

Catatan rilis X

...

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## PRAKTIKUM 1

```
!sudo apt install tesseract-ocr  
!pip install pytesseract  
!pip install opencv-python
```

```
● Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
tesseract-ocr is already the newest version (4.1.1-2.1build1).  
0 upgraded, 0 newly installed, 0 to remove and 24 not upgraded.  
Requirement already satisfied: pytesseract in /usr/local/lib/python3.10/site-packages (0.3.1)  
Requirement already satisfied: packaging>=21.3 in /usr/local/lib/python3.10/site-packages (from pytesseract>=0.3.1)  
Requirement already satisfied: Pillow>=8.0.0 in /usr/local/lib/python3.10/site-packages (from pytesseract>=0.3.1)  
Requirement already satisfied: opencv-python in /usr/local/lib/python3.10/site-packages (from pytesseract>=0.3.1)  
Requirement already satisfied: numpy>=1.21.2 in /usr/local/lib/python3.10/site-packages (from pytesseract>=0.3.1)
```

```
import re  
import cv2  
import numpy as np  
import pytesseract  
from pytesseract import Output  
from matplotlib import pyplot as plt  
  
from google.colab import drive  
drive.mount('/content/drive')
```

```
Drive already mounted at /content/drive; to attempt to forcibly remount
```

```

# get grayscale image
def get_grayscale(image):
    return cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)

# noise removal
def remove_noise(image):
    return cv2.medianBlur(image,5)

#thresholding
def thresholding(image):
    return cv2.threshold(image, 0, 255, cv2.THRESH_BINARY + cv2.THRESH_OTSU)

#dilation
def dilate(image):
    kernel = np.ones((5,5),np.uint8)
    return cv2.dilate(image, kernel, iterations = 1)

#erosion
def erode(image):
    kernel = np.ones((5,5),np.uint8)
    return cv2.erode(image, kernel, iterations = 1)

#opening - erosion followed by dilation
def opening(image):
    kernel = np.ones((5,5),np.uint8)
    return cv2.morphologyEx(image, cv2.MORPH_OPEN, kernel)

#canny edge detection
def canny(image):
    return cv2.Canny(image, 100, 200)

#skew correction
def deskew(image):
    coords = np.column_stack(np.where(image > 0))
    angle = cv2.minAreaRect(coords)[-1]
    if angle < -45:
        angle = -(90 + angle)
    else:
        angle = -angle
    (h, w) = image.shape[:2]
    center = (w // 2, h // 2)
    M = cv2.getRotationMatrix2D(center, angle, 1.0)
    rotated = cv2.warpAffine(image, M, (w, h), flags=cv2.INTER_CUBIC, borderMode=cv2.BORDER_CONSTANT)
    return rotated

#template matching
def match_template(image, template):
    return cv2.matchTemplate(image, template, cv2.TM_CCOEFF_NORMED)

# Plot original image
import cv2
import matplotlib.pyplot as plt

IMG_DIR = '/content/drive/MyDrive/content/Images/'
image = cv2.imread(IMG_DIR + 'aurebesh.jpg')

# Pastikan gambar berhasil dibaca sebelum melanjutkan
if image is not None:
    b, g, r = cv2.split(image)
    rgb_img = cv2.merge([r, g, b])
    plt.imshow(rgb_img)
    plt.title('AUREBESH ORIGINAL IMAGE')
    plt.show()
else:
    print("Gagal membaca gambar. Pastikan path gambar benar.")

```

Please follow our [blog](#) to see more information about new features, tips and tricks, and featured notebooks such as [Analyzing a Bank Failure with Colab](#).

## 2023-12-18

- Expanded access to AI coding has arrived in Colab across 175 locales for all tiers of Colab users
- Improvements to display of ML-based inline completions (for eligible Pro/Pro+ users)
- Started a series of [notebooks](#) highlighting Gemini API capabilities
- Enable ⌘/Ctrl+L to select the full line in an editor
- Fixed [bug](#) where we weren't correctly formatting output from multiple execution results
- Python package upgrades
  - CUDA 11.8 to CUDA 12.2
  - tensorflow 2.14.0 → 2.15.0
  - tensorboard 2.14.0 → 2.15.0
  - keras 2.14.0 → 2.15.0
  - Nvidia drivers 525.105.17 → 535.104.05
  - tensorflow-gcs-config 2.14.0 → 2.15.0
  - bigframes 0.13.0 → 0.17.0
  - geemap 0.28.2 → 0.29.6
  - pyarrow 9.0.0 → 10.0.1
  - google-generativeai 0.2.2 → 0.3.1
  - jax 0.4.20 → 0.4.23
  - jaxlib 0.4.20 → 0.4.23
- Python package inclusions
  - kagglehub 0.1.4
  - google-cloud-aiplatform 1.38.1

## 2023-11-27

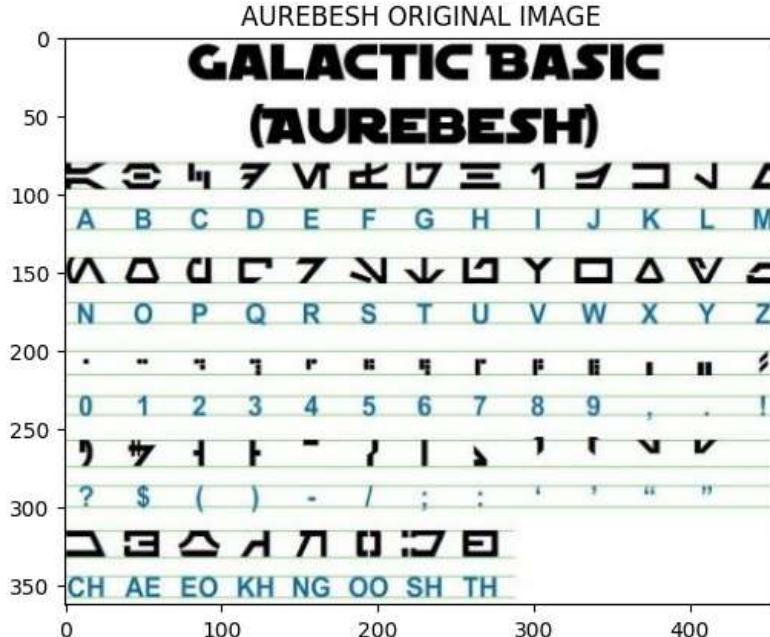
- Removed warning when calling await to make it render as code
- Added "Run selection" to the cell context menu
- Added highlighting for the %%python cell magic
- Launched AI coding features for Pro/Pro+ users in more locales
- Python package upgrades
  - bigframes 0.12.0 → 0.13.0
- Python package inclusions
  - transformers 4.35.2
  - google-generativeai 0.2.2

