```
Start coding or generate with AI.
```

```
from google.colab import drive
drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

Parking Space Detection AI

```
Start coding or generate with AI.
```

Test availability of nvidia

```
!nvidia-smi
```

```
Sat Sep 21 13:22:04 2024
+---------------------------------------------------------------------------------------+
| NVIDIA-SMI 535.104.05             Driver Version: 535.104.05   CUDA Ve
|-----------------------------------------+----------------------+------
| GPU  Name                 Persistence-M | Bus-Id        Disp.A | Volat
| Fan  Temp   Perf          Pwr:Usage/Cap |         Memory-Usage | GPU-U
|                                         |                      |
|=========================================+======================+======
|   0  Tesla T4                       Off | 00000000:00:04.0 Off |
| N/A   57C    P8              10W /  70W |      0MiB / 15360MiB |
|                                         |                      |
+-----------------------------------------+----------------------+------

+---------------------------------------------------------------------------------------+
| Processes:
|  GPU   GI   CI        PID   Type   Process name
|        ID   ID
|=======================================================================================
```

Release notes

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.

2024-09-23

- Improved code snippet search
- Updated Marketplace image and public local runtime container
- Improved the look-and-feel of interactive form dropdowns and checkboxes
- Fixed bugs
  - activating the skip link caused the notebook to scroll out of view
  - toggling a checkbox too much caused the page to crash
  - lightning fast drags could cause orphaned tabs
  - custom widgets snippet would show for local runtimes

Python package upgrades

- accelerate 0.32.1 -> 0.34.2
- arviz 0.18.0 -> 0.19
- autograd 1.6.2 -> 1.7.0
- bigframes 1.14.0 -> 1.18.0
- dask 2024.7.1 -> 2024.8.0
- distributed 2024.7.1 -> 2024.8.0
- duckdb 0.10.3 -> 1.1.0
- earthengine-api 0.1.416 -> 1.0.0
- flax 0.8.4 -> 0.8.5
- gdown 5.1.0 -> 5.2.0
- geemap 0.33.1 -> 0.34.3
- geopandas 0.14.4 -> 1.0.1
- google-cloud-aiplatform 1.59.0 -> 1.67.1
- google-cloud-bigquery-storage 2.25.0 -> 2.26.0
- holidays 0.54 -> 0.57
- huggingface-hub 0.23.5 -> 0.24.7
- ibis-framework 8.0.0 -> 9.2.0
- jax 0.4.26 -> 0.4.33

```
|  No running processes found
+---------------------------------------------------------------------------+
```

Install dependencies

```
# @title Install dependencies

!pip install ultralytics
!pip install imageio --quiet
!pip install imageio-ffmpeg --quiet
!pip install opencv-python
```

```
Collecting ultralytics
  Downloading ultralytics-8.2.98-py3-none-any.whl.metadata (39 kB)
Requirement already satisfied: numpy<2.0.0,>=1.23.0 in /usr/local/lib/py
Requirement already satisfied: matplotlib>=3.3.0 in /usr/local/lib/pytho
Requirement already satisfied: opencv-python>=4.6.0 in /usr/local/lib/py
Requirement already satisfied: pillow>=7.1.2 in /usr/local/lib/python3.1
Requirement already satisfied: pyyaml>=5.3.1 in /usr/local/lib/python3.1
Requirement already satisfied: requests>=2.23.0 in /usr/local/lib/python
Requirement already satisfied: scipy>=1.4.1 in /usr/local/lib/python3.10
Requirement already satisfied: torch>=1.8.0 in /usr/local/lib/python3.10
Requirement already satisfied: torchvision>=0.9.0 in /usr/local/lib/pyth
Requirement already satisfied: tqdm>=4.64.0 in /usr/local/lib/python3.10
Requirement already satisfied: psutil in /usr/local/lib/python3.10/dist-
Requirement already satisfied: py-cpuinfo in /usr/local/lib/python3.10/d
Requirement already satisfied: pandas>=1.1.4 in /usr/local/lib/python3.1
Requirement already satisfied: seaborn>=0.11.0 in /usr/local/lib/python3
Collecting ultralytics-thop>=2.0.0 (from ultralytics)
  Downloading ultralytics_thop-2.0.6-py3-none-any.whl.metadata (9.1 kB)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.10
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/pytho
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/pytho
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python
Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/py
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.10
Requirement already satisfied: tzdata>=2022.1 in /usr/local/lib/python3
```

- jaxlib 0.4.26 -> 0.4.33
- kagglehub 0.2.9 -> 0.3.0
- lightgbm 4.4.0 -> 4.5.0
- matplotlib-venn 0.11.10 -> 1.1.1
- mizani 0.9.3 -> 0.11.4
- Pillow 9.4.0 -> 10.4.0
- plotly 5.15.0 -> 5.24.1
- plotnine 0.12.4 -> 0.13.6
- polars 0.20.2 -> 1.6.0
- progressbar2 4.2.0 -> 4.5.0
- PyDrive2 1.6.3 -> 1.20.0
- pymc 5.10.4 -> 5.16.2
- pytensor 2.18.6 -> 2.25.4
- scikit-image 0.23.2 -> 0.24.0
- scikit-learn 1.3.2 -> 1.5.2
- torch 2.3.1 -> 2.4.1
- torchaudio 2.3.1 -> 2.4.1
- torchvision 0.18.1 -> 0.19.1
- transformers 4.42.4 -> 4.44.2
- urllib3 2.0.7 -> 2.2.3
- xarray 2024.6.0 -> 2024.9.0

Python package inclusions

- bigquery-magics 0.2.0

2024-08-20

- TPU memory usage and utilization can now be checked with `!tpu-info`
- Gemini Chat responses are now grounded in relevant sources
- Added a new "Create Gemini API key" link in the user secrets panel
- Added a new "Gemini: Creating a prompt" snippet and touched up the existing "Gemini: Connecting to Gemini" snippet
- Added the ability to specify custom placeholder text for various interactive form params (see examples)
- Keyboard navigation a11y improvements to comments UI

