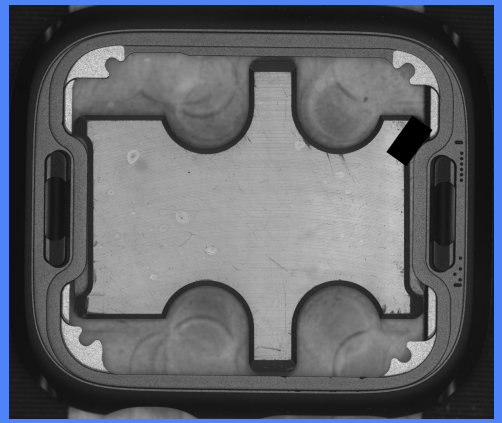
Co-founder and CTO of Brodmann17. Highly experienced in building CV/AI Groups and leading into production.

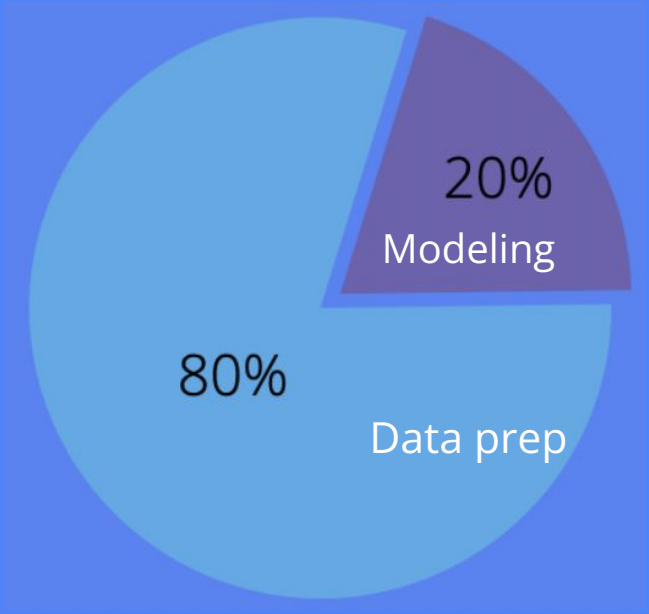
Prof. Carlos Guestrin

Co-founder & CSO

Stanford Prof, Co-founder and CEO of Turi (acquired by Apple). Sr. Dir. at Apple. Deep Learning Infra Team Pioneer.