## 2023-11-08

- Launched Secrets, for safe storage of private keys on Colab ([tweet](#))
- Fixed issue where TensorBoard would not load ([#3990](#))
- Python package upgrades
  - lightgbm 4.0.0 → 4.1.0
  - bigframes 0.10.0 → 0.12.0
  - bokeh 3.2.2 → 3.3.0
  - duckdb 0.8.1 → 0.9.1
  - numba 0.56.4 → 0.58.1
  - tweepy 4.13.0 → 4.14.0
  - jax 0.4.16 → 0.4.20
  - jaxlib 0.4.16 → 0.4.20

## 2023-10-23

- Updated the **Open notebook** dialog for better usability and support for smaller screen sizes



```
# Preprocess image
```

```
gray = get_grayscale(image)
thresh = thresholding(gray)
opening = opening(gray)
canny = canny(gray)
images = {'gray': gray,
          'thresh': thresh,
          'opening': opening,
          'canny': canny}
```

```
# Plot images after preprocessing
```

```
fig = plt.figure(figsize=(13,13))
ax = []

rows = 2
columns = 2
keys = list(images.keys())
for i in range(rows*columns):
    ax.append( fig.add_subplot(rows, columns, i+1) )
    ax[-1].set_title('AUREBESH - ' + keys[i])
    plt.imshow(images[keys[i]], cmap='gray')
```

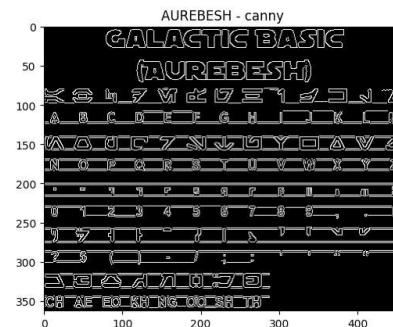
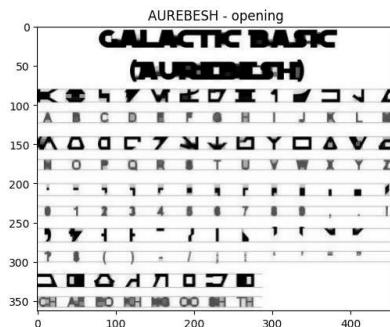
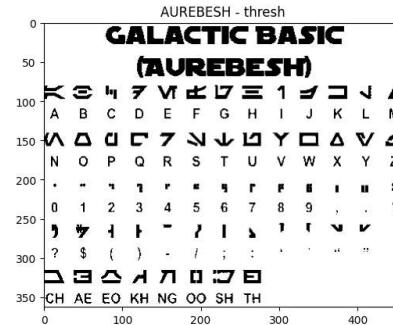
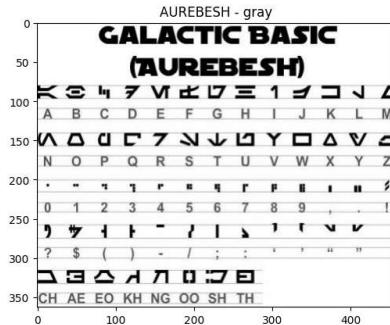
- Added smart paste support for data from Google Sheets for R notebooks
- Enabled showing release notes in a tab
- Launched AI coding features for Pro/Pro+ users in Australia AU Canada CA India IN and Japan JP ([tweet](#))
- Python package upgrades
  - earthengine-api 0.1.357 -> 0.1.375
  - flax 0.7.2 -> 0.7.4
  - geemap 0.27.4 -> 0.28.2
  - jax 0.4.14 -> 0.4.16
  - jaxlib 0.4.14 -> 0.4.16
  - keras 2.13.1 -> 2.14.0
  - tensorboard 2.13.0 -> 2.14.1
  - tensorflow 2.13.0 -> 2.14.0
  - tensorflow-gcs-config 2.13.0 -> 2.14.0
  - tensorflow-hub 0.14.0 -> 0.15.0
  - tensorflow-probability 0.20.1 -> 0.22.0
  - torch 2.0.1 -> 2.1.0
  - torchaudio 2.0.2 -> 2.1.0
  - torchtext 0.15.2 -> 0.16.0
  - torchvision 0.15.2 -> 0.16.0
  - xgboost 1.7.6 -> 2.0.0
- Python package inclusions
  - bigframes 0.10.0
  - malloy 2023.1056

## 2023-09-22

- Added the ability to scope an AI generated suggestion to a specific Pandas dataframe ([tweet](#))
- Added Colab link previews to Docs ([tweet](#))
- Added smart paste support for data from Google Sheets
- Increased font size of dropdowns in interactive forms
- Improved rendering of the notebook when printing
- Python package upgrades
  - tensorflow 2.12.0 -> 2.13.0
  - tensorboard 2.12.3 -> 2.13.0
  - keras 2.12.0 -> 2.13.0
  - tensorflow-gcs-config 2.12.0 -> 2.13.0
  - scipy 1.10.1 -> 1.11.2
  - cython 0.29.6 -> 3.0.2
- Python package inclusions
  - geemap 0.26.0

## 2023-08-18

- Added "Change runtime type" to the menu in the connection button
- Improved auto-reconnection to an already running notebook ([#3764](#))
- Increased the specs of our highmem machines for Pro users
- Fixed add-apt-repository command on Ubuntu 22.04 runtime ([#3867](#))
- Python package upgrades
  - bokeh 2.4.3 -> 3.2.2
  - cmake 3.25.2 -> 3.27.2
  - cryptography 3.4.8 -> 41.0.3
  - dask 2022.12.1 -> 2023.8.0
  - distributed 2022.12.1 -> 2023.8.0
  - earthengine-api 0.1.358 -> 0.1.364
  - flax 0.7.0 -> 0.7.2
  - ipython-sql 0.4.0 -> 0.5.0
  - jax 0.4.13 -> 0.4.14
  - jaxlib 0.4.13 -> 0.4.14



- lightgbm 3.3.5 → 4.0.0
- mkl 2019.0 → 2023.2.0
- notebook 6.4.8 → 6.5.5
- numpy 1.22.4 → 1.23.5
- opencv-python 4.7.0.72 → 4.8.0.76
- pillow 8.4.0 → 9.4.0
- plotly 5.13.1 → 5.15.0
- prettytable 0.7.2 → 3.8.0
- pytensor 2.10.1 → 2.14.2
- spacy 3.5.4 → 3.6.1
- statsmodels 0.13.5 → 0.14.0
- xarray 2022.12.0 → 2023.7.0