```
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/li
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/pyth
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/pyth
Requirement already satisfied: filelock in /usr/local/lib/python3.10/dis
Requirement already satisfied: typing-extensions>=4.8.0 in /usr/local/li
Requirement already satisfied: sympy in /usr/local/lib/python3.10/dist-p
Requirement already satisfied: networkx in /usr/local/lib/python3.10/dis
Requirement already satisfied: jinja2 in /usr/local/lib/python3.10/dist-
Requirement already satisfied: fsspec in /usr/local/lib/python3.10/dist-
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dis
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3
Requirement already satisfied: mpmath<1.4,>=1.1.0 in /usr/local/lib/pyth
Downloading ultralytics-8.2.98-py3-none-any.whl (873 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 873.6/873.6 kB 23.2 MB/s eta
Downloading ultralytics_thop-2.0.6-py3-none-any.whl (26 kB)
Installing collected packages: ultralytics-thop, ultralytics
Successfully installed ultralytics-8.2.98 ultralytics-thop-2.0.6
Requirement already satisfied: opencv-python in /usr/local/lib/python3.1
Requirement already satisfied: numpy>=1.21.2 in /usr/local/lib/python3.1
```

Start coding or generate with AI.

```
# Imports
import cv2
import time
import torch
import numpy as np
import matplotlib.pyplot as plt
from matplotlib.animation import FuncAnimation

from ultralytics import YOLO
from tqdm.auto import tqdm
from google.colab.patches import cv2_imshow
from IPython.display import clear_output
```

- Various minor rendering improvements to interactive forms UI
- A11y improvements for the run button and header
- Updated tooltip styling
- A11y improvements for the file browser's disk usage bar
- On mobile, tooltips now trigger on long press
- On mobile, release notes updates will no longer display automatically
- Python package upgrades
  - astropy 5.3.4 -> 6.1.2
  - bigframes 1.11.1 -> 1.14.0
  - bokeh 3.3.4 -> 3.4.3
  - dask 2023.8.1 -> 2024.7.1
  - earthengine-api 0.1.412 -> 0.1.416
  - geopandas 0.13.2 -> 0.14.4
  - kagglehub 0.2.8 -> 0.2.9
  - keras 2.15.0 -> 3.4.1
  - lightgbm 4.1.0 -> 4.4.0
  - malloy 2023.1067 -> 2024.1067
  - numba 0.58.1 -> 0.60.0
  - numpy 1.25.2 -> 1.26.4
  - opencv-python 4.8.0.76 -> 4.10.0.84
  - pandas 2.0.3 -> 2.1.4
  - pandas-gbq 0.19.2 -> 0.23.1
  - panel 1.3.8 -> 1.4.5
  - requests 2.31.0 -> 2.32.3
  - scikit-learn 1.2.2. -> 1.3.2
  - scipy 1.11.4 -> 1.13.1
  - tensorboard 2.15.2 -> 2.17.0
  - tensorflow 2.15.0 -> 2.17.0
  - tf-keras 2.15.1 -> 2.17.0
  - xarray 2023.7.0 -> 2024.6.0
  - xgboost 2.0.3 -> 2.1.1
- Python package inclusions
  - einops 0.8.0

2024-07-22

```
Start coding or generate with AI.
```

Set random seed

```
# @title Set random seed

import random
import torch

def set_seed(seed=None, seed_torch=True):

  if seed is None:
    seed = np.random.choice(2 ** 32)
  random.seed(seed)
  np.random.seed(seed)
  if seed_torch:
    torch.manual_seed(seed)
    torch.cuda.manual_seed_all(seed)
    torch.cuda.manual_seed(seed)
    torch.backends.cudnn.benchmark = False
    torch.backends.cudnn.deterministic = True

  print(f'Random seed {seed} has been set.')


