

Visual Die-Analysis Tool

All computational die analysis needs to be visually validated and corrected. This requires thousands of visual pair-wise comparisons. The results of these comparisons have to be recorded in two ways:

- 1) The image clusters must be recorded on a spreadsheet.
- 2) The images themselves must be moved into an appropriately named folder in DROPBOX.

This record-keeping process is, currently, done by hand, very time-consuming, and a source of many clerical errors. Automating this process would eliminate errors and save hundreds of hours of time.

Currently, I am using three separate applications:

- 1) Excel
- 2) Dropbox
- 3) Safari

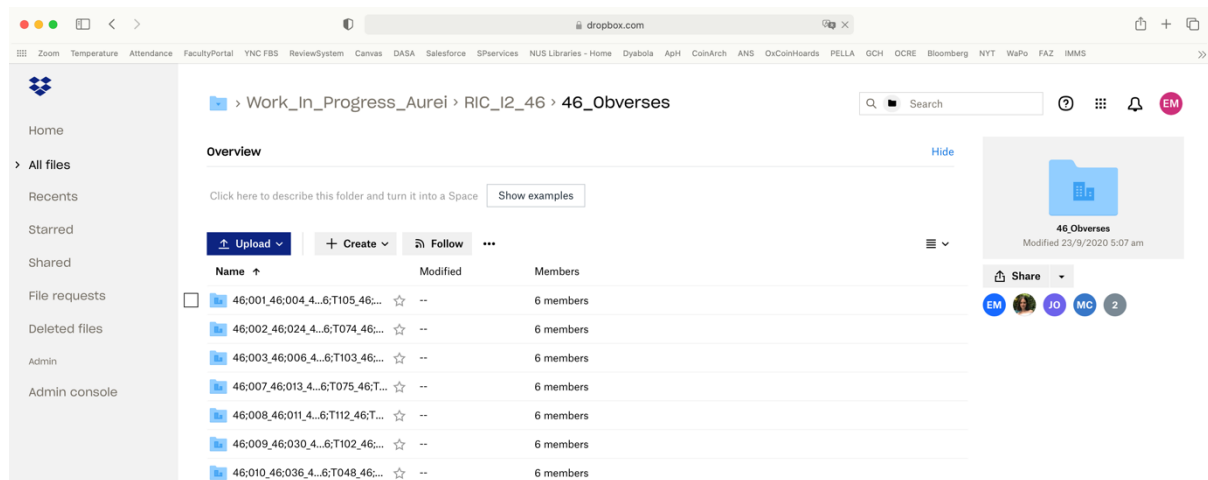
The computational model delivers results as an Excel sheet. Image numbers in the same row all belong to the same cluster:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG
1	46:001	46:004	46:082	46:115	46:121	46:131	46:142	46:T072	46:T088	46:T105	46:T117																						
2	46:002	46:024	46:044	46:054	46:056	46:068	46:081	46:101	46:103	46:111	46:126	46:T054	46:T057	46:T074	46:T110																		
3	46:003	46:006	46:014	46:033	46:083	46:T119	46:T094	46:T109																									
4	46:005																																
5	46:007	46:013	46:023	46:069	46:079	46:080	46:T061	46:T075	46:T131																								
6	46:008	46:011	46:085	46:105	46:T049	46:T058	46:T084	46:T092	46:T104	46:T121																							
7	46:009	46:030	46:058	46:072	46:102	46:125	46:135	46:T078	46:T079	46:T081	46:T097	46:T102	46:T115																				
8	46:010	46:036	46:078	46:129	46:T048	46:T053																											
9	46:012	46:018	46:067	46:073	46:087	46:089	46:090	46:114	46:120	46:127	46:133	46:139	46:140	46:T063	46:T093	46:T100	46:T108	46:T109	46:T119														