- Python package inclusions

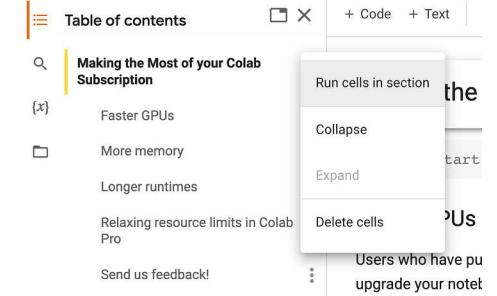
- PyDrive2 1.6.3

## 2023-07-21

- Launched auto-plotting for dataframes, available using the chart button that shows up alongside datatables ([post](#))



- Added a menu to the table of contents to support running a section or collapsing/expanding sections ([post](#))



- Added an option to automatically run the first cell or section, available under Edit → Notebook settings ([post](#))

### Notebook settings

Runtime type: Python 3

Hardware accelerator: None

Automatically run the first cell or section

Omit code cell output when saving this notebook

Cancel Save

- Launched Pro/Pro+ to Algeria, Argentina, Chile, Ecuador, Egypt, Ghana, Kenya, Malaysia, Nepal, Nigeria, Peru, Rwanda, Saudi Arabia, South Africa, Sri Lanka, Tunisia, and Ukraine ([tweet](#))
- Added a command, "Toggle tab moves focus" for toggling tab trapping in the editor (Tools → Command palette, "Toggle tab moves focus")
- Fixed issue where `files.upload()` was sometimes returning an incorrect filename ([#1550](#))
- Fixed f-string syntax highlighting bug ([#3802](#))
- Disabled ambiguous characters highlighting for commonly used LaTeX characters ([#3648](#))
- Upgraded Ubuntu from 20.04 LTS to [22.04 LTS](#)
- Updated the Colab Marketplace VM image
- Python package upgrades:
  - autograd 1.6.1 → 1.6.2
  - drivefs 76.0 → 77.0
  - flax 0.6.11 → 0.7.0
  - earthengine-api 0.1.357 → 0.1.358

```
# Get OCR output using Pytesseract

custom_config = r'--oem 3 --psm 6'
print('-----')
print('TESSERACT OUTPUT --> ORIGINAL IMAGE')
print('-----')
print(pytesseract.image_to_string(image, config=custom_config))
print('\n-----')
print('TESSERACT OUTPUT --> THRESHOLDED IMAGE')
print('-----')
print(pytesseract.image_to_string(image, config=custom_config))
print('\n-----')
print('TESSERACT OUTPUT --> OPENED IMAGE')
print('-----')
print(pytesseract.image_to_string(image, config=custom_config))
print('\n-----')
print('TESSERACT OUTPUT --> CANNY EDGE IMAGE')
print('-----')
print(pytesseract.image_to_string(image, config=custom_config))
```

-----  
TESSERACT OUTPUT --> ORIGINAL IMAGE

GALACTIC BASIC  
(AUREBESH)  
—<ESe7F7VMEVESI1VIaVNe  
Ze CD ee ee eT re  
AOde7TNVYOYOAVG.A  
SO 8 ee TC we  
Sse ee  
SE eS  
a 2, 1S a; A  
a a a ce a a  
ASoSANnNADIE  
CH AE EO KH NG OO SH TH

-----  
TESSERACT OUTPUT --> THRESHOLDED IMAGE

GALACTIC BASIC  
(AUREBESH)  
—<ESe7F7VMEVESI1VIaVNe  
Ze CD ee ee eT re  
AOde7TNVYOYOAVG.A  
SO 8 ee TC we  
Sse ee  
SE eS  
a 2, 1S a; A  
a a a ce a a  
ASoSANnNADIE  
CH AE EO KH NG OO SH TH

-----  
TESSERACT OUTPUT --> OPENED IMAGE

GALACTIC BASIC  
(AUREBESH)  
—<ESe7F7VMEVESI1VIaVNe  
Ze CD ee ee eT re  
AOde7TNVYOYOAVG.A  
SO 8 ee TC we  
Sse ee  
SE eS  
a 2, 1S a; A  
a a a ce a a  
ASoSANnNADIE  
CH AE EO KH NG OO SH TH

- GDAL 3.3.2->3.4.3
- google-cloud-bigquery-storage 2.20.0 -> 2.22.2
- gsheets-dataframe 3.0.8 -> 3.3.1
- holidays 0.27.1 -> 0.29
- jax 0.4.10 -> jax 0.4.13
- jaxlib 0.4.10 -> jax 0.4.13
- jupyterlab-widgets 3.0.7 -> 3.0.8
- nbformat 5.9.0 -> 5.9.1
- opencv-python-headless 4.7.0.72 -> 4.8.0.74
- pygame 2.4.0 -> 2.5.0
- spacy 3.5.3 -> 3.5.4
- SQLAlchemy 2.0.16 -> 2.0.19
- tabulate 0.8.10 -> 0.9.0
- tensorflow-hub 0.13.0 -> 0.14.0

## 2023-06-23

- Launched AI coding features to subscribed users starting with Pro+ users in the US ([tweet](#), [post](#))
- Added the Kernel Selector in the Notebook Settings ([tweet](#))
- Fixed double space trimming issue in markdown [#3766](#)
- Fixed run button indicator not always centered [#3609](#)
- Fixed inconsistencies for automatic indentation on multi-line [#3697](#)
- Upgraded Python from 3.10.11 to 3.10.12
- Python package updates:
  - duckdb 0.7.1 -> 0.8.1
  - earthengine-api 0.1.350 -> 0.1.357
  - flax 0.6.9 -> 0.6.11
  - google-cloud-bigquery 3.9.0 -> 3.10.0
  - google-cloud-bigquery-storage 2.19.1 -> 2.20.0
  - grpcio 1.54.0 -> 1.56.0
  - holidays 0.25 -> 0.27.1
  - nbformat 5.8.0 -> 5.9.0
  - prophet 1.1.3 -> 1.1.4
  - pydata-google-auth 1.7.0 -> 1.8.0
  - spacy 3.5.2 -> 3.5.3
  - tensorboard 2.12.2 -> 2.12.3
  - xgboost 1.7.5 -> 1.7.6
- Python package inclusions:
  - gcsfs 2023.6.0
  - geopandas 0.13.2
  - google-cloud-bigquery-connection 1.12.0
  - google-cloud-functions 1.13.0
  - grpc-google-iam-v1 0.12.6
  - multidict 6.0.4
  - tensorboard-data-server 0.7.1