# In case that `DataLoader` is used
def seed_worker(worker_id):

  worker_seed = torch.initial_seed() % 2**32
  np.random.seed(worker_seed)
  random.seed(worker_seed)
```

Set device (GPU or CPU). Execute `set_device()`

```
# @title Set device (GPU or CPU). Execute `set_device()`
# especially if torch modules used.
```

- You can now embed Google sheets directly into Colab to streamline interactions with data with InteractiveSheet.

  Example:

  ```
  from google.colab import sheets
  sh = sheets.InteractiveSheet()
  df = sh.as_df()
  ```

- Fixed multiple rendering bugs in cell editors with wide text content (i.e. text is no longer hidden or clipped)
- Fixed multiple accessibility issues in Colab's comments feature (e.g. proper keyboard focus management, added accessibility landmarks, etc)
- Fixed bug where AI code generation would fail for extremely long broken code snippets
- Fixed multiple scrollbar bugs in the user secrets panel
- Added the ability for workspace admin to purchase Colab Pro and Pro+ Subscriptions for users
- Fixed bug where user secrets couldn't be moved to a tab
- Fixed several focus management accessibility issues in tabs, the table of contents, the left toolbar, and the run button
- Fixed bug where overflowing cells may be omitted when pasting from Google Sheets
- Fixed bug where the generate code button did not activate on touch
- Python package upgrades
  - bigframes 1.9.0 -> 1.11.1
  - cvxpy 1.3.4 -> 1.5.2
  - earthengine-api 0.1.408 -> 0.1.412
  - google-api-core 2.11.1 -> 2.19.1
  - google-api-python-client 2.84.0 -> 2.137.0
  - google-cloud-aiplatform 1.56.0 -> 1.59.0
  - google-cloud-bigquery 3.21.0 -> 3.25.0

```
# Inform the user if the notebook uses GPU or CPU.

def set_device():
  """
  Set the device. CUDA if available, CPU otherwise

  Args:
    None

  Returns:
    Nothing
  """
  device = "cuda" if torch.cuda.is_available() else "cpu"
  if device != "cuda":
    print("WARNING: For this notebook to perform best, "
        "if possible, in the menu under `Runtime` -> "
        "`Change runtime type.`  select `GPU` ")
  else:
    print("GPU is enabled in this notebook.")

  return device


SEED = 2021
set_seed(seed=SEED)
DEVICE = set_device()
```

```
Random seed 2021 has been set.
GPU is enabled in this notebook.
```

Start coding or generate with AI.

Model Selection and Training

- google-cloud-core 2.3.3 -> 2.4.1
- google-cloud-datastore 2.15.2 -> 2.19.0
- google-cloud-firestore 2.11.1 -> 2.16.1
- google-cloud-functions 1.13.3 -> 1.16.4
- google-generativeai 0.5.4 -> 0.7.2
- kagglehub 0.2.5 -> 0.2.8
- pip 23.1.2 -> 24.1.2
- setuptools 67.7.2 -> 71.0.4
- sympy 1.12.1 -> 1.13.1
- torch 2.3.0 -> 2.3.1
- transformers 4.41.2 -> 4.42.4

- Python package inclusions
  - accelerate 0.32.1

2024-06-18

- Inline AI completions are now available to users on the free-of-charge tier
- Reduced latency for LSP and terminal connections
- Improved quality of inline completions
- Visual improvements to switch controls across Colab
- Various bug fixes, performance and a11y improvements to the user secrets panel
- Improved tooltip UX behavior
- Improved behavior when copying data from Google Sheets and pasting in Colab
- Scroll to cell fixes for single tabbed view and jump to cell command
- Improved tab header behavior
- A11y improvements for notebook-focused cells
- Python package upgrades
  - torch 2.2.1 -> 2.3.0
  - torchaudio 2.2.1 -> 2.3.0
  - torchvision 0.17.1 -> 0.18.0
  - torchtext 0.17.1 -> 0.18.0
  - google-cloud-aiplatform 1.51.0 -> 1.56.0

```
# Initialize the model for detection task

set_seed(seed=SEED)
model = YOLO('yolov8l.pt')
model.task = 'detect'
```

```
Random seed 2021 has been set.
Downloading https://github.com/ultralytics/assets/releases/download/v8.2
100%|██████████| 83.7M/83.7M [00:00<00:00, 187MB/s]
```