My Personal Experience





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Case Study: ImageNet

32K+

Citations

O. Russakovsky, et al. **ImageNet Large Scale Visual Recognition Challenge**. IJCV, 2015.

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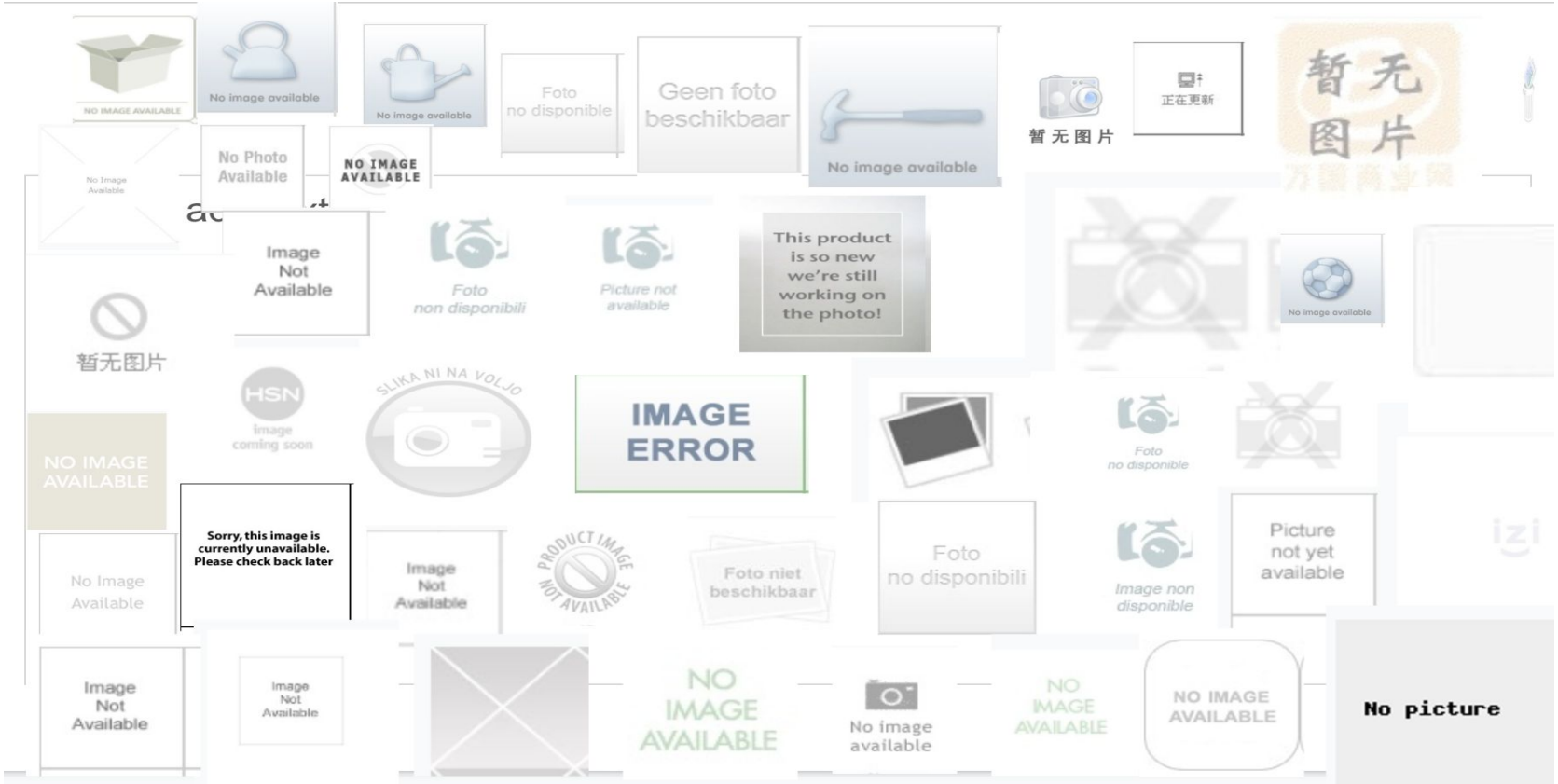
200K Broken Images



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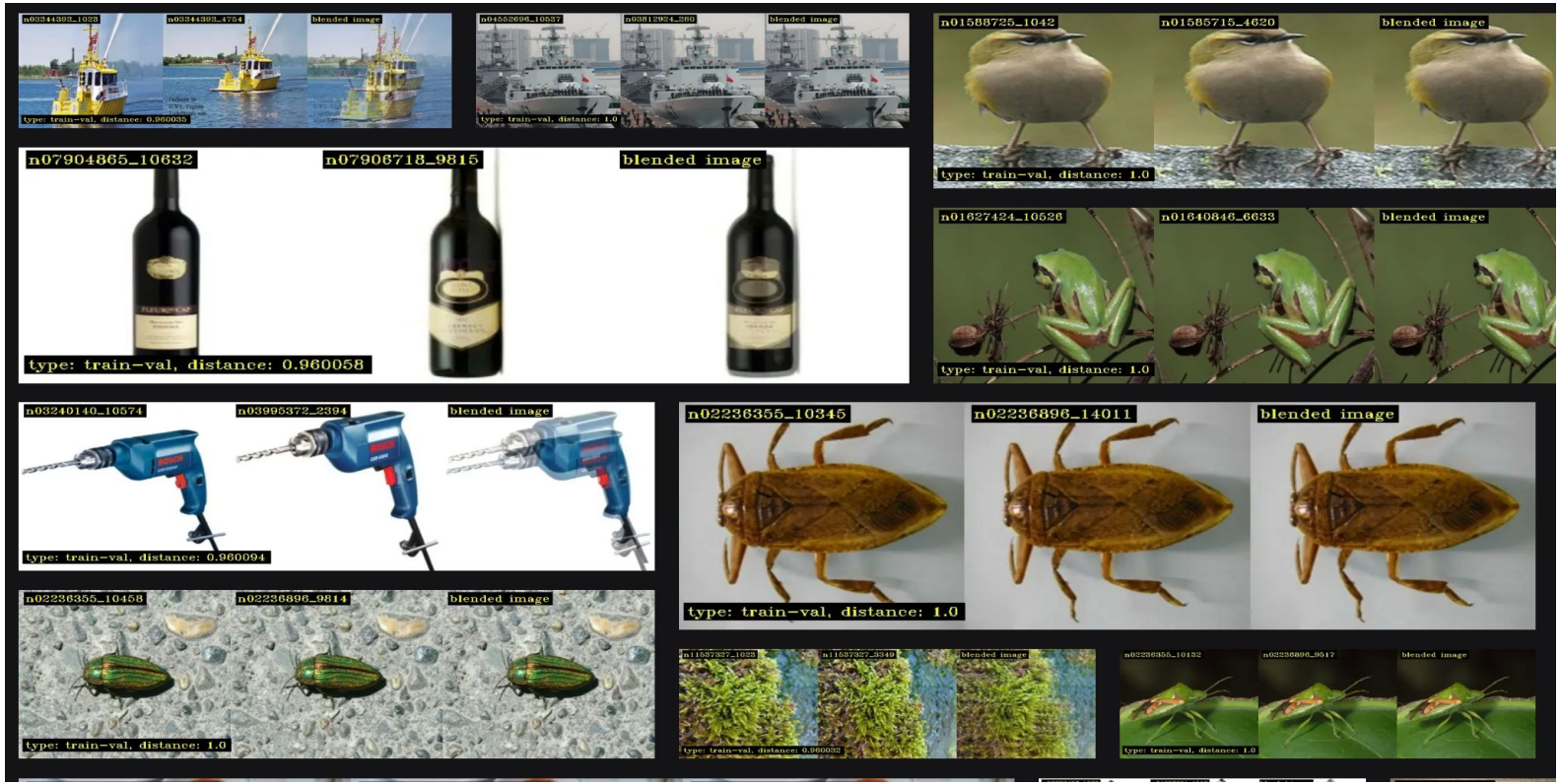
1.7M Duplicates