## 2023-06-02

- Released the new site [colab.google](#)
- Published Colab's Docker runtime image to us-docker.pkg.dev/colab-images/public/runtime ([tweet](#), [instructions](#))
- Launched support for Google children accounts ([tweet](#))
- Launched DagsHub integration ([tweet](#), [post](#))
- Upgraded to Monaco Editor Version 0.37.1
- Fixed various Vim keybinding bugs
- Fixed issue where the N and P letters sometimes couldn't be typed ([#3664](#))
- Fixed rendering support for compositional inputs ([#3660](#), [#3679](#))
- Fixed lag in notebooks with lots of cells ([#3676](#))
- Improved support for R by adding a Runtime type notebook setting (Edit -> Notebook

```
-----  
TESSERACT OUTPUT --> CANNY EDGE IMAGE  
-----  
GALACTIC BASIC  
(AUREBESH)  
—<ESe7F7VMEVESI1VIaVNe  
Ze CD ee ee eT re
```

## PRAKTIKUM 2

```
# Plot gambar original

# Membaca gambar dari direktori
image = cv2.imread(IMG_DIR + 'invoice-sample.jpg')

# Memisahkan saluran warna (blue, green, red) karena matplotlib menggunakan
b, g, r = cv2.split(image)
rgb_img = cv2.merge([r, g, b])

# Menampilkan gambar dalam ukuran tertentu
plt.figure(figsize=(16, 12))
plt.imshow(rgb_img)
plt.title('CONTOH GAMBAR INVOICE')
plt.show()
```

settings)

- Improved documentation for connecting to a local runtime (Connect → Connect to a local runtime)
- Python package updates:
  - holidays 0.23 → 0.25
  - jax 0.4.8 → 0.4.10
  - jaxlib 0.4.8 → 0.4.10
  - pip 23.0.1 → 23.1.2
  - tensorflow-probability 0.19.0 → 0.20.1
  - torch 2.0.0 → 2.0.1
  - torchaudio 2.0.1 → 2.0.2
  - torchdata 0.6.0 → 0.6.1
  - torchtext 0.15.1 → 0.15.2
  - torchvision 0.15.1 → 0.15.2
  - tornado 6.2 → 6.3.1

## 2023-05-05

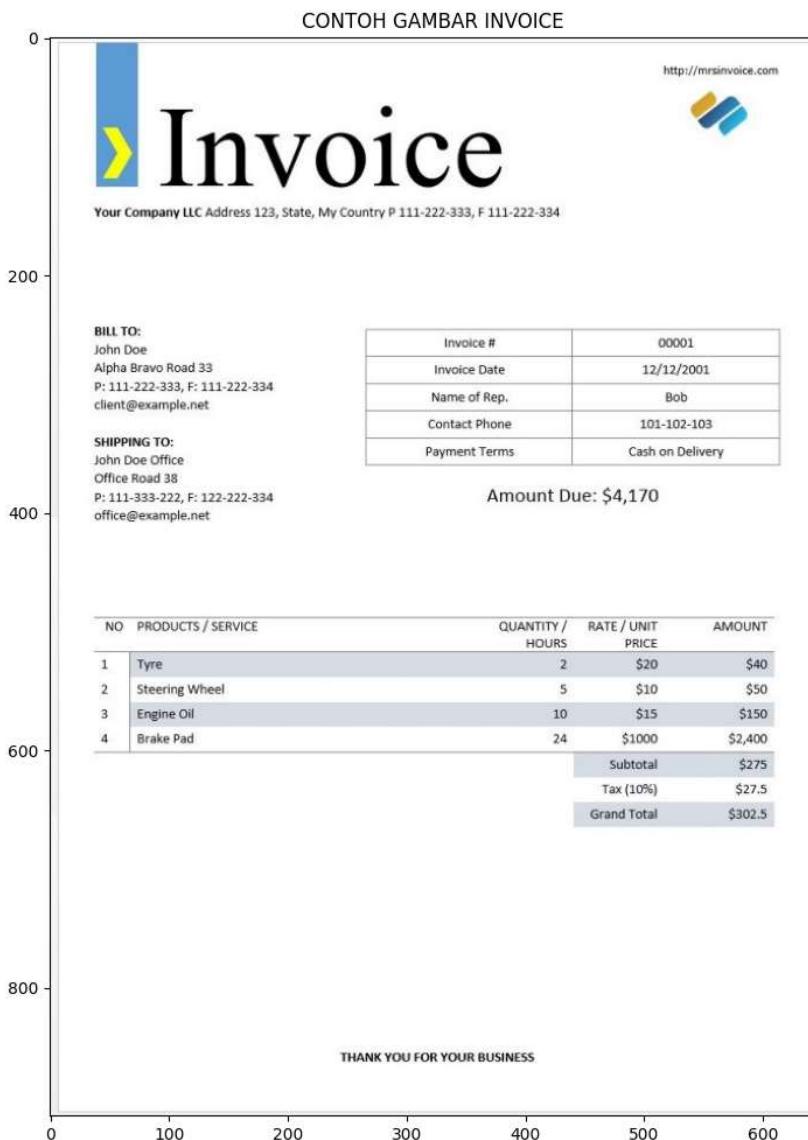
- Released GPU type selection for paid users, allowing them to choose a preferred Nvidia GPU
- Upgraded R from 4.2.3 to 4.3.0
- Upgraded Python from 3.9.16 to 3.10.11
- Python package updates:
  - attrs 22.2.0 → attrs 23.1.0
  - earthengine-api 0.1.349 → earthengine-api 0.1.350
  - flax 0.6.8 → 0.6.9
  - grpcio 1.53.0 → 1.54.0
  - nbclient 0.7.3 → 0.7.4
  - tensorflow-datasets 4.8.3 → 4.9.2
  - termcolor 2.2.0 → 2.3.0
  - zict 2.2.0 → 3.0.0

## 2023-04-14

- Python package updates:
  - google-api-python-client 2.70.0 → 2.84.0
  - google-auth-oauthlib 0.4.6 → 1.0.0
  - google-cloud-bigquery 3.4.2 → 3.9.0
  - google-cloud-datastore 2.11.1 → 2.15.1
  - google-cloud-firebase 2.7.3 → 2.11.0
  - google-cloud-language 2.6.1 → 2.9.1
  - google-cloud-storage 2.7.0 → 2.8.0
  - google-cloud-translate 3.8.4 → 3.11.1
  - networkx 3.0 → 3.1
  - notebook 6.3.0 → 6.4.8
  - jax 0.4.7 → 0.4.8
  - pandas 1.4.4 → 1.5.3
  - spacy 3.5.1 → 3.5.2
  - SQLAlchemy 1.4.47 → 2.0.9
  - xgboost 1.7.4 → 1.7.5

