Univerza v Mariboru

Fakulteta za elektrotehniko,
računalništvo in informatiko

Pregled Orodij in Tehnologij pri Razvoju Programskih Sistemov

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Kazalo

Slike

1 Uvod

Za osnovo sem se odločil uporabit 1. nalogo pri predmetu Osnove Računalniškega Vida, v kateri smo na sliki iskali piksle v barvi kože. Po končani nalogi sem ugotovil, da to ni najboljša izbira, saj docker ne podpira grafičnih vmesnikov ampak zdaj nimam časa za ponovitev naloge.

- GitHub repozitorij: github.com/tilcica/SA3-CICD
- DockerHub repozitorij: hub.docker.com/repository/docker/tilcica/sa3-cicd

2 Koda

Koda je v posameznih datotekah komentirana, tukaj pa bi za to bilo preveč besedila v posamezni vrstici.

2.1 Python

2.1.1 openCV.py

```
def doloci_barvo_koze(slika, spodnjaMeja, zgornjaMeja):
    pass

def zmanjsaj_sliko(slika,sirina,visina):
    pass

def obdelaj_sliko_s_skatlami(slika, sirina_skatle, visina_skatle, barva_koze):
    pass

def prestej_piksle_z_barvo_koze(slika, barva_koze):
    pass
```

2.1.2 openCV_test.py

```
class TestOpenCVFunctions(unittest.TestCase):
    def test_prestej_piksle_z_barvo_koze(self):
        img = cv2.imread("test.png")
        if img is None:
            self.fail("test.png not found or could not be loaded.")

        spodnjaMeja = np.array([0, 48, 80], dtype=np.uint8)
        zgornjaMeja = np.array([20, 255, 255], dtype=np.uint8)

        num_skin_pixels = prestej_piksle_z_barvo_koze(
                        img,
                        (spodnjaMeja, zgornjaMeja))

        mask = cv2.inRange(img, spodnjaMeja, zgornjaMeja)
        expected_num_skin_pixels = cv2.countNonZero(mask)

        self.assertEqual(num_skin_pixels, expected_num_skin_pixels)
```

```
18
19      def test_zmanjsaj_sliko(self):
20          img = cv2.imread("test.png")
21          if img is None:
22              self.fail("test.png not found or could not be loaded.")
23
24          resized_img = cv2.resize(img, (100, 100))
25
26          self.assertEqual(resized_img.shape[0], 100)
27          self.assertEqual(resized_img.shape[1], 100)
```

2.2 Docker

2.2.1 Dockerfile

```
1  FROM python:3.10-slim
2
3  WORKDIR /app
4
5  RUN apt-get update && apt-get install -y \
6      libgl1 \
7      libglib2.0-0 \
8      libx11-6 \
9      libxext6 \
10     libxrender1 \
11     libsm6 \
12     libxcb1 \
13     && rm -rf /var/lib/apt/lists/*
14
15 COPY requirements.txt .
16 RUN pip install --no-cache-dir -r requirements.txt
17
18 COPY openCV.py .
19 COPY smiley.png .
20 COPY test.png .
21
22 ENV PYTHONUNBUFFERED=1
23
24 CMD ["python", "openCV.py"]
```

2.2.2 requirements.txt

```
1  numpy
2  opencv-python
```

2.3 YAML

2.3.1 28544_test.yml

```
1  name: 28544_test
2
3  on:
```

```yaml
  push:
    branches: [master]

jobs:
  checkTests:
    name: check if test file exists
    runs-on: ubuntu-latest

    outputs:
      error_exists: ${{ steps.check.outputs.error_exists }}

    steps:
      - name: checkout
        uses: actions/checkout@v3

      - name: check for openCV_test.py
        id: check
        run: |
          if [ -f openCV_test.py ]; then
            echo "Test file found."
            echo "error_exists=false" >> $GITHUB_OUTPUT
          else
            echo "Test file 'openCV_test.py' not found!" 1>&2
            echo "Test file not found!" > napaka.txt
            echo "error_exists=true" >> $GITHUB_OUTPUT
          fi

      - name: upload napaka.txt
        if: always()
        uses: actions/upload-artifact@v4
        with:
          name: napaka
          path: napaka.txt

  runTests:
    name: run tests
    needs: checkTests
    if: needs.checkTests.outputs.error_exists == 'false'
    runs-on: ubuntu-latest

    strategy:
      matrix:
        pythonVersion: [3.10, 3.13]

    steps:
      - name: checkout
        uses: actions/checkout@v3

      - name: download napaka.txt
        uses: actions/download-artifact@v4
        with:
          name: napaka
        continue-on-error: true

      - name: set up python
        uses: actions/setup-python@v4
```

```
60          with:
61            pythonVersion: ${{ matrix.python-version }}
62
63        - name: dependencies
64          run: |
65            if [ -f requirements.txt ]; then pip install -r requirements.txt; fi
66
67        - name: run tests
68          run: |
69            if grep -q "not found" napaka.txt; then
70              echo "Error found in napaka.txt. Exiting."
71              exit 1  # Fail the job if there's an error
72            else
73              echo "Running unit tests..."
74                    if ! python -m unittest openCV_test.py; then
75                      echo "Unit tests failed. Exiting."
76                      exit 1  # Fail the job if tests fail
77                    fi
78            fi
```