10	46:015	46:019	46:022	46:052	46:136	46:T047																											
11	46:016	46:057	46:097	46:138	46:T122																												
12	46:017	46:038	46:095	46:099	46:T107																												
13	46:020	46:143	46:T076																														
14	46:021	46:035	46:141	46:T050	46:T067	46:T101	46:T114																										
15	46:025	46:T058	46:T066	46:T128																													
16	46:027	46:063	46:065	46:070	46:092	46:113	46:119	46:128	46:T051	46:T052	46:T059	46:T065	46:T091	46:T132																			
17	46:028	46:034	46:086	46:108	46:124	46:T089																											
18	46:029																																
19	46:031	46:038	46:064	46:T116																													
20	46:032	46:048	46:053	46:094	46:098	46:110	46:117	46:144	46:T123	46:T129																							
21	46:037	46:039	46:045	46:074	46:088	46:T054	46:T080	46:T096	46:T098	46:T111	46:T120																						
22	46:040	46:041	46:047	46:061	46:076	46:077	46:100	46:107	46:123	46:134	46:T055	46:T124																					
23	46:042																																
24	46:043	46:T069	46:T106																														
25	46:046																																
26	46:049	46:060	46:084	46:109	46:122	46:T090																											
27	46:050	46:051	46:062	46:075	46:093	46:106	46:118	46:132	46:T077	46:T083																							
28	46:055																																
29	46:059	46:112	46:116	46:T063	46:T070	46:T118	46:T127																										
30	46:066	46:096	46:137	46:T082	46:T087	46:T099	46:T126																										
31	46:071	46:091	46:T073	46:T125																													
32	46:104																																
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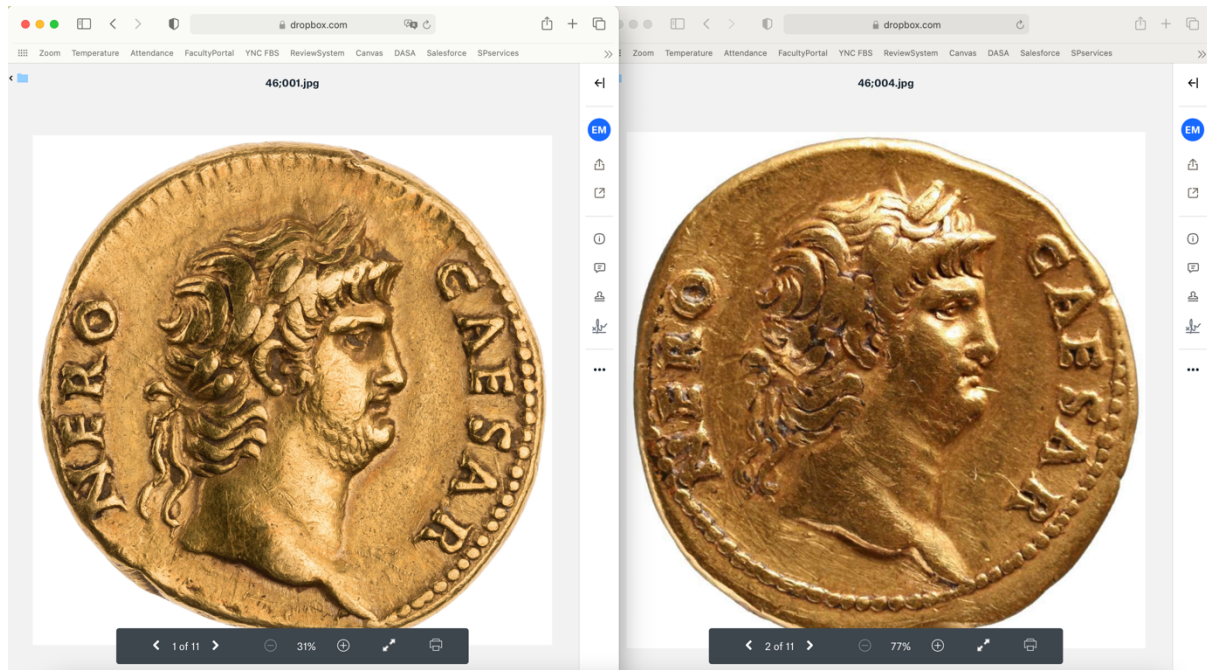
STEP 1: The images have to be moved into appropriately named folders in DROPBOX, such as