## 2023-03-31

- Improve bash ! syntax highlighting ([GitHub issue](#))
- Fix bug where VIM keybindings weren't working in the file editor
- Upgraded R from 4.2.2 to 4.2.3
- Python package updates:
  - arviz 0.12.1 → 0.15.1
  - astropy 4.3.1 → 5.2.2
  - dopamine-rl 1.0.5 → 4.0.6
  - gensim 3.6.0 → 4.3.1
  - ipykernel 5.3.4 → 5.5.6
  - ipython 7.9.0 → 7.34.0
  - jax 0.4.4 → 0.4.7
  - jaxlib 0.4.4 → 0.4.7
  - jupyter\_core 5.2.0 → 5.3.0
  - keras 2.11.0 → 2.12.0
  - lightgbm 2.2.3 → 3.3.5



- matplotlib 3.5.3 -> 3.7.1
- nltk 3.7 -> 3.8.1
- opencv-python 4.6.0.66 -> 4.7.0.72
- plotly 5.5.0 -> 5.13.1
- pymc 4.1.4 -> 5.1.2
- seaborn 0.11.2 -> 0.12.2
- spacy 3.4.4 -> 3.5.1
- sympy 1.7.1 -> 1.11.1
- tensorboard 2.11.2 -> 2.12.0
- tensorflow 2.11.0 -> 2.12.0
- tensorflow-estimator 2.11.0 -> 2.12.0
- tensorflow-hub 0.12.0 -> 0.13.0
- torch 1.13.1 -> 2.0.0
- torchaudio 0.13.1 -> 2.0.1
- torchtext 0.14.1 -> 0.15.1
- torchvision 0.14.1 -> 0.15.1

## 2023-03-10

- Added the [Colab editor shortcuts](#) example notebook
- Fixed triggering of @-mention and email autocomplete for large comments ([GitHub issue](#))
- Added View Resources to the Runtime menu
- Made file viewer images fit the view by default, resizing to original size on click
- When in VIM mode, enable copy as well as allowing propagation to monaco-vim to escape visual mode ([GitHub issue](#))
- Upgraded CUDA 11.6.2 -> 11.8.0 and cuDNN 8.4.0.27 -> 8.7.0.84
- Upgraded Nvidia drivers 525.78.01 -> 530.30.02
- Upgraded Python 3.8.10 -> 3.9.16
- Python package updates:
  - beautifulsoup4 4.6.3 -> 4.9.3
  - bokeh 2.3.3 -> 2.4.3
  - debugpy 1.0.0 -> 1.6.6
  - Flask 1.1.4 -> 2.2.3
  - jax 0.3.25 -> 0.4.4
  - jaxlib 0.3.25 -> 0.4.4
  - Jinja2 2.11.3 -> 3.1.2
  - matplotlib 3.2.2 -> 3.5.3
  - nbconvert 5.6.1 -> 6.5.4
  - pandas 1.3.5 -> 1.4.4
  - pandas-datareader 0.9.0 -> 0.10.0
  - pandas-profiling 1.4.1 -> 3.2.0
  - Pillow 7.1.2 -> 8.4.0
  - plotnine 0.8.0 -> 0.10.1
  - scikit-image 0.18.3 -> 0.19.3
  - scikit-learn 1.0.2 -> 1.2.2
  - scipy 1.7.3 -> 1.10.1
  - setuptools 57.4.0 -> 63.4.3
  - sklearn-pandas 1.8.0 -> 2.2.0
  - statsmodels 0.12.2 -> 0.13.5
  - urllib3 1.24.3 -> 1.26.14
  - Werkzeug 1.0.1 -> 2.2.3
  - wrapt 1.14.1 -> 1.15.0
  - xgboost 0.90 -> 1.7.4
  - xlrd 1.2.0 -> 2.0.1

## 2023-02-17

- Show graphs of RAM and disk usage in notebook toolbar
- Copy cell links directly to the clipboard instead of showing a dialog when clicking on the link icon in the cell toolbar
- Updated the [Colab Marketplace VM image](#)
- Upgraded CUDA to 11.6.2 and cuDNN to 8.4.0.27
- Python package updates:
  - tensorflow 2.9.2 -> 2.11.0

```
# Membaca gambar dari direktori
image = cv2.imread(IMG_DIR + 'invoice-sample.jpg')

# Mendapatkan dimensi tinggi (h), lebar (w), dan channel warna (c) dari gambar
h, w, c = image.shape

# Menggunakan pytesseract.image_to_boxes() untuk mendapatkan informasi kotak karakter
boxes = pytesseract.image_to_boxes(image)

# Iterasi melalui setiap baris hasil dan membuat kotak pada gambar menggunakan cv2.rectangle()
for b in boxes.splitlines():
    b = b.split(' ')
    image = cv2.rectangle(image, (int(b[1]), h - int(b[2])), (int(b[3]), h - int(b[4])), (0, 255, 0))

# Memisahkan channel warna untuk mengonversi dari BGR ke RGB
b, g, r = cv2.split(image)
rgb_img = cv2.merge([r, g, b])

# Menampilkan gambar dengan kotak karakter
plt.figure(figsize=(16, 12))
plt.imshow(rgb_img)
plt.title('CONTOH INVOICE DENGAN CHARACTER LEVEL BOXES')
plt.show()
```

- tensorflow 2.9.1 → 2.11.2
- keras 2.9.0 → 2.11.0
- tensorflow-estimator 2.9.0 → 2.11.0
- tensorflow-probability 0.17.0 → 0.19.0
- tensorflow-gcs-config 2.9.0 → 2.11.0
- earthengine-api 0.1.339 → 0.1.341
- flatbuffers 1.12 → 23.1.21
- platformdirs 2.6.2 → 3.0.0
- pydata-google-auth 1.6.0 → 1.7.0
- python-utils 3.4.5 → 3.5.2
- tenacity 8.1.0 → 8.2.1
- tifffile 2023.1.23.1 → 2023.2.3
- notebook 5.7.16 → 6.3.0
- tornado 6.0.4 → 6.2
- aiohttp 3.8.3 → 3.8.4
- charset-normalizer 2.1.1 → 3.0.1
- fastai 2.7.0 → 2.7.1
- soundfile 0.11.0 → 0.12.1
- typing-extensions 4.4.0 → 4.5.0
- widgetsnbextension 3.6.1 → 3.6.2
- pydantic 1.10.4 → 1.10.5
- zipp 3.12.0 → 3.13.0
- numpy 1.21.6 → 1.22.4
- drivefs 66.0 → 69.0
- gdal 3.0.4 → 3.3.2 [GitHub issue](#)

