

Configuration file explanation from “Automated data population using case-like scenarios for training and validation in mobile forensics

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1 PERSON INFORMATION

This part of the configuration file contains personal information about the person.

```
"First name": "Wilhelm B.", # First name of the person
"Surname": "Orange", # Surname of the person
"Birthday": "15.02. 1960", # Birthday of the person
"Home phone": "1234567", # Home phone number of the person
"Street": "Street 123", # Street of the person's address
"Postal code": "12345", # postal code of the person's address
"City": "Beispielstadt", # city of the person's address
"Organisation": "", # Organization where the person works
"Phone number": "+49175XXXXXX", # Phone number of the person (in
Mobile devices section of the config file)
```

This information is added to the **vcard_data_with_config.csv** from which the vCard is generated.

Only one of the above fields must have data in it in order to add the information to the .csv and thus to the vCard.

However, in order to properly run the WhatsApp script, it is necessary to store at least:

- First name
- Surname
- Phone number

otherwise, the script will not be able to select chats properly.

2 DEVICE INFORMATION

This part of the configuration file contains information about the phones of the person. One person could theoretically have more than one phone, but currently the scripts expect each person to have only one phone.

```
"Mobile devices": [
  {
    "Brand": "Huawei",
    "Model": "SNE -LX1",
    "nr of pics": 142,
    "timeframe start": "2021-07-13T08:59:37.512752Z",
    "timeframe end": "2021-09-07T08:59:37.512752Z",
    "individual apks": 1,
    "Serial number": "HYFDUXXXXXXXXXX",
    "Phone number": "+ 4915XXXXXX",
    "active times": {
      "6:10": 6,
      "12:00": 7
    },
    "Whatsapp token": "PERSON_A",
    "Conversation partners": ["PERSON_B", "PERSON_C"],
    "typing speed": 0.6,
    "voice message probability": 0.05,
    "transition matrix":
  },
],
```

Brand: brand of the phone

Could give a hint about the app names that are needed to store contacts on the device but needs more investigation. See Chapter 6 – Contacts store and Contact delete. Currently unused.

Model: Model of the phone

Used to identify the phone model when importing contacts to the device. More information in the last section.

nr of pics: Number of pictures that should be stored on the device

Used in `setup_phones.py` when pictures are copied from the dataset.

timeframe start/end: lower and upper bound of timestamps of the pictures

Used in `setup_phones.py` to modify the timestamps of the pictures before the pictures get stored on the device. This needs to be in the format: %Y-%m-%dT%H:%M:%S.%fZ

individual apks: number of individual apps that should be stored on the device

The apps in the `datasets/apps` folder are split into two different folders:

- **standard:** apps that should be installed on every phone
- **individual:** apps that should not be installed on every phone

The number behind “individual apks” tells the program how many random apps of the **individual** folder should be installed.

Serial number: serial number of the device

Used for identifying devices when using ADB (pictures, apps, contacts) and naming folders corresponding to the devices.

Please use the serial number that ADB shows.

Phone number: phone number of the device

Used for vCard generation (see Chapter 1) and phone calls/SMS (in the future).

active times: dictionary of times where the person should be active

Key: start time of active phase

Value: duration of active phase in hours

Used in order to check whether the person is active in `fsm.py`.

WhatsApp token: name of WhatsApp token folder

Name of the folder where the WhatsApp token is saved.

Used for identification (see conversation partners) and when loading the WhatsApp token. Currently also used to specify the subfolder of the person in the **Token** directory.

Conversation partners: list of conversation partners

List of WhatsApp token names of other people that are defined in the configuration file. Used in order to specify with which people the person should communicate over WhatsApp.

typing speed: typing speed of the person

Used in order to calculate the time it takes to write a message.
Given in words per second.

voice message probability: probability for a voice message

Used in order to determine whether the message will be sent as a text or voice message.

transition matrix: matrix that defines the transitions of the FSM

Used in order to determine the transitions of the Finite State Machine (FSM). The matrix must be an 8x8 left stochastic matrix, meaning all entries have to be positive, positive nonzero entries and all columns have to sum up to 1.