46:001_46;004_46;082_46;115_46;121_46;131_46;142_46;T072_46;T088_46;T105_46;T117

Image numbers are always separated by an underscore. **Singletons are moved into a folder SINGLES.**



As soon as the images are in their folders, visual analysis can begin. Currently, I open two windows of the same DROPBOX folder in my web-Browser, and then click through the images with the DROBOX image viewer (the grey bar beneath the image):



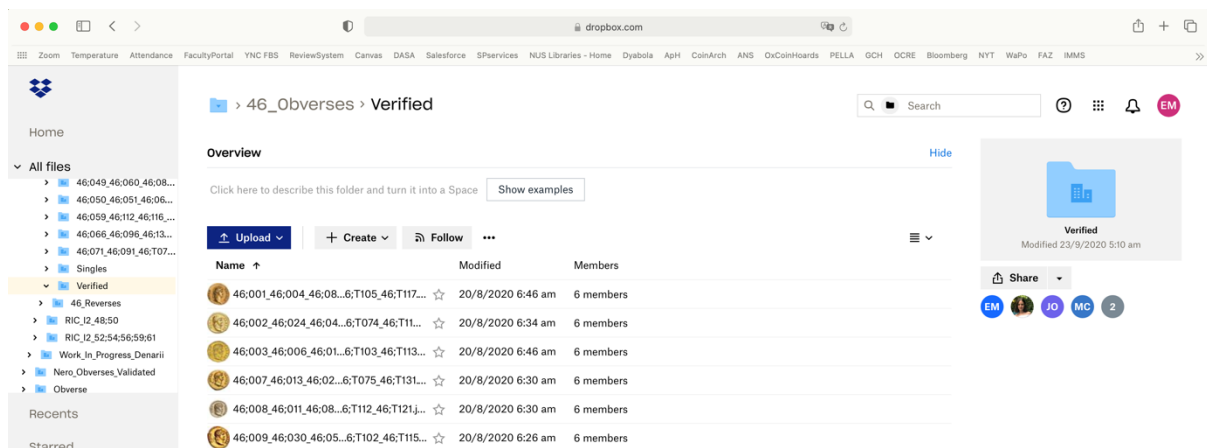
STEP 1:

If an image matches, I leave it in the folder. If not, I move manually move it to the SINGLES folder, and manually correct the spreadsheet.

STEP 2:

After, I have validated a folder I

- pick the best image in the folder.
- copy it into the folder.
- rename it according to the folder number.
- move it to the VERIFIED folder.



STEP 3:

I compare all images in the VERIFIED folder to each other, to make sure that the algorithm has not broken up an image cluster into two or more clusters. If need be, clusters are combined into one. Again, I manually move the images, rename the folder and correct the spreadsheet.

STEP 4:

I compare all images in VERIFIED to all images in SINGLES and assign un-assigned images to predicted clusters. Again, I manually move the images, rename the folder and correct the spreadsheet.

STEP 5:

I compare all images in SINGLES to each other to detect missed clusters. Again, I manually move the images, rename the folder and correct the spreadsheet.

STEP 6:

I check all images in the each named folder to each other to determine whether there are two or more images of the same physical coin. If this is the case, I record this in the spreadsheet (in the case below, in column T) and calculate the number of physical coins (in the case below, in column U):

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THE APPLICATION

The application should link EXCEL, DROPBOX, and a WEB-BROWSER. It should have an interface with **four functions**:

- 1) MATCH
Images are either left in their current folder or moved to the folder with the matching image. The Excel-sheet and the Dropbox folder – both in terms of name and files – are automatically updated.
- 2) NO-MATCH
The non-matching image is moved to Singles, the Excel-sheet and the Dropbox folder – both in terms of name and files – are automatically updated.
- 3) BEST IMAGE
Allows to select an image in a folder. It is a) copied, b) named after the folder number, and c) moved to VERIFIED.
- 4) IDENTICAL IMAGE
Identical images are marked as such in the Excel sheet, e.g. (46:82_142), and the number of **coins** per clusters is automatically updated (in this case by -1).

This is it. Please let me know whether it can be done.