```
# Train the model
results = model.train(
    data='../content/drive/MyDrive/Datasets/ParkingSpaceDetection/data.yaml'
    epochs=200,
    imgsz=640,
    batch=16,
    name='parking_space_detector'
)
```

- bigframes 1.5.0 -> 1.8.0
- regex 2023.12.25 -> 2024.5.15

2024-05-13

- Code actions are now supported to automatically improve and refactor code. Code actions can be triggered by the keyboard shortcut "Ctrl/⌘ + ."
- Python package upgrades
  - bigframes 1.0.0 -> 1.5.0
  - google-cloud-aiplatform 1.47.0 -> 1.51.0
  - jax[tpu] 0.4.23 -> 0.4.26
- Python package inclusions
  - cudf 24.4.1

2024-04-15

- TPU v2 runtime is now available
- L4 runtime is now available for paid users
- New distributed fine-tuning Gemma tutorial on TPUs (GitHub)
- Symbol rename is now supported with keyboard shortcut F2
- Fixed bug causing inability to re-upload deleted files
- Fixed breaking bug in colabtools %upload_files_async
- Added syntax highlighting to %%writefile cells
- Cuda dependencies that come with Torch are cached for faster downloads for packages that require Torch and its dependencies (GitHub issue)
- Python package upgrades
  - bigframes 0.24.0 -> 1.0.0
  - duckdb 0.9.2 -> 0.10.1
  - google-cloud-aiplatform 1.43.0 -> 1.47.0
  - jax 0.4.23 -> 0.4.26

```
Ultralytics YOLOv8.2.98 🚀 Python-3.10.12 torch-2.4.1+cu121 CUDA:0 (
engine/trainer: task=detect, mode=train, model=yolov8l.pt, data=../c
Downloading https://ultralytics.com/assets/Arial.ttf to '/root/.conf
100%|██████████| 755k/755k [00:00<00:00, 16.4MB/s]
Overriding model.yaml nc=80 with nc=5

                   from  n    params  module
  0                  -1  1      1856  ultralytics.nn.modules.conv.Co
  1                  -1  1     73984  ultralytics.nn.modules.conv.Co
  2                  -1  3    279808  ultralytics.nn.modules.block.C
  3                  -1  1    295424  ultralytics.nn.modules.conv.Co
  4                  -1  6   2101248  ultralytics.nn.modules.block.C
  5                  -1  1   1180672  ultralytics.nn.modules.conv.Co
  6                  -1  6   8396800  ultralytics.nn.modules.block.C
  7                  -1  1   2360320  ultralytics.nn.modules.conv.Co
  8                  -1  3   4461568  ultralytics.nn.modules.block.C
  9                  -1  1    656896  ultralytics.nn.modules.block.S
 10                  -1  1         0  torch.nn.modules.upsampling.Up
 11             [-1, 6]  1         0  ultralytics.nn.modules.conv.Co
 12                  -1  3   4723712  ultralytics.nn.modules.block.C
 13                  -1  1         0  torch.nn.modules.upsampling.Up
 14             [-1, 4]  1         0  ultralytics.nn.modules.conv.Co
 15                  -1  3   1247744  ultralytics.nn.modules.block.C
 16                  -1  1    590336  ultralytics.nn.modules.conv.Co
 17            [-1, 12]  1         0  ultralytics.nn.modules.conv.Co
 18                  -1  3   4592640  ultralytics.nn.modules.block.C
 19                  -1  1   2360320  ultralytics.nn.modules.conv.Co
 20             [-1, 9]  1         0  ultralytics.nn.modules.conv.Co
 21                  -1  3   4723712  ultralytics.nn.modules.block.C
 22        [15, 18, 21]  1   5586655  ultralytics.nn.modules.head.De
Model summary: 365 layers, 43,633,695 parameters, 43,633,679 gradien

Transferred 589/595 items from pretrained weights
TensorBoard: Start with 'tensorboard --logdir runs/detect/parking_sp
Freezing layer 'model.22.dfl.conv.weight'
AMP: running Automatic Mixed Precision (AMP) checks with YOLOv8n...
Downloading https://github.com/ultralytics/assets/releases/download/
100%|██████████| 6.25M/6.25M [00:00<00:00, 94.3MB/s]
AMP: checks passed ✅
train: Scanning /content/drive/MyDrive/Datasets/ParkingSpaceDetectio

