


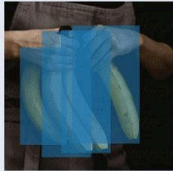
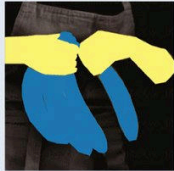

Annotationem ex Nihilo

Image annotation from scratch using `PyQtGraph` and `FastSAM`

Nathan Jessurun
Founder, TerraVerum

Introduction

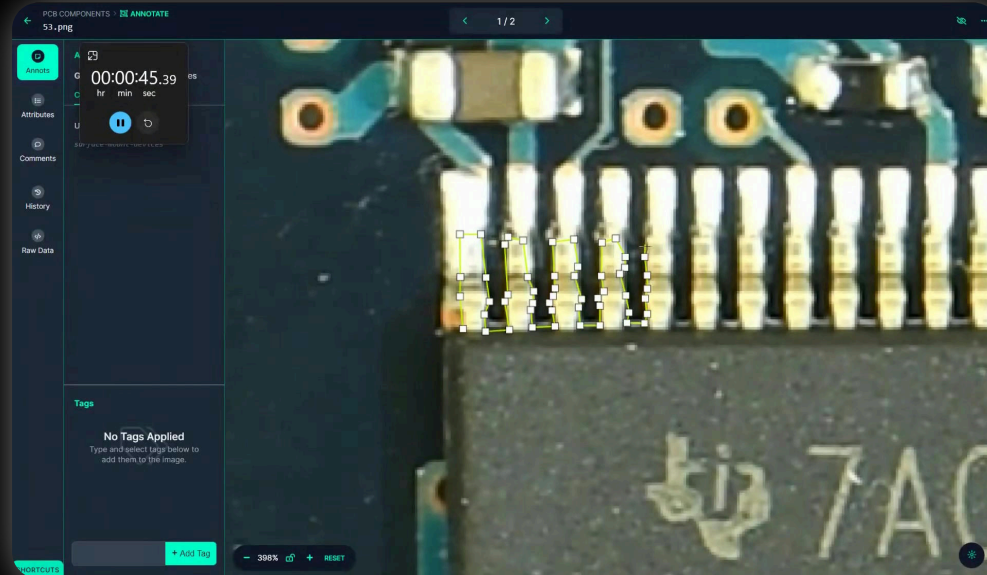
Several types of annotation, most time consuming and informative is **instance segmentation**

Classification	Object Detection	Semantic Segmentation	Instance Segmentation
			
<ul style="list-style-type: none">✓ Presence✗ Location✗ Count✗ Size✗ Shape	<ul style="list-style-type: none">✓ Presence✓ Location✓ Count✗ Size✗ Shape	<ul style="list-style-type: none">✓ Presence✓ Location✗ Count⚠ Size⚠ Shape	<ul style="list-style-type: none">✓ Presence✓ Location✓ Count✓ Size✓ Shape
<p>OUTPUT</p> <p>Banana exists: Yes / No</p>	<p>OUTPUT</p> <p>There are 4 bananas</p>	<p>OUTPUT</p> <p>There is banana in these pixels</p>	<p>OUTPUT</p> <p>There are 4 bananas of this shape, size and grade</p>

Introduction

But \rf_0_0\ detailed annotation is time consuming!

(manual timelapse)

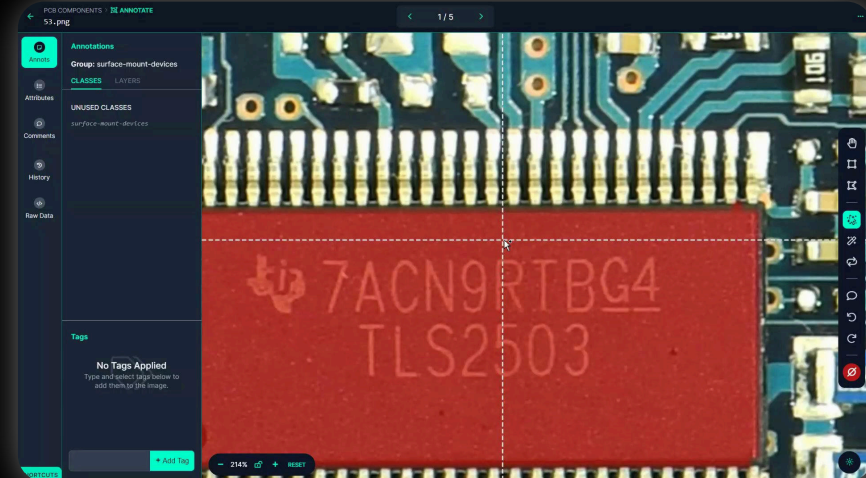


Introduction

Assistance tools help, but are often **paywalled**, **perform poorly**, or expect **detailed project workflows**