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Why should we care about duplicates?

- Recent study by Roboflow show 26% reduction in cloud training costs while keeping the same algorithm accuracy

https://roboflow.com/integration/fastdup

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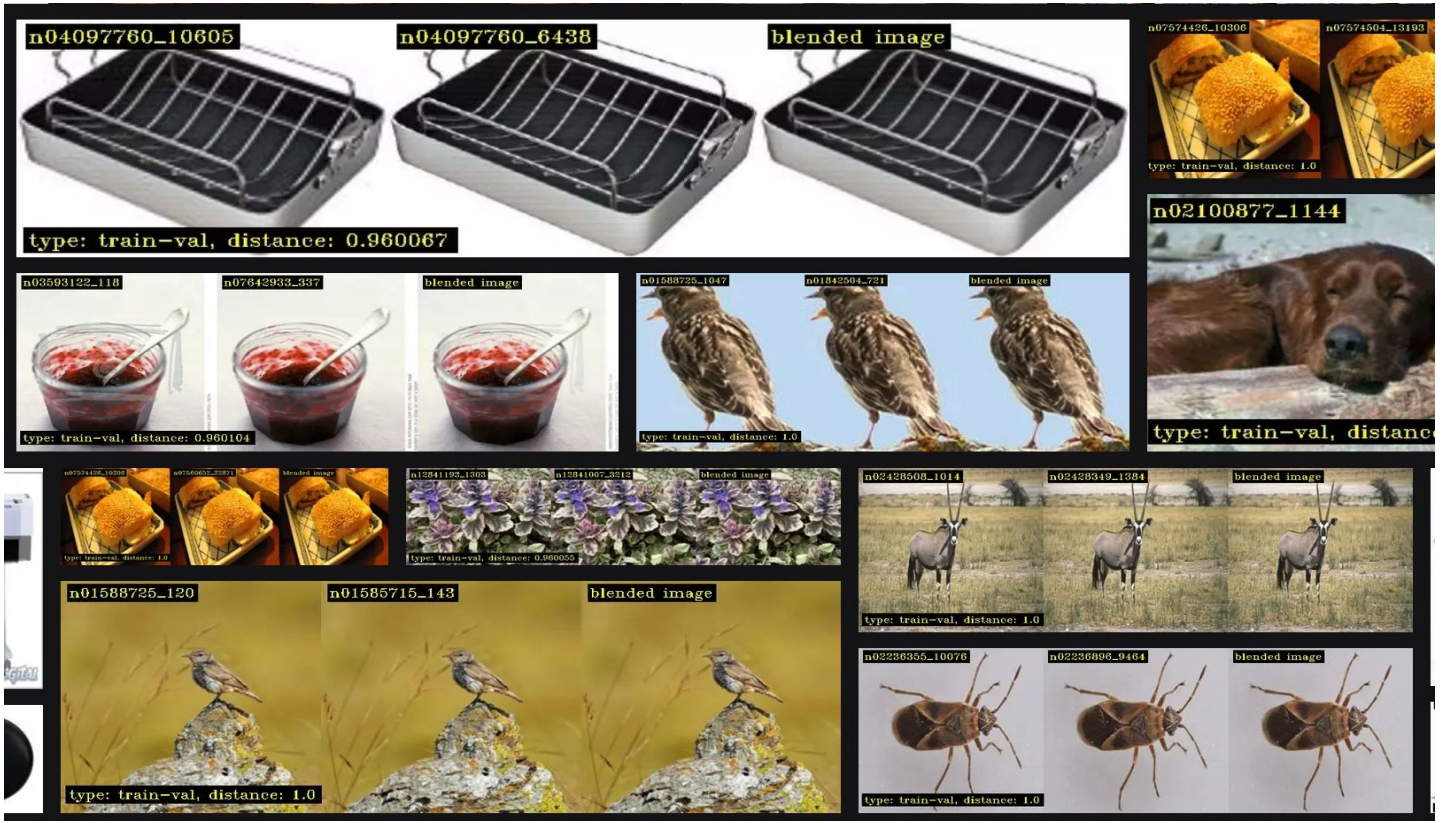
Train test/leak 100K