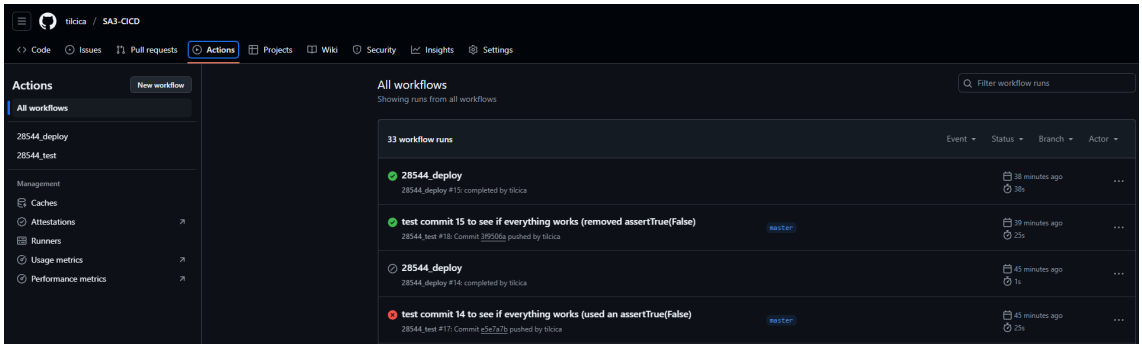
2.3.2 28544_deploy.yml

V primeru, da se 28544_test ne izvede uspešno, se izvajanje 28544_deploy ne začne.

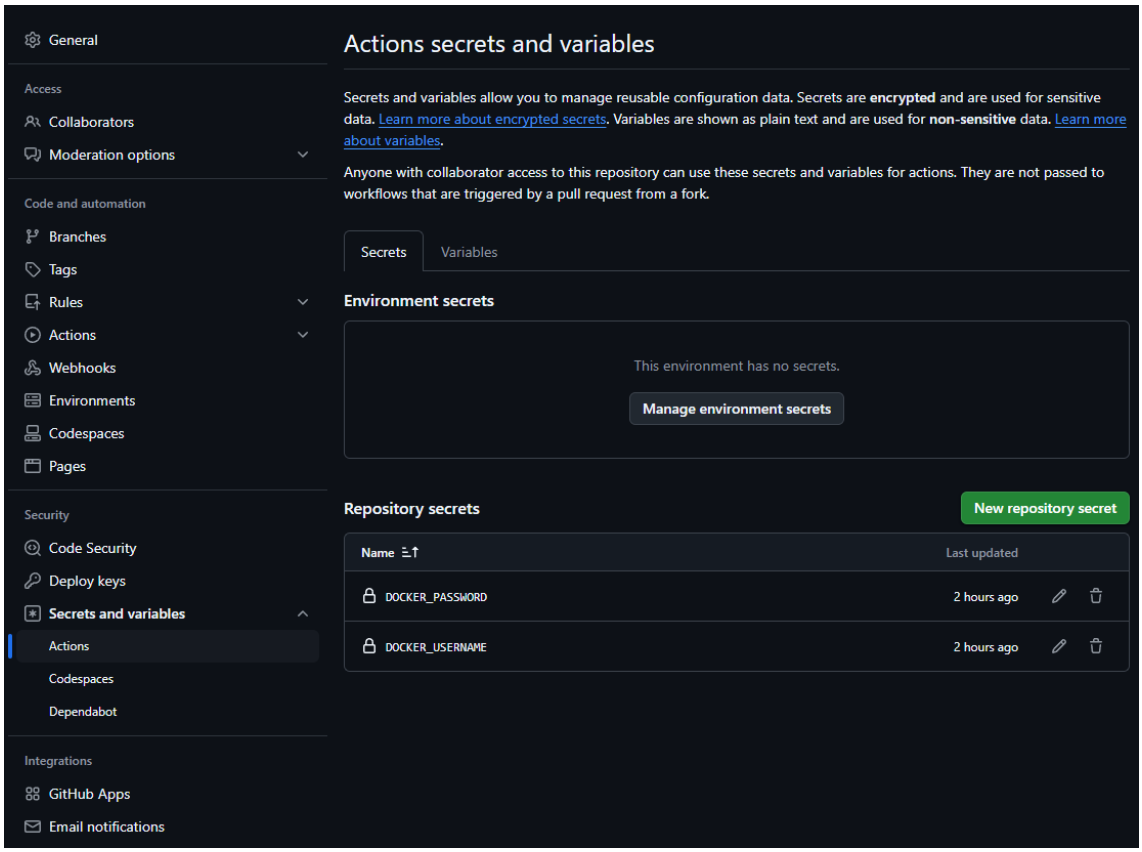
```
1  name: 28544_deploy
2
3  on:
4    workflow_run:
5      workflows: ["28544_test"]
6      types: ["completed"]
7
8  jobs:
9    buildAndPush:
10     if: ${{ github.event.workflow_run.conclusion == 'success' }}
11     runs-on: ubuntu-latest
12
13     steps:
14       - name: checkout
15         uses: actions/checkout@v3
16
17       - name: docker login
18         uses: docker/login-action@v3
19         with:
20           username: ${{ secrets.DOCKER_USERNAME }}
21           password: ${{ secrets.DOCKER_PASSWORD }}
22
23       - name: docker build
24         run: |
25           docker build -t tilcica/sa3-cicd:latest .
26
27       - name: docker push
28         run: |
29           docker push tilcica/sa3-cicd:latest
```