- Added libudunits2-dev for smoother R package installs [GitHub issue](#)

## 2023-02-03

- Improved tooltips for pandas series to show common statistics about the series object
- Made the forms dropdown behave like an autocomplete box when it allows input
- Updated the nvidia driver from 460.32.03 to 510.47.03
- Python package updates:
  - absl-py 1.3.0 → 1.4.0
  - bleach 5.0.1 → 6.0.0
  - cachetools 5.2.1 → 5.3.0
  - cmdstanpy 1.0.8 → 1.1.0
  - dnspython 2.2.1 → 2.3.0
  - fsspec 2022.11.0 → 2023.1.0
  - google-cloud-bigquery-storage 2.17.0 → 2.18.1
  - holidays 0.18 → 0.19
  - jupyter-core 5.1.3 → 5.2.0
  - packaging 21.3 → 23.0
  - prometheus-client 0.15.0 → 0.16.0
  - pyct 0.4.8 → 0.5.0
  - pydata-google-auth 1.5.0 → 1.6.0
  - python-slugify 7.0.0 → 8.0.0
  - sqlalchemy 1.4.46 → 2.0.0
  - tensorflow-io-gcs-filesystem 0.29.0 → 0.30.0
  - tifffile 2022.10.10 → 2023.1.23.1
  - zipp 3.11.0 → 3.12.0
  - Pinned sqlalchemy to version 1.4.46

## 2023-01-12

- Added support for @-mention and email autocomplete in comments
- Improved errors when GitHub notebooks can't be loaded
- Increased color contrast for colors used for syntax highlighting in the code editor
- Added terminal access for custom GCE VM runtimes
- Upgraded Ubuntu from 18.04 LTS to 20.04 LTS ([GitHub issue](#))
- Python package updates:
  - GDAL 2.2.2 → 2.2.3.



```
# Membaca gambar contoh invoice
image = cv2.imread(IMG_DIR + 'invoice-sample.jpg')

# Menggunakan pytesseract.image_to_data() untuk mendapatkan data teks dari
d = pytesseract.image_to_data(image, output_type=Output.DICT)

# Menampilkan kunci-kunci data yang diperoleh dari hasil OCR
print('DATA KEYS: \n', d.keys())

DATA KEYS:
dict_keys(['level', 'page_num', 'block_num', 'par_num', 'line_num', 'v
```

- NumPy from 1.21.5 to 1.21.6.
- attrs 22.1.0 -> 22.2.0
- chardet 3.0.4 -> 4.0.0
- cloudpickle 1.6.0 -> 2.2.0
- filelock 3.8.2 -> 3.9.0
- google-api-core 2.8.2 -> 2.11.0
- google-api-python-client 1.12.11 -> 2.70.0
- google-auth-httplib2 0.0.3 -> 0.1.0
- google-cloud-bigquery 3.3.5 -> 3.4.1
- google-cloud-datastore 2.9.0 -> 2.11.0
- google-cloud-firebase 2.7.2 -> 2.7.3
- google-cloud-storage 2.5.0 -> 2.7.0
- holidays 0.17.2 -> holidays 0.18
- importlib-metadata 5.2.0 -> 6.0.0
- networkx 2.8.8 -> 3.0
- opencv-python-headless 4.6.0.66 -> 4.7.0.68
- pip 21.1.3 -> 22.0.4
- pip-tools 6.2.0 -> 6.6.2
- prettytable 3.5.0 -> 3.6.0
- requests 2.23.0 -> 2.25.1
- termcolor 2.1.1 -> 2.2.0
- torch 1.13.0 -> 1.13.1
- torchaudio 0.13.0 -> 0.13.1
- torchtext 0.14.0 -> 0.14.1
- torchvision 0.14.0 -> 0.14.1

## 2022-12-06

- Made fallback runtime version available until mid-December ([GitHub issue](#))
- Upgraded to Python 3.8 ([GitHub issue](#))
- Python package updates:
  - jax from 0.3.23 to 0.3.25, jaxlib from 0.3.22 to 0.3.25
  - pyarrow from 6.0.1 to 9.0.0
  - torch from 1.12.1 to 1.13.0
  - torchaudio from 0.12.1 to 0.13.0
  - torchvision from 0.13.1 to 0.14.0
  - torchtext from 0.13.1 to 0.14.0
  - xlrd from 1.1.0 to 1.2.0
  - DriveFS from 62.0.1 to 66.0.3
- Made styling of markdown tables in outputs match markdown tables in text cells
- Improved formatting for empty interactive table rows
- Fixed syntax highlighting for variables with names that contain Python keywords ([GitHub issue](#))

## 2022-11-11

- Added more dark editor themes for Monaco (when in dark mode, "Editor colorization" appears as an option in the Editor tab of the Tools → Settings dialog)
- Fixed bug where collapsed forms were deleted on mobile ([GitHub issue](#))
- Python package updates:
  - rpy2 from 3.4.0 to 3.5.5 ([GitHub issue](#))
  - notebook from 5.5.0 to 5.7.16
  - tornado from 5.1.1 to 6.0.4
  - tensorflow\_probability from 0.16.0 to 0.17.0
  - pandas-gbq from 0.13.3 to 0.17.9
  - protobuf from 3.17.3 to 3.19.6
  - google-api-core[grpc] from 1.31.5 to 2.8.2
  - google-cloud-bigquery from 1.21.0 to 3.3.5
  - google-cloud-core from 1.0.1 to 2.3.2
  - google-cloud-datastore from 1.8.0 to 2.9.0
  - google-cloud-firestore from 1.7.0 to 2.7.2

```

n_boxes = len(d['text'])
for i in range(n_boxes):
    # Kondisi untuk hanya memilih kotak dengan kepercayaan > 60%
    if int(d['conf'][i]) > 60:
        # Mendapatkan koordinat dan ukuran kotak kata
        (x, y, w, h) = (d['left'][i], d['top'][i], d['width'][i], d['height'][i])
        # Membuat kotak pada gambar untuk kata dengan kepercayaan > 60%
        image = cv2.rectangle(image, (x, y), (x + w, y + h), (0, 255, 0), 2)

    # Memisahkan channel warna untuk mengonversi dari BGR ke RGB
    b, g, r = cv2.split(image)
    rgb_img = cv2.merge([r, g, b])

# Menampilkan gambar dengan kotak kata berdasarkan kepercayaan > 60%
plt.figure(figsize=(16, 12))
plt.imshow(rgb_img)
plt.title('CONTOH INVOICE DENGAN KOTAK KATA LEVEL')
plt.show()