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50K Wrong Labels

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Wrong Label Example

Scanner
C-clamp
Cinnamon
Fairlead
Fuel_gauge
Gas_thermomoter
Grapnel
Hypodermic syringe
Snatch block
Stabling
Wall unit
Winch
Windlass

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BLIP Captions

“there is a man riding a surfboard on the beach”

https://github.com/visual-layer/fastdup/blob/main/examples/blip_laion_captions.ipynb

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Guess the label ?

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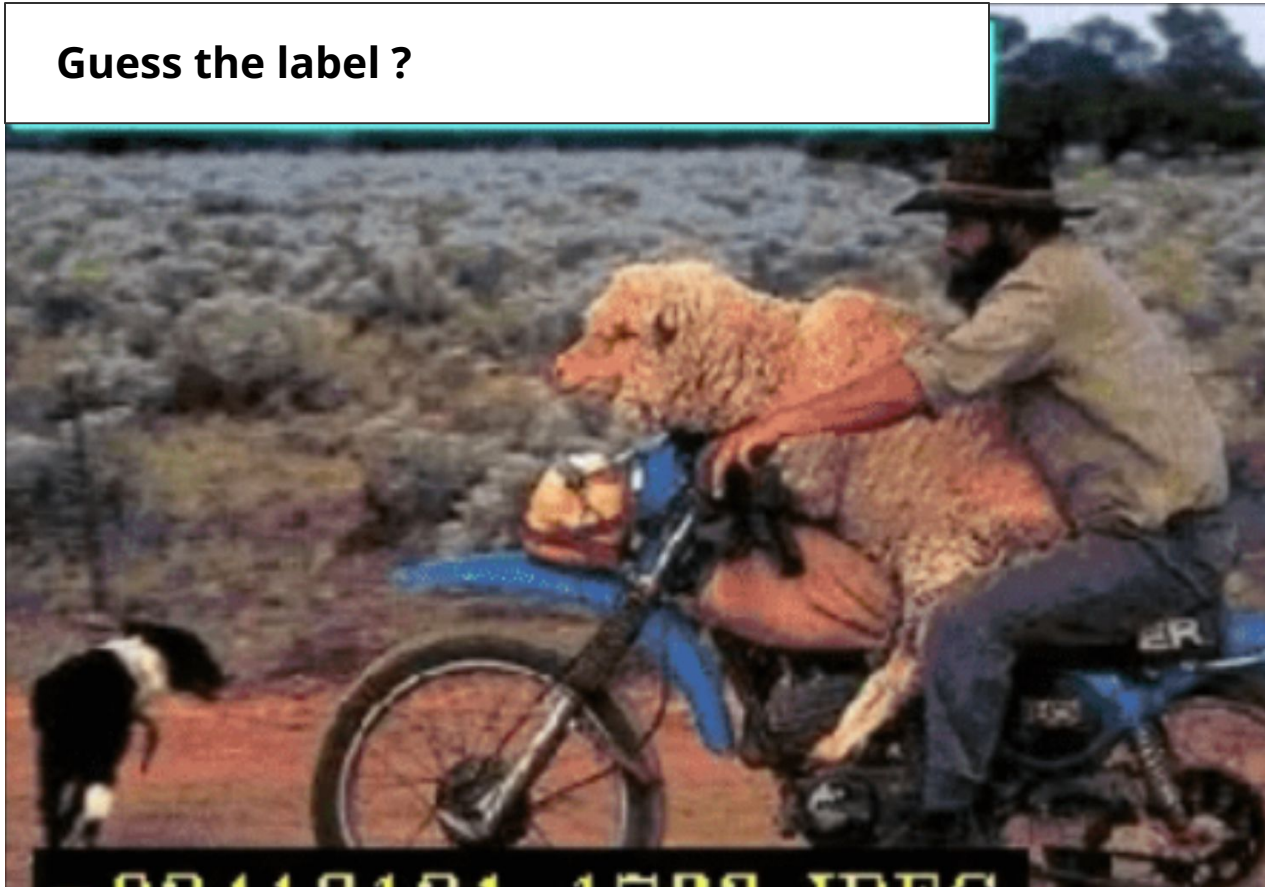
Two-Spotted Ladybug