albumentations: Blur(p=0.01, blur_limit=(3, 7)), MedianBlur(p=0.01,
```

2024-03-13

- Fixed bug that sometimes caused UserSecrets to move / disappear
- Improved messaging for mounting drive in an unsupported environment (GitHub issue)
- Python package upgrades
  - torch 2.1.0 -> 2.2.1
  - torchaudio 2.1.0 -> 2.2.1
  - torchvision 0.16.0 -> 0.17.1
  - torchtext 0.16.0 -> 0.17.1
  - PyMC 5.7.2 -> 5.10.4
  - BigFrames 0.21.0 -> 0.24.0
  - google-cloud-aiplatform 1.42.1 -> 1.43.0
  - tornado 6.3.2 -> 6.3.3

2024-02-21

- Try out Gemma on Colab!
- Allow unicode in form text inputs
- Display documentation and link to source when displaying functions
- Display image-like ndarrays as images
- Improved UX around quick charts and execution error suggestions
- Released Marketplace image for the month of February (GitHub issue)
- Python package upgrades
  - bigframes 0.19.2 -> 0.21.0
  - regex 2023.6.3 -> 2023.12.25
  - spacy 3.6.1 -> 3.7.4
  - beautifulsoup4 4.11.2 -> 4.12.3
  - tensorflow-probability 0.22.0 -> 0.23.0
  - google-cloud-language 2.9.1 -> 2.13.1
  - google-cloud-aiplatform 1.39.0 -> 1.42.1
  - transformers 4.35.2 -> 4..37.2
  - pyarrow 10.0.1 -> 14.0.2

2024-01-29

```
/usr/lib/python3.10/multiprocessing/popen_fork.py:66: RuntimeWarning
  self.pid = os.fork()
val: Scanning /content/drive/MyDrive/Datasets/ParkingSpaceDetection/

Plotting labels to runs/detect/parking_space_detector/labels.jpg...
optimizer: 'optimizer=auto' found, ignoring 'lr0=0.01' and 'momentum
optimizer: AdamW(lr=0.001111, momentum=0.9) with parameter groups 97
TensorBoard: model graph visualization added ✅
Image sizes 640 train, 640 val
Using 2 dataloader workers
Logging results to runs/detect/parking_space_detector
Starting training for 200 epochs...

      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances
      1/200      10.9G      1.579      1.629      1.522        632
                 Class     Images  Instances      Box(P          R
------------------------------------------------------------------
-------
KeyboardInterrupt                         Traceback (most recent
call last)
<ipython-input-9-5e95597c6d9f> in <cell line: 2>()
      1 # Train the model
----> 2 results = model.train(
      3
data='../content/drive/MyDrive/Datasets/ParkingSpaceDetection/data.y
      4     epochs=200,
      5     imgsz=640,

                                 13 frames
/usr/lib/python3.10/threading.py in wait(self, timeout)
    322             else:
    323                 if timeout > 0:
--> 324                     gotit = waiter.acquire(True, timeout)
    325                 else:
    326                     gotit = waiter.acquire(False)
```

- New Kaggle Notebooks <> Colab updates! Now you can:
  - Import directly from Colab without having to download/re-upload
  - Upload via link, by pasting Google Drive or Colab URLs
  - Export & run Kaggle Notebooks on Colab with 1 click
- Try these notebooks that talk to Gemini:
  - Gemini and Stable Diffusion
  - Learning with Gemini and ChatGPT
  - Talk to Gemini with Google's Speech to Text API
  - Sell lemonade with Gemini and Sheets
  - Generate images with Gemini and Vertex
- Python package upgrades
  - google-cloud-aiplatform 1.38.1 -> 1.39.0
  - bigframes 0.18.0 -> 0.19.2
  - polars 0.17.3 -> 0.20.2
  - gdown 4.6.6 -> 4.7.3 (GitHub issue)
  - tensorflow-hub 0.15.0 -> 0.16.0
  - flax 0.7.5 -> 0.8.0
- Python package inclusions
  - sentencepiece 0.1.99

Start coding or generate with AI.

Model Evaluation

```
# Validate the model
val_results = model.val()
print(val_results)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-1-a06949e1625d> in <cell line: 2>()
      1 # Validate the model
----> 2 val_results = model.val()
      3 print(val_results)

NameError: name 'model' is not defined
```

Start coding or generate with AI.

Inference and Post-processing

> Now, let's use the trained model for detection and implement post-processing logic

```
def process_parking_lot(results):
    parking_spaces = {'Empty': [], 'Filled': []}
    for r in results:
        boxes = r.boxes
        for box in boxes:
            cls = int(box.cls[0])
```

2024-01-08

- Avoid nested scrollbars for large outputs by using `google.colab.output.no_vertical_scroll()` Example notebook
- Fix bug where downloading models from Hugging Face could freeze
- Python package upgrades
  - huggingface-hub 0.19.4 -> 0.20.2
  - bigframes 0.17.0 -> 0.18.0

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

```
            conf = float(box.conf[0])
            if cls in [0, 3]:  # Empty or empty
                parking_spaces['Empty'].append((box.xyxy[0].tolist(), conf))
            elif cls in [1, 2, 4]:  # Empty-Filled, Filled, or occupied
                parking_spaces['Filled'].append((box.xyxy[0].tolist(), conf))
    return parking_spaces

