

# ShopAdmin

## Image processing tests

### Restrictions/Scope

Technically the app reuses the build in mobile camera. The gathered picture will then be (temporarily) in the file system of the mobile. Out of there the tesseract OCR engine will retrieve the image for further processing returning the extracted data (shop name amount) to a classifier algorithm which will correct a minimal amount of errors. Final result will be passed in a container object.

As the image processing testing should be evaluated separately from the business- and app logic primarily tests should start when the picture is retrieved from the file system. The possibility of automated evaluation of the retrieved data must be further examined.

Due to the defined project timeline test could not start before KW 3/2016.

## Image processing requirements regarding VDI/VDE

### Tasks

	Influencing factor	Examples	Notes
1.1	Type of task	From a given receipt image specific data (characters and numbers) need to be extracted. The extracted data will be further processed by a classifier.	Data is shop name and total amount.  OCR engine is tesseract.  Classifier needs to be further specified.
1.2	Objective of testing	The OCR engine must retrieve valid data for further processing within the app.	Valid data is words and numbers, no special signs/junk data/no empty data.
1.3	Detailed description of task	OCR before classifier: Regarding the retrieved <b>shop names</b> : 2/3 of the word must be correct. <b>Amount</b> cannot be classified.  After classifying: <b>Overall</b> success rate must be 30%.	The value of correct shop name is needed to further complete/classify the shop name. Is the word less than 2/3 correct the correct classification is assumed to not be possible.  An overall success is the complete data of one receipt which must not be corrected by the user.
1.4	Previous procedure	No inspection so far	
1.5	Characteristics to be validated	At least a floating point number and an existing shop name.	A shop name is existing when available in database.

1.6	Objects for validation	Must be defined.	Various number of receipts.
1.7	Validation procedure	Camera, tesseract and classification.	Possibility is automated ("instrumentation") test within android studio.
1.8	Evaluation of measurement and test results	Count of overall success rate.	

### Test Object

	Influencing	Examples	Notes
2.1	Range of types	Paper receipts of shops.	
2.2	Macroscopic shape and dimensions	Receipt must fit to picture with a camera distance of ca. 20 cm.	Receipt can be folded to display shop name and amount.
2.3	Microscopic	Normal receipt paper	
2.5	Variance of object properties.	Some receipts can have a glossy effect. Some receipts can be dirty and also crinkling can occur.	

### Scene

	Influencing factor	Examples	Notes
3.1	Positioning	Distance between camera and receipt around 20 cm and camera orientation is parallel to the receipt.	
3.2	Number of objects	One	
3.3	Background	I.e. receipt should not be placed in front of the sun or any other light source	
3.5	Movement	Movement is prohibited to ensure picture quality.	Build in camera gives immediately feedback.
3.6	Vibrations	No.	
3.7	Extraneous light	Will be covered by flash of mobile camera.	

### Process integration

	Influencing factor	Examples	Notes
4.1	Use of data from image processing system	Display on app-screen.	
4.2	Inputs and outputs of the image processing system	Input: Image from camera Output: Retrieved data	

### Human-machine interface

	Influencing factor	Examples	Notes
5.1	Operation concept	Graphical user interface	
5.2	Visualization and signaling	Statistical/textual visualization	

### Miscellaneous

	Influencing factor	Examples	Notes
6.4	Documentation	Electronically	