3 Posnetki zaslona

3.1 Github

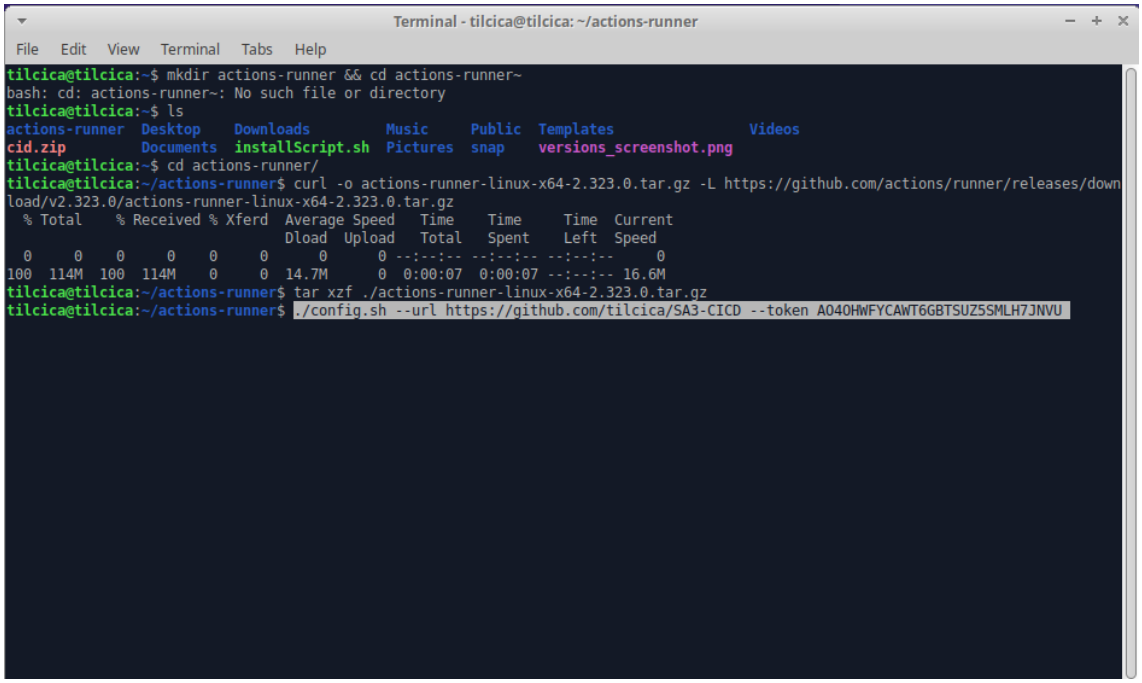


Slika 1: Github Actions

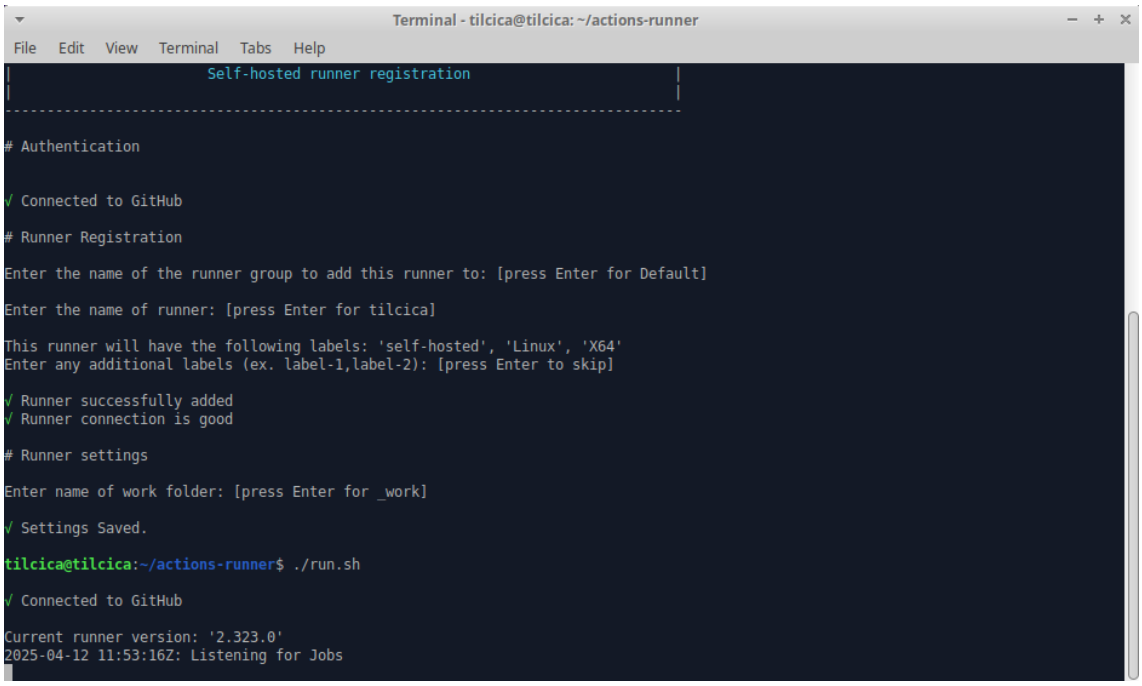


Slika 2: Github Secrets

3.2 Linux runner strežnik