# Load the trained model
trained_model = YOLO('../content/drive/MyDrive/Datasets/ParkingSpaceDetectio

# Predict on a new image
image_path = '../content/drive/MyDrive/Datasets/ParkingSpaceDetection/test/i
results = trained_model(image_path)

# Process results
parking_status = process_parking_lot(results)

print(f"Empty spaces: {len(parking_status['Empty'])}")
print(f"Filled spaces: {len(parking_status['Filled'])}")
```

```
image 1/1 /content/../content/drive/MyDrive/Datasets/ParkingSpaceDetecti
Speed: 1.2ms preprocess, 43.2ms inference, 1.6ms postprocess per image a
Empty spaces: 15
Filled spaces: 42
```

Start coding or generate with AI.

Visualization

To visualize the results

```
def draw_boxes(image, parking_status, width_reduction=0.2):
    for status, spaces in parking_status.items():
```

- 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

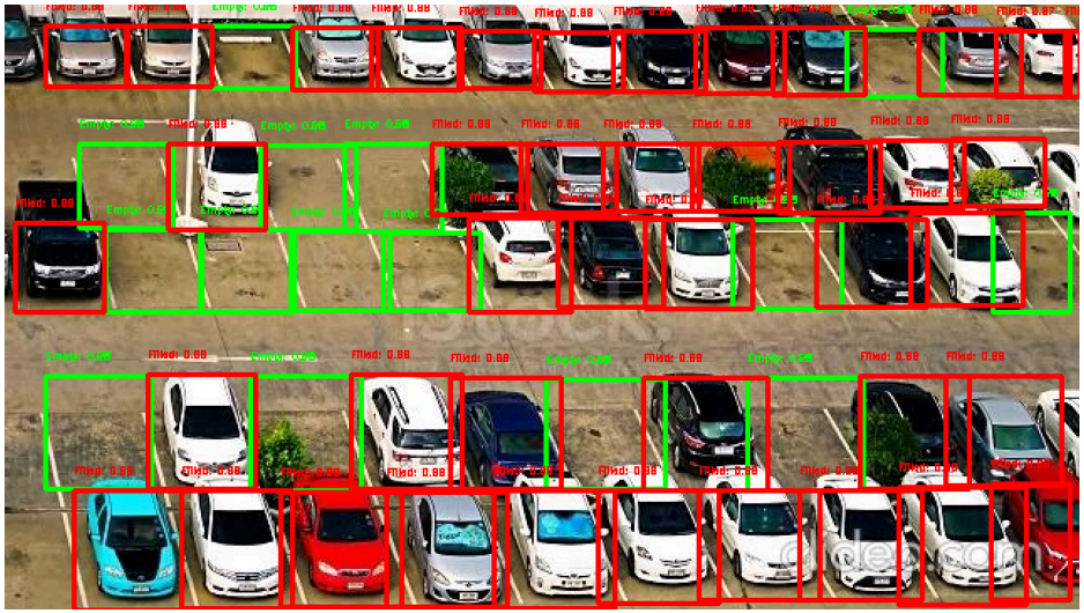
- Updated the **Open notebook** dialog for better usability and support for smaller screen sizes
- Added smart paste support for data from Google Sheets for R notebooks
- Enabled showing release notes in a tab

```
            color = (0, 255, 0) if status == 'Empty' else (0, 0, 255)
            for (box, conf) in spaces:
                x1, y1, x2, y2 = map(int, box)

                # Calculate the width reduction for both sides
                reduction = int((x2 - x1) * width_reduction) // 2

                # Adjust x1 and x2 to reduce the width and keep the rectangle ce
                x1 = x1 + reduction
                x2 = x2 - reduction

                # Draw the rectangle
                cv2.rectangle(image, (x1, y1), (x2, y2), color, 2)

                # Adjust the text size by reducing the font scale and thickness
                font_scale = 0.2  # Smaller font scale
                thickness = 1 # Thinner text
                cv2.putText(image, f"{status}: {conf:.2f}", (x1, y1-10),
                            cv2.FONT_HERSHEY_SIMPLEX, font_scale, color, thickne
        return image

    # Load and process image
    image = cv2.imread(image_path)
    result_image = draw_boxes(image, parking_status)

    # Display result
    plt.figure(figsize=(12, 8))
    plt.imshow(cv2.cvtColor(result_image, cv2.COLOR_BGR2RGB))
    plt.axis('off')
    plt.show()
```

- 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 -> 2.13.1
  - tensorflow-gcs-config 2.12.0 -> 2.13.



Start coding or generate with AI.

Predict on a video

```
def process_video(video_path, trained_model, process_every_n_frames=1, displ
    cap = cv2.VideoCapture(video_path)
    frame_count = int(cap.get(cv2.CAP_PROP_FRAME_COUNT))
    fps = int(cap.get(cv2.CAP_PROP_FPS))

    print(f"Total frames: {frame_count}")
    print(f"FPS: {fps}")

    occupancy_data = []
    frame_index = 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