(Pretrained SAM)

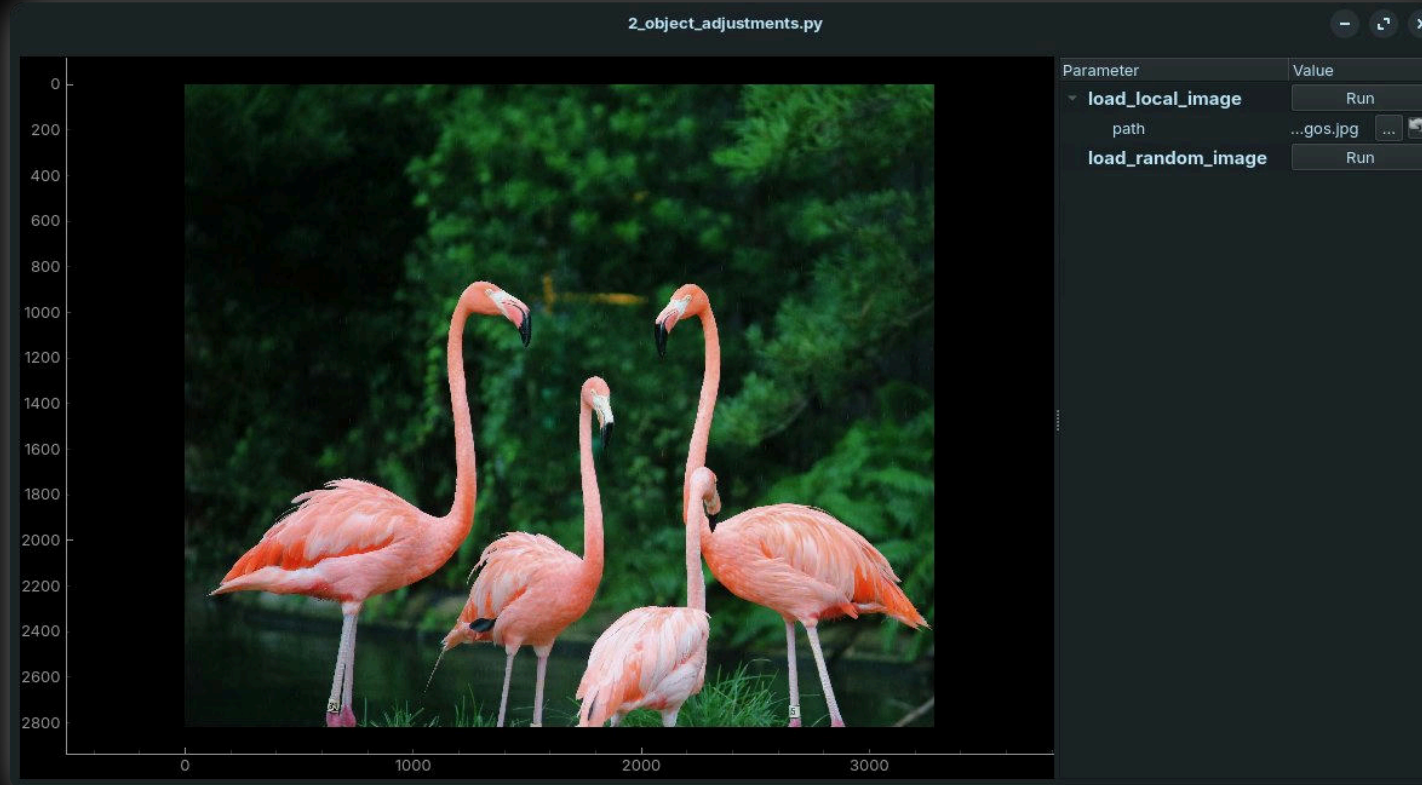
Free	Pro	Enterprise
Ideal for early-stage startups and academics/researchers	Get ready to scale your most sophisticated AI projects and MLOps needs	Best suited for well-established, recurring, and high-volume AI projects
Startup Academic	✓ Annotation automation (Magic tools)	
Basic features	All of Free +	All of Pro +
<ul style="list-style-type: none">✓ Image editor (supports image, video, PDF, and DICOM upload)✓ Video, text, and audio editors✓ Project management✓ Team and user management✓ Integrations with AWS, GCP, and Azure✓ Simple analytics✓ Up to 3 users✓ Up to 5000 items✓ Email support	<ul style="list-style-type: none">✓ Annotation services✓ Gen AI, LLM, and custom editor✓ Tiled and multilayer image editors✓ Annotation automation (Magic tools)✓ AI data management and curation✓ Data versioning and debugging✓ Python SDK✓ Advanced insights✓ Unlimited users✓ AI customer success	<ul style="list-style-type: none">✓ Annotation services with guaranteed SLAs✓ PDF, DICOM, time series, HTML, and custom editors✓ MLOps toolkit✓ Custom integrations✓ Private user groups✓ SSO and MFA✓ Dedicated AI solutions manager✓ Dedicated pipeline engineer✓ ML consulting✓ Unlimited annotations✓ Enterprise customer support (24/7)