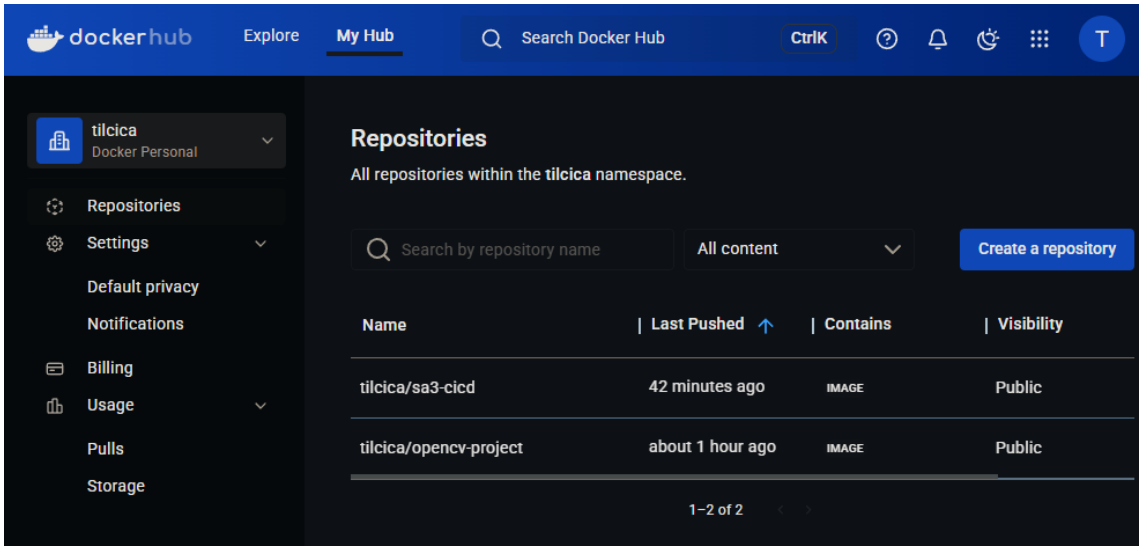


Slika 3: Vzpostavljanje Runner Strežnika 1



Slika 4: Vzpostavljanje Runner Strežnika 2

3.3 Docker hub



Slika 5: sa3-cicd projekt na DockerHub