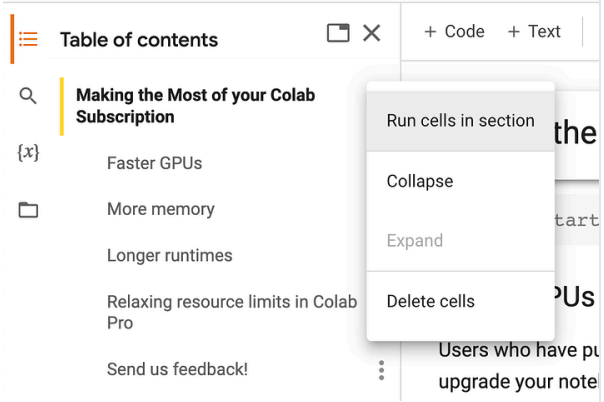
- Added "Change runtime type" to the menu in the connection button
- Improved auto-reconnection to an already running notebook (#3764)
- Increased the specs of our highmem machines for Pro users
- Fixed `add-apt-repository` command on Ubuntu 22.04 runtime (#3867)
- Python package upgrades
  - bokeh 2.4.3 -> 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

```
    while cap.isOpened():
        ret, frame = cap.read()
        if not ret:
            print(f"Finished processing at frame {frame_index}")
            break

        if frame_index % process_every_n_frames == 0:
            print(f"Processing frame {frame_index}")
            results = trained_model(frame)
            parking_status = process_parking_lot(results)

            occupancy_data.append({
                'frame': frame_index,
                'time': frame_index / fps,
                'empty': len(parking_status['Empty']),
                'filled': len(parking_status['Filled'])
            })

            frame_with_boxes = draw_boxes(frame.copy(), parking_status)

            # Display frame info
            cv2.putText(frame_with_boxes, f"Frame: {frame_index}", (10, 30),
                        cv2.FONT_HERSHEY_SIMPLEX, 1, (255, 255, 255), 2)
            cv2.putText(frame_with_boxes, f"Empty: {len(parking_status['Empt
                        cv2.FONT_HERSHEY_SIMPLEX, 1, (0, 255, 0), 2)
            cv2.putText(frame_with_boxes, f"Filled: {len(parking_status['Fi]
                        cv2.FONT_HERSHEY_SIMPLEX, 1, (0, 0, 255), 2)

            # Display the frame at regular intervals
            if frame_index % display_every_n_frames == 0:
                clear_output(wait=True)
                cv2_imshow(frame_with_boxes)

        frame_index += 1

    cap.release()
    print(f"Processed {len(occupancy_data)} frames")
    return occupancy_data
```

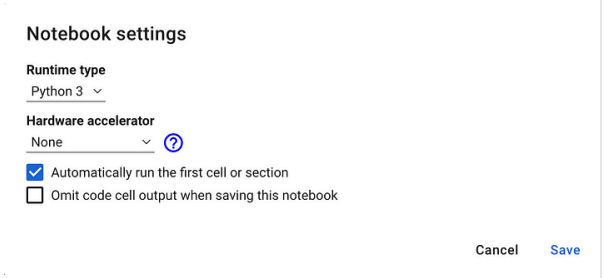
2023-07-21

- 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)