```

- google-cloud-language from 1.2.0 to 2.6.1
- google-cloud-storage from 1.18.0 to 2.5.0
- google-cloud-translate from 1.5.0 to 3.8.4

## 2022-10-21

- Launched a single-click way to get from BigQuery to Colab to further explore query results ([announcement](#))
- Launched [Pro, Prot, and Pay As You Go](#) to 19 additional countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, Greece, Hungary, Latvia, Lithuania, Norway, Portugal, Romania, Slovakia, Slovenia, and Sweden ([tweet](#))
- Updated jax from 0.3.17 to 0.3.23, jaxlib from 0.3.15 to 0.3.22, TensorFlow from 2.8.2 to 2.9.2, CUDA from 11.1 to 11.2, and cuDNN from 8.0 to 8.1 ([backend-info](#))
- Added a readonly option to [drive.mount](#)
- Fixed bug where Xarray was not working ([GitHub issue](#))
- Modified Markdown parsing to ignore block quote symbol within MathJax ([GitHub issue](#))

## 2022-09-30

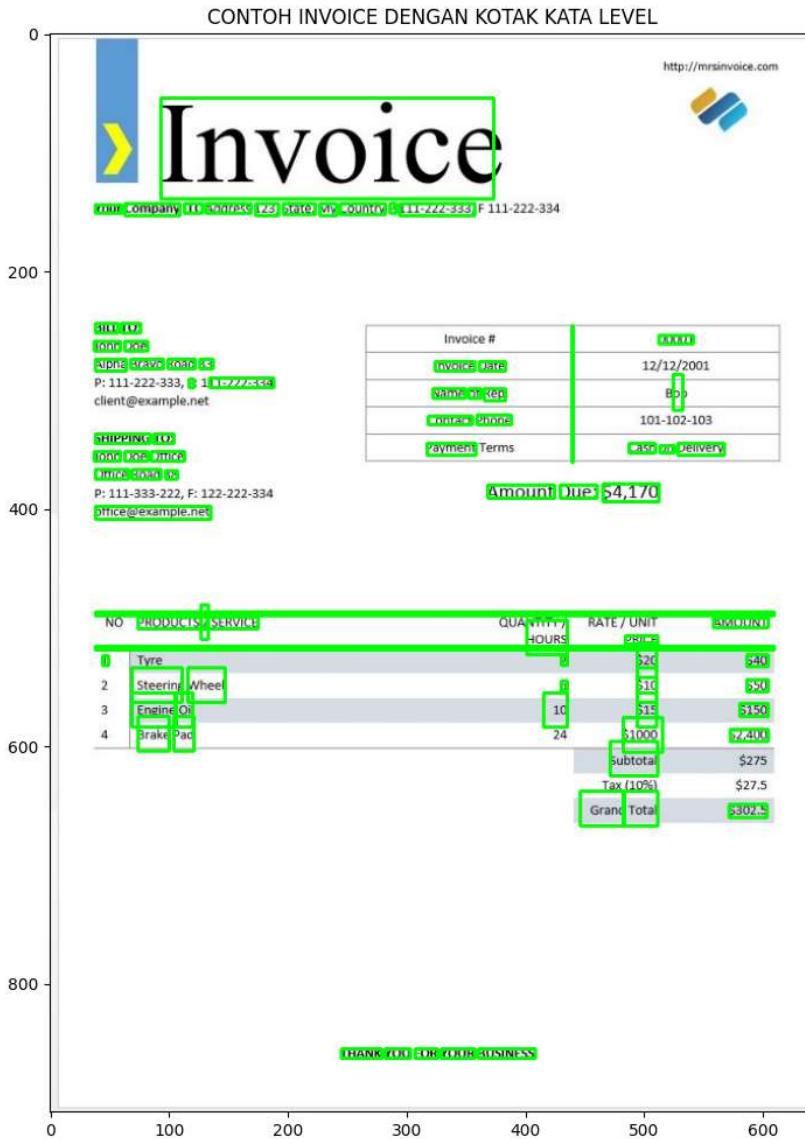
- Launched [Pay As You Go](#), allowing premium GPU access without requiring a subscription
- Added vim and tcllib to our runtime image
- Fixed bug where open files were closed on kernel disconnect ([GitHub issue](#))
- Fixed bug where the play button/execution indicator was not clickable when scrolled into the cell output ([GitHub issue](#))
- Updated the styling for form titles so that they avoid obscuring the code editor
- Created a GitHub repo, [backend-info](#), with the latest apt-list.txt and pip-freeze.txt files for the Colab runtime ([GitHub issue](#))
- Added [files.upload\\_file\(filename\)](#) to upload a file from the browser to the runtime with a specified filename

## 2022-09-16

- Upgraded pymc from 3.11.0 to 4.1.4, jax from 0.3.14 to 0.3.17, jaxlib from 0.3.14 to 0.3.15, fsspec from 2022.8.1 to 2022.8.2
- Modified our save flow to avoid persisting Drive filenames as titles in notebook JSON
- Updated our [Terms of Service](#)
- Modified the Jump to Cell command to locate the cursor at the end of the command palette input (Jump to cell in Tools → Command palette in a notebook with section headings)
- Updated the styling of the Drive notebook comment UI
- Added support for terminating your runtime from code: python from google.colab import runtime runtime.unassign()
- Added regex filter support to the Recent notebooks dialog
- Inline google.colab.files.upload JS to fix files.upload() not working ([GitHub issue](#))

## 2022-08-26

- Upgraded PyYAML from 3.13 to 6.0 ([GitHub issue](#)), drivefs from 61.0.3 to 62.0.1
- Upgraded TensorFlow from 2.8.2 to 2.9.1 and ipywidgets from 7.7.1 to 8.0.1 but rolled both



back due to a number of user reports ([GitHub issue](#), [GitHub issue](#))

- Stop persisting inferred titles in notebook JSON ([GitHub issue](#))
- Fix bug in background execution which affected some Pro+ users ([GitHub issue](#))
- Fix bug where Download as .py incorrectly handled text cells ending in a double quote
- Fix bug for Pro and Pro+ users where we weren't honoring the preference (Tools → Settings) to use a temporary scratch notebook as the default landing page
- Provide undo/redo for scratch cells
- When writing ipynb files, serialize empty multiline strings as [] for better consistency with JupyterLab