The following picture shows, which entry in the matrix represents which transition:

		from state											
		idle	whatsapp idle	whatsapp read message	whatsapp start new chat	whatsapp send message	email idle	email read	email write	mock location	browse	take photo	
to state	idle	0	0,2	0	0	0	0,2	0	0	1	1	1	
	whatsapp idle	0,6	0	0	0,4	0,4	0	0	0	0	0	0	
	whatsapp read message	0	0,7	0,5	0,1	0,1	0	0	0	0	0	0	
	whatsapp start new chat	0	0,1	0	0,1	0,1	0	0	0	0	0	0	
	whatsapp send message	0	0	0,5	0,4	0,4	0	0	0	0	0	0	
	email idle	0,1	0	0	0	0	0	0,33	0,5	0	0	0	
	email read	0	0	0	0	0	0,4	0,34	0,5	0	0	0	
	email write	0	0	0	0	0	0,4	0,33	0	0	0	0	
	mock location	0,1	0	0	0	0	0	0	0	0	0	0	
	browse	0,1	0	0	0	0	0	0	0	0	0	0	
	take photo	0,1											
	total:	1	1	1	1	1	1	1	1	1	1	1	
		correct	correct	correct	correct	correct	correct	correct	correct	correct	correct	correct	

3 GMAIL ACCOUNTS INFORMATION

This part of the configuration file contains information about the Gmail accounts of the person. One person could theoretically have more than one Gmail account, but currently the scripts expect each person to have only one account.

```
"Gmail account": [
  {
    "Gmail address": "wilhelmborange@gmail.com",
    "Gmail password": "",
    "Gmail token": "orange_Gmail.json",
    "Calendar token": "orange_calendar.json",
    "Signature": "Best regards\nWilhelm",
    "E-mail partners": {
      "yorkr757@gmail.com": "Hey Rob\n\n",
      "thomasalpin83@gmail.com": "Dear Mr. Alpin\n\n"
    }
  }
]
```

Gmail address: e-mail address of the account of the person

Currently not used in the codes but it is good to document it here in order to keep track of things, especially for e-mail partners.

Gmail password: password to the e-mail address

Currently not used. Maybe for account generation in the future

Gmail token: name of the Gmail token

Name of the folder where the Gmail token is saved.
Used for loading the Gmail token.
Needs to be a .json file name.

Calendar token: name of the google calendar token

Name of the folder where the google calendar token is saved.
Used for loading the google calendar token.
Needs to be a .json file name.

Signature: Signature for e-mails

The signature is appended to the end of every e-mail the person sends.

E-mail partners: dictionary of all the e-mail conversation partners

Key: e-mail address of possible e-mail conversation partner

Value: salutation for that person

4 WHATSAPP GROUPS INFORMATION

This part of the configuration file contains information about WhatsApp groups.

```
"Whatsapp groups": {  
  "New York": [ "PERSON_A", "PERSON_B", "PERSON_C" ],  
  "Old York": [ "PERSON_A", "PERSON_B", "PERSON_C" ],  
  "New NEW Group": [ "PERSON_A", "PERSON_B", "PERSON_C" ]  
},
```

Whatsapp groups: dictionary with group name and participants

Key: name of the group

Value: WhatsApp token filenames of the members.

If the configuration file only contains two people, this is best kept empty.

5 INFORMATION ABOUT DATASETS

This part contains information about where the picture dataset is stored on the computer.

```
"Picture dataset": "/home/XXXXXXX/Downloads/VG_100K",
```

In this example the visual genome dataset was downloaded and stored in the Downloads folder.

6 PHONE SPECIFIC INFORMATION

This part of the configuration file contains information that is specific to the devices.

Each android phone that's currently supported has such an entry in the configuration file. This example is for the Samsung S9 duos.

```
"SM-A405FN": {  
  "Buttons contacts": [  
    "Save",  
    "Phone",  
    "Just once"  
  ],  
  "Contacts store": "com.samsung.android.app.contacts",  
  "Contacts delete": "com.samsung.android.providers.contacts",  
  "Photo names": "%Y%m%d_%H%M%S"  
},
```

Buttons contacts: list of buttons that need to be pressed in order to import the contact information from the vCard

For this phone after the .vcf file is read the buttons 'Save', 'Phone' and 'Select' need to be pressed.