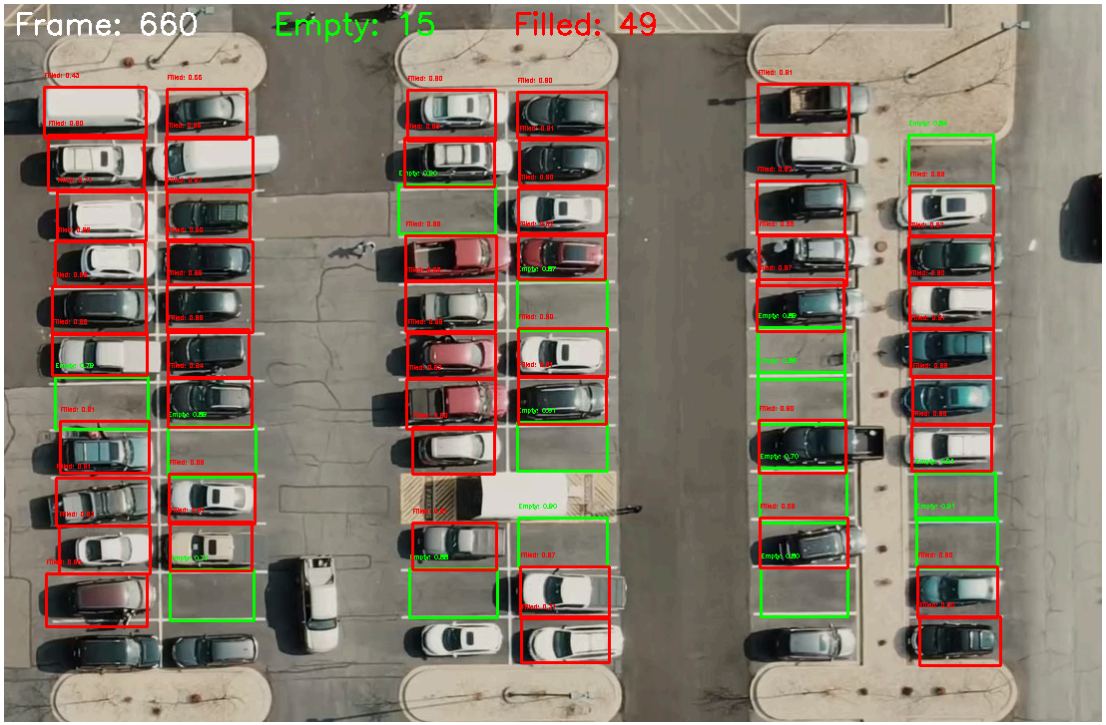
- Launched Pro/Pro+ to Algeria, Argentina, Chile, Ecuador, Egypt, Ghana, Kenya, Malaysia, Nepal, Nigeria, Peru, Rwanda, Saudi Arabia, South Africa, Sri Lanka, Tunisia, and Ukraine (tweet)
- Added a command, "Toggle tab moves focus" for toggling tab trapping in the editor (Tools -> Command palette, "Toggle tab moves focus")

```
# Usage
video_path = '../content/drive/MyDrive/Datasets/ParkingSpaceDetection/carPar
trained_model = YOLO('../content/drive/MyDrive/Datasets/ParkingSpaceDetectio

print("Starting video processing...")
start_time = time.time()
occupancy_data = process_video(video_path, trained_model, process_every_n_fr
end_time = time.time()

print(f"Processing completed in {end_time - start_time:.2f} seconds")
print(f"Total frames processed: {len(occupancy_data)}")

if not occupancy_data:
    print("No frames were processed. Check the video file and model.")
else:
    print("Video processing and display completed successfully.")

print("Script completed.")
```

- 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
  - GDAL 3.3.2->3.4.3
  - google-cloud-bigquery-storage 2.20.0 -> 2.22.2
  - gspread-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




```
Processing frame 665

0: 448x640 15 emptys, 49 occupieds, 39.6ms
Speed: 4.0ms preprocess, 39.6ms inference, 1.6ms postprocess per image a
Processing frame 670

0: 448x640 15 emptys, 49 occupieds, 42.1ms
Speed: 5.4ms preprocess, 42.1ms inference, 4.2ms postprocess per image a
Processing frame 675

0: 448x640 15 emptys, 48 occupieds, 38.8ms
Speed: 3.2ms preprocess, 38.8ms inference, 1.6ms postprocess per image a
Finished processing at frame 679
Processed 136 frames
Processing completed in 19.10 seconds
Total frames processed: 136
Video processing and display completed successfully.
```

Start coding or generate with AI.

- 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 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-ap 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-firestore 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
  - tensorboard 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.
  - 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-firestore 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 -> 22.04
  - 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
  - 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, Pro+, 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.
- 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/Pro+ 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_` 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

2022-03-10

- Launched Pro/Pro+ 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 Pro+ users
- Fixed bug in interactive datatables where filtering by number did not work
- Finished removing the python2 kernelspec

2022-02-25

- Made various accessibility improvements to the header
- Fix bug with forms run:auto where a form field change would trigger multiple runs
- Minor updates to the bigquery example notebook and snippet
- Include background execution setting in the sessions dialog for Pro+ users
- Update tensorflow-probability from 0.15 to 0.16
- Update jax from 0.2.25 to 0.3.1 & jaxlib from 0.1.71 to 0.3.0

2022-02-11

- Improve keyboard navigation for the open dialog
- Fix issue where nvidia-smi stopped reporting resource utilization for some users who were modifying the version of nvidia used
- Update tensorflow from 2.7 to 2.8, keras from 2.7 to 2.8, numpy from 1.19.5 to 1.21.5, tables from 3.4.4 to 3.7.0

2022-02-04

- Improve UX for opening content alongside your notebook, such as files opened from the file browser. This includes a multi-pane view and drag-drop support
- Better Twitter previews when sharing example Colab notebooks and notebooks opened from

GitHub Gists
- Update pandas from 1.1.5 to 1.3.5
- Update openpyxl from 2.5.9 to 3.0.0 and pyarrow from 3.0.0 to 6.0.0
- Link to the release notes from the Help menu