Visual Layer

Guess the label ?



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Challenges of Bad Visual Data

- Slow time to production
- High cost: storage, compute, annotations
- Inefficiency of CV teams
- Lower model quality

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What can we do about it?

Visual Layer Open Source: Trusted by 280,000+ Users

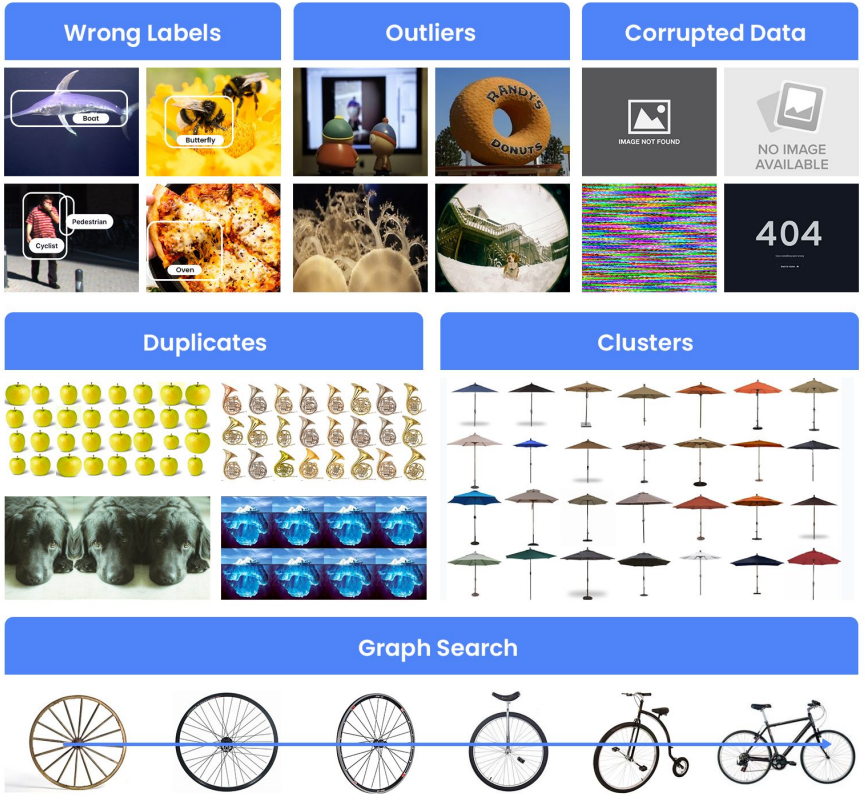
https://github.com/visual-layer/fastdup

fastdup

1.2K+
GitHub stars

280K+
Downloads

50B+
Images processed



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Trusted by users in the following companies:

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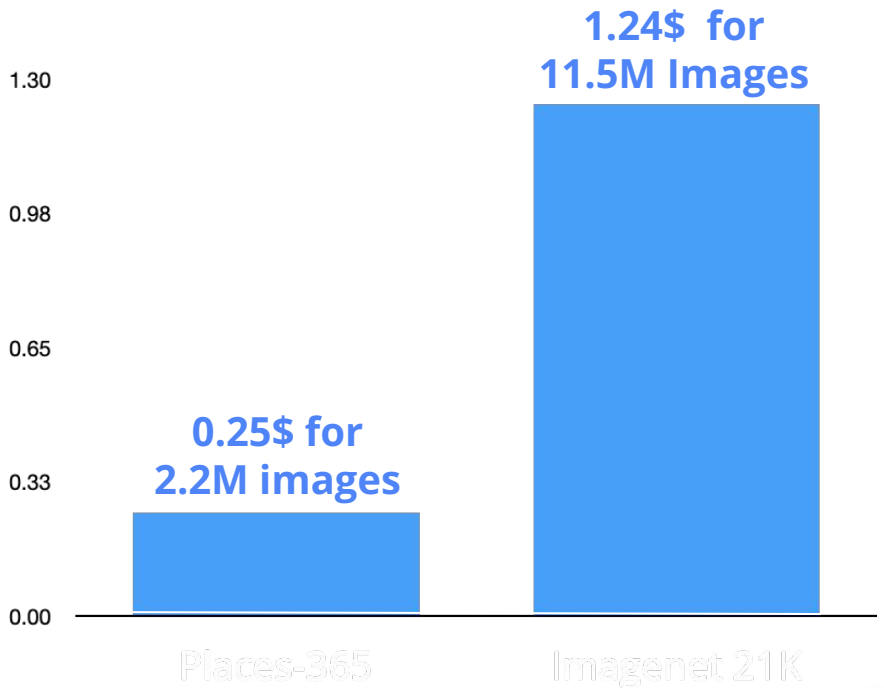
fastdup Technology

Design principles

- Easy to use
- Efficient / Scalable
- No GPU
- Accurate
- Runs everywhere
- **FREE!!**



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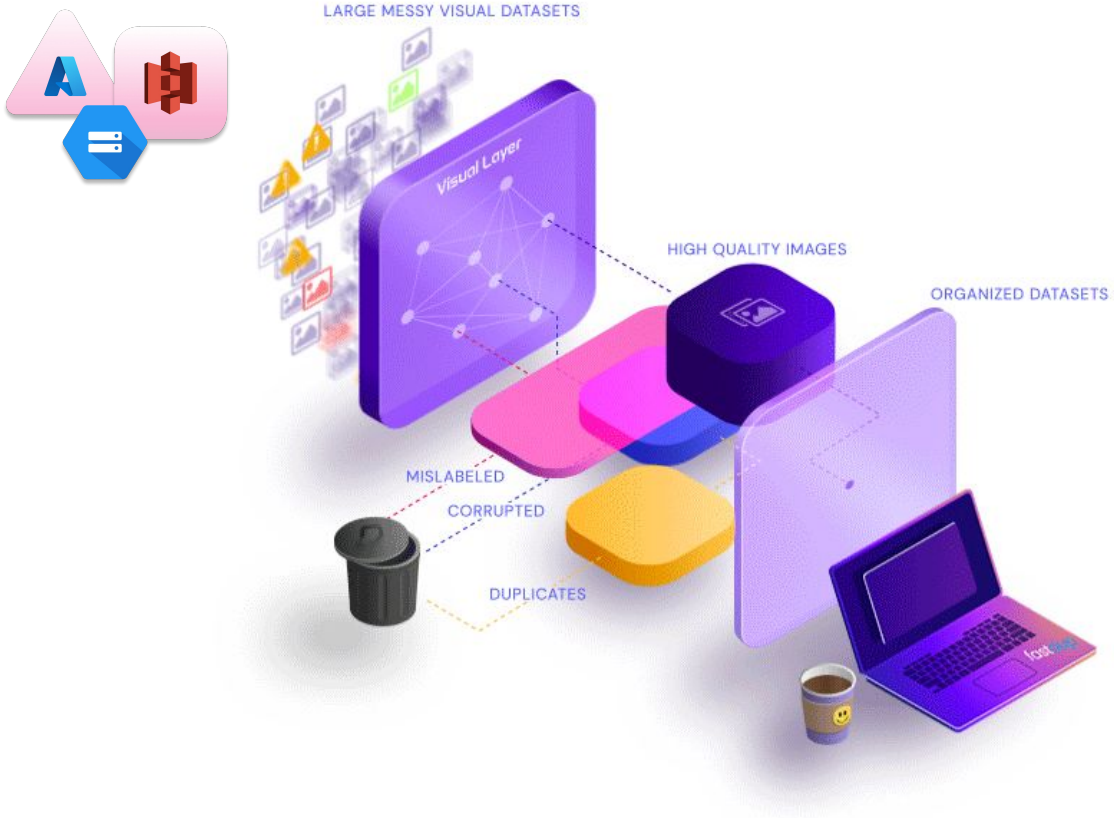
System Architecture