## 2022-08-11

- Upgraded ipython from 5.5.0 to 7.9.0, fbprophet 0.7 to prophet 1.1, tensorflow-datasets from 4.0.1 to 4.6.0, drivefs from 60.0.2 to 61.0.3, pytorch from 1.12.0 to 1.12.1, numba from 0.51 to 0.56, and lxml from 4.2.0 to 4.9.1
- Loosened our requests version requirement ([GitHub issue](#))
- Removed support for TensorFlow 1
- Added Help → Report Drive abuse for Drive notebooks
- Fixed indentation for Python lines ending in [
- Modified styling of tables in Markdown to left-align them rather than centering them
- Fixed special character replacement when copying interactive tables as Markdown
- Fixed ansi 8-bit color parsing ([GitHub issue](#))
- Configured logging to preempt transitive imports and other loading from implicitly configuring the root logger
- Modified forms to use a value of None instead of causing a parse error when clearing raw and numeric-typed form fields

## 2022-07-22

- Update scipy from 1.4.1 to 1.7.3, drivefs from 59.0.3 to 60.0.2, pytorch from 1.11 to 1.12, jax/jaxlib from 0.3.8 to 0.3.14, opencv-python from 4.1.2.30 to 4.6.0.66, spaCy from 3.3.1 to 3.4.0, and dlib from 19.18.0 to 19.24.0
- Fix Open in tab doc link which was rendering incorrectly ([GitHub issue](#))
- Add a preference for the default tab orientation to the Site section of the settings menu under Tools → Settings
- Show a warning for USE\_AUTH\_EPHEM usage when running authenticate\_user on a TPU runtime ([code](#))

## 2022-07-01

- Add a preference for code font to the settings menu under Tools → Settings
- Update drivefs from 58.0.3 to 59.0.3 and spacy from 2.2.4 to 3.3.1
- Allow `display_data` and `execute_result` text outputs to wrap, matching behavior of JupyterLab (does not affect stream outputs/print statements).
- Improve LSP handling of some magics, esp. `%%writefile` ([GitHub issue](#)).
- Add a [FAQ entry](#) about the mount Drive button behavior and include link buttons for each FAQ entry.

```

image = cv2.imread(IMG_DIR + 'invoice-sample.jpg')

# Pola tanggal dalam format dd/mm/yyyy
date_pattern = '^(0[1-9]|1[0-9]|2[01])/(0[1-9]|1[012])/(19|20)\d\d$'

n_boxes = len(d['text'])
for i in range(n_boxes):
    # Memeriksa apakah kotak memiliki tingkat kepercayaan lebih dari 60%
    if int(d['conf'][i]) > 60:
        # Memeriksa apakah teks di dalam kotak sesuai dengan pola tanggal
        if re.match(date_pattern, d['text'][i]):
            # Mendapatkan koordinat dan ukuran kotak kata
            (x, y, w, h) = (d['left'][i], d['top'][i], d['width'][i], d['height'][i])
            # Membuat kotak pada gambar untuk tanggal yang sesuai dengan pola
            image = cv2.rectangle(image, (x, y), (x + w, y + h), (0, 255, 0), 2)

    # Memisahkan channel warna untuk mengonversi dari BGR ke RGB
    b, g, r = cv2.split(image)
    rgb_img = cv2.merge([r, g, b])

# Menampilkan gambar dengan kotak-kotak yang menandai lokasi tanggal
plt.figure(figsize=(16, 12))
plt.imshow(rgb_img)
plt.title('CONTOH INVOICE DENGAN KOTAK UNTUK TANGGAL')
plt.show()

```

- Fix bug where the notebook was sometimes hidden behind other tabs on load when in single pane view.
- Fix issue with inconsistent scrolling when an editor is in multi-select mode.
- Fix bug where clicking on a link in a form would navigate away from the notebook
- Show a confirmation dialog before performing Replace all from the Find and replace pane.

## 2022-06-10

- Update drivefs from 57.0.5 to 58.0.3 and tensorflow from 2.8.0 to 2.8.2
- Support more than 100 repos in the GitHub repo selector shown in the open dialog and the clone to GitHub dialog
- Show full notebook names on hover in the open dialog
- Improve the color contrast for links, buttons, and the ipywidgets.Accordion widget in dark mode

## 2022-05-20

- Support URL params for linking to some common pref settings: [force\\_theme=dark](#), [force\\_corgi\\_mode=1](#), [force\\_font\\_size=14](#). Params forced by URL are not persisted unless saved using Tools → Settings.
- Add a class `markdown-google-sans` to allow Markdown to render in Google Sans
- Update monaco-vim from 0.1.19 to 0.3.4
- Update drivefs from 55.0.3 to 57.0.5, jax from 0.3.4 to 0.3.8, and jaxlib from 0.3.2 to 0.3.7

## 2022-04-29

- Added 🐛 mode (under Miscellaneous in Tools → Settings)
- Added "Disconnect and delete runtime" option to the menu next to the Connect button
- Improved rendering of filter options in an interactive table
- Added git-lfs to the base image
- Updated torch from 1.10.0 to 1.11.0, jupyter-core from 4.9.2 to 4.10.0, and cmake from 3.12.0 to 3.22.3
- Added more details to our [FAQ](#) about unsupported uses (using proxies, downloading torrents, etc.)
- Fixed [issue](#) with apt-get dependencies

## 2022-04-15

- Add an option in the file browser to show hidden files.
- Upgrade gdown from 4.2.0 to 4.4.0, google-api-core[grpc] from 1.26.0 to 1.31.5, and pytz from 2018.4 to 2022.1

## 2022-03-25

- Launched [Pro/Prot](#) to 12 additional countries: Australia, Bangladesh, Colombia, Hong Kong, Indonesia, Mexico, New Zealand, Pakistan, Philippines, Singapore, Taiwan, and Vietnam
- Added [google.colab.auth.authenticate\\_service\\_account](#) to support using [Service Account keys](#)
- Update jax from 0.3.1 to 0.3.4 & jaxlib from 0.3.0 to 0.3.2
- Fixed an issue with Twitter previews of notebooks shared as Github Gists

```
# Membaca gambar asli
image = cv2.imread(IMG_DIR + 'greek-thai.png')

# Memisahkan channel warna untuk mengonversi dari BGR ke RGB
b, g, r = cv2.split(image)
rgb_img = cv2.merge([r, g, b])
```

## 2022-03-10

- Launched [Pro/Prot](#) to 10 new countries: Ireland, Israel, Italy, Morocco, the Netherlands, Poland, Spain, Switzerland, Turkey, and the United Arab Emirates
- Launched support for [scheduling notebooks for Prot+ users](#)
- Fixed bug in interactive datatables where Sorting by number did not work.