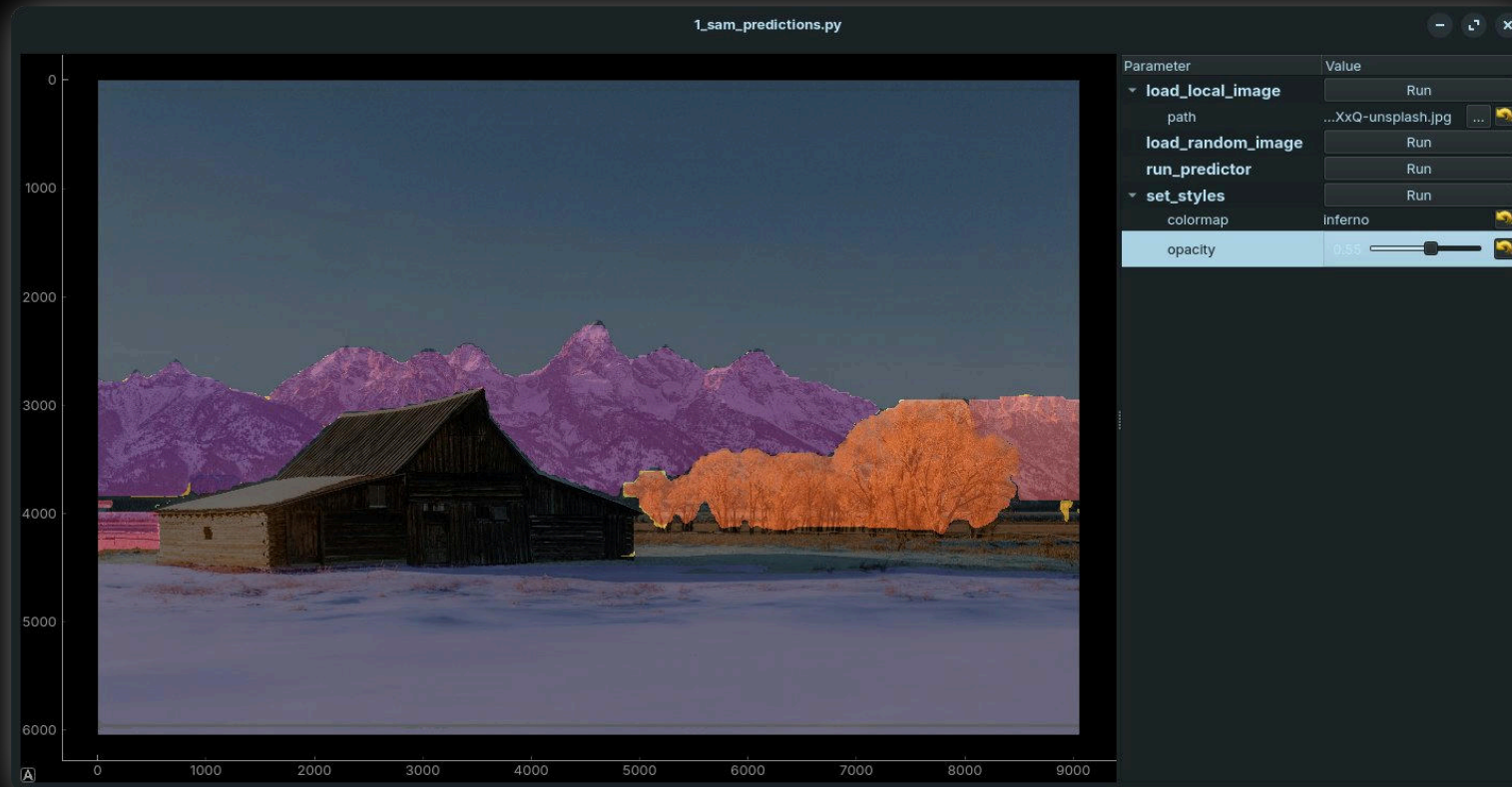
Tutorial Components

1. Create a window that loads an image from a file
2. Segment the current image using FastSAM
3. Enable object-by-object adjustments using FastSAMPrompt
4. Enable manual adjustments using a brush
5. Incorporate metadata like labels, confidence, tags, ...

Window Loading an Image



Predictions using Ultralytics FastSAM



Providing user edits