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Behind the Scenes

2023 VLDB Test of Time Award

Distributed Graphlab: A framework for machine learning in the cloud. Yucheng Low, Joseph Gonzalez (UC Berkeley), Aapo Kyrola, Danny Bickson, Carlos Guestrin, Joseph M. Hellerstein (UC Berkeley). VLDB 2012

Distributed GraphLab: A Framework for Machine Learning and Data Mining in the Cloud

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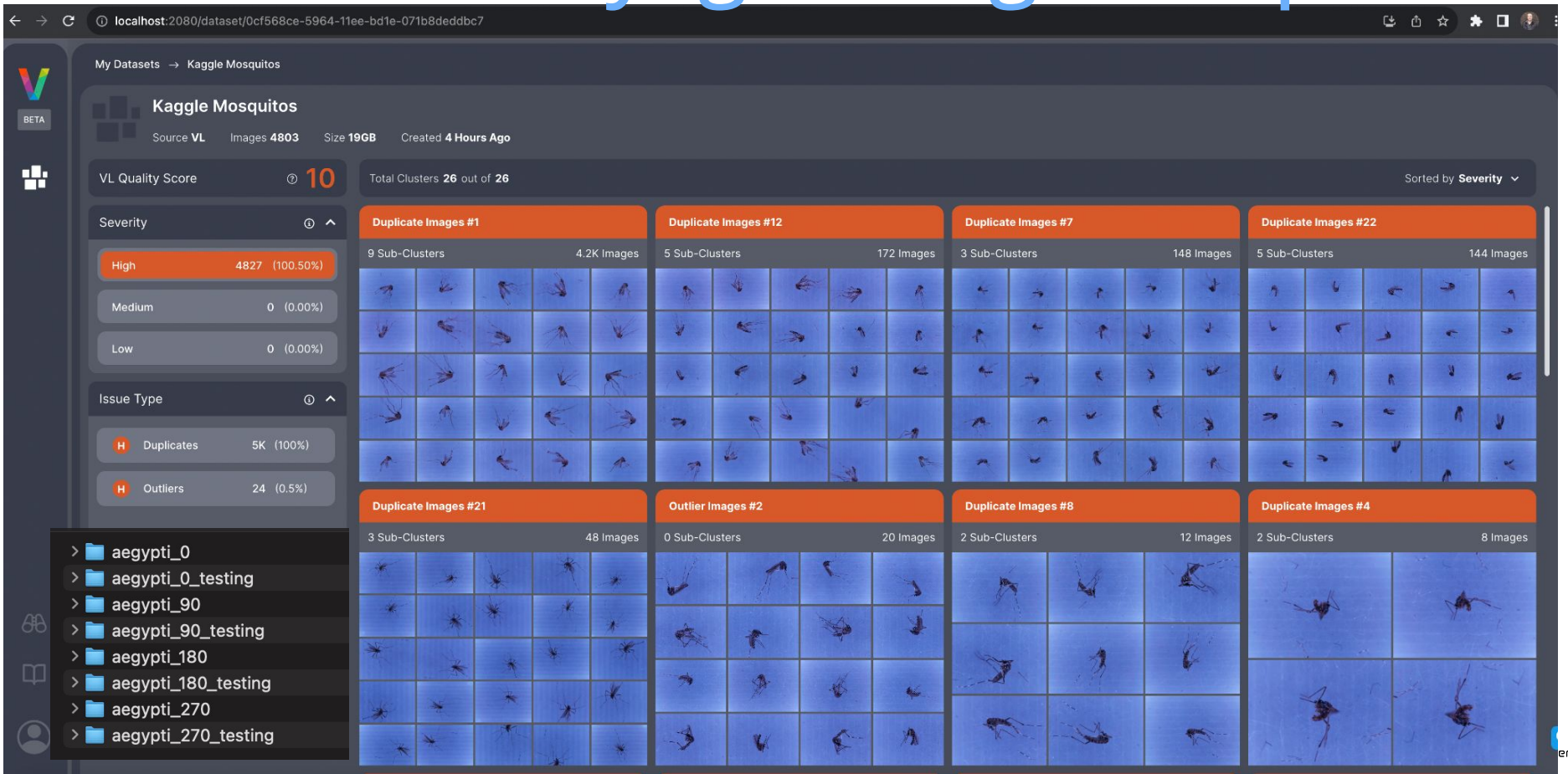
Case study: growing mosquitos



