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

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|  | **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 **shop names**: 2/3 of the word must be correct.  **Amount** cannot be classified.  After classifying:  **Overall** 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

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|  | **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

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|  | **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

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|  | **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

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

### Miscellaneous

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|  | **Influencing factor** | **Examples** | **Notes** |
| 6.4 | Documentation | Electronically |  |