These buttons can change between different android versions for this phone.

In that case the buttons in the configuration file must be adjusted.

The button instructions are **case sensitive!**

Contacts store: app that is responsible for the storing of contacts

The app that is responsible for the storing of contacts is different for each phone Model. Used when storing contacts.

Contacts delete: app that is responsible for the deletion of contacts

The app that is responsible for the deletion of contacts is different for each phone Model. Used when deleting contacts.

Photo names: Format string for naming of photos

Each phone has a specific way of naming photos that are taken with the camera. This string is the format specification that when used formats the random generated timestamp to the device specific string.

Used when naming the photos.

7 EXAMPLE CONFIG FILE

Example config file with one person:

```
{
  " People": [
    {
      "First name": "Wilhelm B.",
      "Surname": "Orange",
      "Birthday": "15.02. 1960",
      "Home phone": "1234567",
      "Street": "Street 123",
      "Postal code": "12345",
      "City": "Beispielstadt",
      "Organisation": "",
      "Mobile devices": [
        {
          "Brand": "Huawei",
          "Model": "SNE -LX1",
          "nr of pics": 142,
          "timeframe start": "2021-07-13T08:59:37.512752Z",
          "timeframe end": "2021-09-07T08:59:37.512752Z",
          "individual apks": 1,
          "Serial number": "HYFDU19823003328",
          "Phone number": "+491756509915",
          "active times": {
            "6:10": 6,
            "12:00": 7
          },
          "Whatsapp token": "PERSON_A",
          "Conversation partners": ["PERSON_B", "PERSON_C"],
          "typing speed": 0.6,
          "voice message probability": 0.05,
          "transition matrix": [[0, 0.2, 0, 0, 0, 0, 0.2, 0, 0],
                                [0.98, 0, 0.1, 0.4, 0.4, 0, 0, 0, 0],
                                [0, 0.7, 0.4, 0.1, 0.1, 0, 0, 0, 0],
                                [0, 0.1, 0, 0.1, 0.1, 0, 0, 0, 0],
                                [0, 0, 0.5, 0.4, 0.4, 0, 0, 0, 0],
                                [0.02, 0, 0, 0, 0, 0, 0, 0.33, 0.5],
                                [0, 0, 0, 0, 0, 0.4, 0.34, 0.5],
                                [0, 0, 0, 0, 0, 0.4, 0.33, 0]]
        }
      ],
      "Gmail account": [
        {
          "Gmail address": "wilhelmborange@gmail.com",
          "Gmail password": "",
          "Gmail token": "orange_Gmail.json",
          "Calendar token": "orange_calendar.json",
          "Signature": "Best regards\nWilhelm",
          "E-mail partners": {
            "yorkr757@gmail.com": "Hey Rob\n\n",
            "thomasalpin83@gmail.com": "Dear Mr. Alpin\n\n"
          }
        }
      ]
    },
    {
      "Whatsapp groups": {
        "New York": ["PERSON_A", "PERSON_B", "PERSON_C"],
        "Old York": ["PERSON_A", "PERSON_B", "PERSON_C"],
        "New NEW Group": ["PERSON_A", "PERSON_B", "PERSON_C"]
      },
      "Picture dataset": "/home/XXXXXX/Downloads/VG_100K",
      "SM-A405FN": {
        "Buttons contacts": [
          "Save",
          "Phone",
          "Just once"
        ],
        "Contacts store": "com.samsung.android.app.contacts",
      }
    }
  ]
}
```

```
    "Contacts delete": "com.samsung.android.providers.contacts",
    "Photo names": "%Y%m%d_%H%M%S"
  },
  "SNE-LX1": {
    "Buttons contacts": [
      "OK",
      "Phone"
    ],
    "Contacts store": "com.android.contacts",
    "Contacts delete": "com.android.providers.contacts",
    "Photo names": "IMG_%Y%m%d_%H%M%S"
  },
  "SM-G960F": {
    "Buttons contacts": [
      "Save",
      "Phone",
      "Select"
    ],
    "Contacts store": "com.samsung.android.contacts",
    "Contacts delete": "com.samsung.android.providers.contacts",
    "Photo names": "%Y%m%d_%H%M%S"
  }
}
```