VL Profiler Demo

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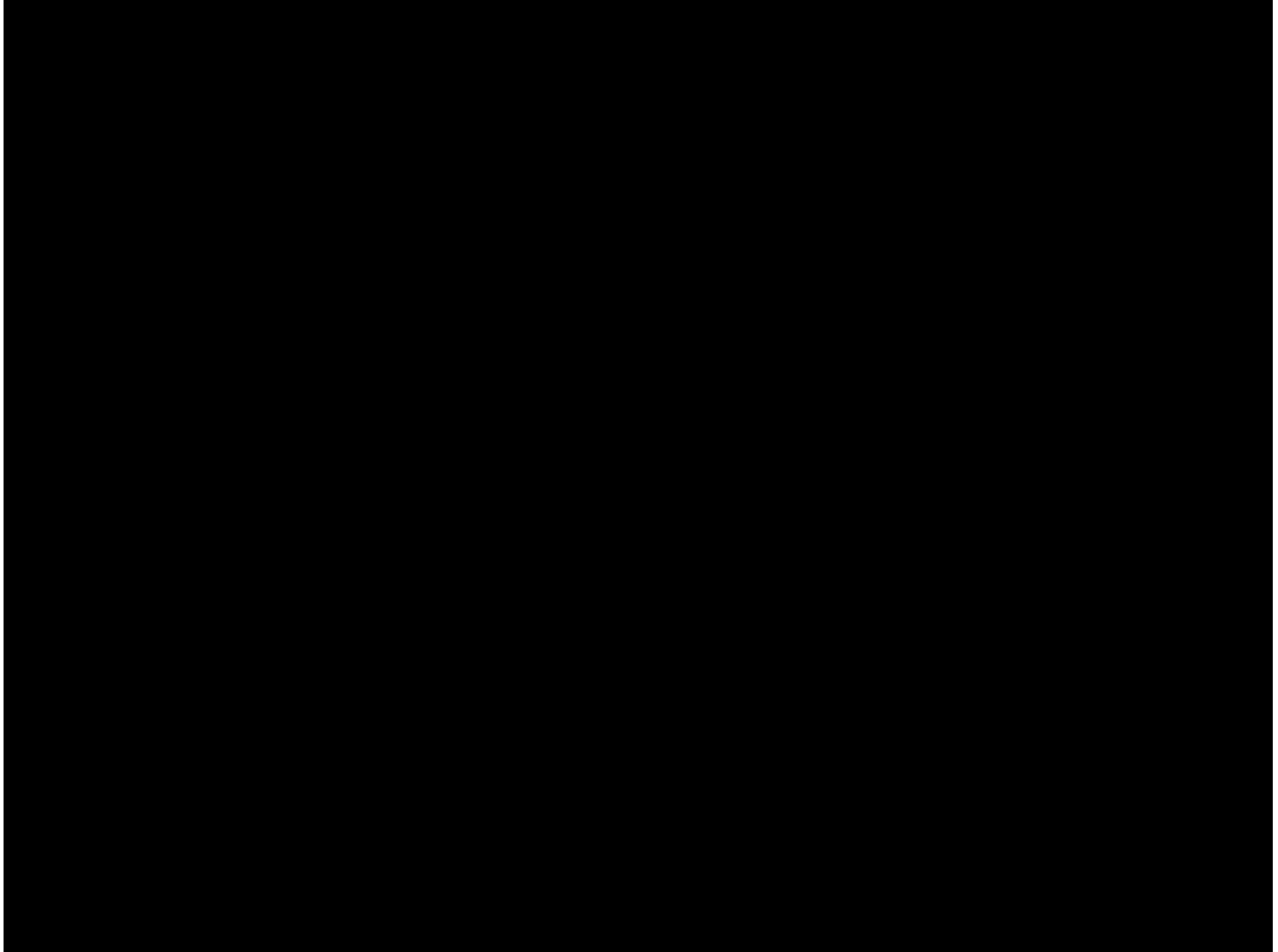

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pip install fastdup

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