

```
!pip install transformers accelerate
```

```
Requirement already satisfied: regex!=2019.12.17 in /usr/local/lib/python3.10/dist-packages (from transformers)
Requirement already satisfied: requests in /usr/local/lib/python3.10/dist-packages (from transformers)
Requirement already satisfied: tokenizers<0.19,>=0.14 in /usr/local/lib/python3.10/dist-packages (from transformers)
Requirement already satisfied: safetensors>=0.4.1 in /usr/local/lib/python3.10/dist-packages (from transformers)
Requirement already satisfied: tqdm>=4.27 in /usr/local/lib/python3.10/dist-packages (from transformers)
Requirement already satisfied: psutil in /usr/local/lib/python3.10/dist-packages (from accelerate)
Requirement already satisfied: torch>=1.10.0 in /usr/local/lib/python3.10/dist-packages (from accelerate)
Requirement already satisfied: fsspec>=2023.5.0 in /usr/local/lib/python3.10/dist-packages (from accelerate)
Requirement already satisfied: typing-extensions>=3.7.4.3 in /usr/local/lib/python3.10/dist-packages (from accelerate)
Requirement already satisfied: sympy in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0)
Requirement already satisfied: networkx in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0)
Collecting nvidia-cuda-nvrtc-cu12==12.1.105 (from torch>=1.10.0->accelerate)
  Downloading nvidia_cuda_nvrtc_cu12-12.1.105-py3-none-manylinux1_x86_64.whl (23.7 MB)
    23.7/23.7 MB 43.0 MB/s eta 0:00:00
Collecting nvidia-cuda-runtime-cu12==12.1.105 (from torch>=1.10.0->accelerate)
  Downloading nvidia_cuda_runtime_cu12-12.1.105-py3-none-manylinux1_x86_64.whl (823 kB)
    823.6/823.6 kB 62.2 MB/s eta 0:00:00
Collecting nvidia-cuda-cupti-cu12==12.1.105 (from torch>=1.10.0->accelerate)
  Downloading nvidia_cuda_cupti_cu12-12.1.105-py3-none-manylinux1_x86_64.whl (14.1 MB)
    14.1/14.1 MB 46.1 MB/s eta 0:00:00
Collecting nvidia-cudnn-cu12==8.9.2.26 (from torch>=1.10.0->accelerate)
  Downloading nvidia_cudnn_cu12-8.9.2.26-py3-none-manylinux1_x86_64.whl (731.7 MB)
    731.7/731.7 MB 2.2 MB/s eta 0:00:00
Collecting nvidia-cublas-cu12==12.1.3.1 (from torch>=1.10.0->accelerate)
  Downloading nvidia_cublas_cu12-12.1.3.1-py3-none-manylinux1_x86_64.whl (410.6 MB)
    410.6/410.6 MB 2.4 MB/s eta 0:00:00
Collecting nvidia-cufft-cu12==11.0.2.54 (from torch>=1.10.0->accelerate)
  Downloading nvidia_cufft_cu12-11.0.2.54-py3-none-manylinux1_x86_64.whl (121.6 MB)
    121.6/121.6 MB 5.6 MB/s eta 0:00:00
Collecting nvidia-curand-cu12==10.3.2.106 (from torch>=1.10.0->accelerate)
  Downloading nvidia_curand_cu12-10.3.2.106-py3-none-manylinux1_x86_64.whl (56.5 MB)
    56.5/56.5 MB 6.5 MB/s eta 0:00:00
Collecting nvidia-cusolver-cu12==11.4.5.107 (from torch>=1.10.0->accelerate)
  Downloading nvidia_cusolver_cu12-11.4.5.107-py3-none-manylinux1_x86_64.whl (124.2 MB)
    124.2/124.2 MB 6.5 MB/s eta 0:00:00
Collecting nvidia-cusparse-cu12==12.1.0.106 (from torch>=1.10.0->accelerate)
  Downloading nvidia_cusparse_cu12-12.1.0.106-py3-none-manylinux1_x86_64.whl (196.0 MB)
    196.0/196.0 MB 6.0 MB/s eta 0:00:00
Collecting nvidia-nccl-cu12==2.19.3 (from torch>=1.10.0->accelerate)
  Downloading nvidia_nccl_cu12-2.19.3-py3-none-manylinux1_x86_64.whl (166.0 MB)
    166.0/166.0 MB 3.2 MB/s eta 0:00:00
Collecting nvidia-nvtx-cu12==12.1.105 (from torch>=1.10.0->accelerate)
  Downloading nvidia_nvtx_cu12-12.1.105-py3-none-manylinux1_x86_64.whl (99 kB)
    99.1/99.1 kB 13.8 MB/s eta 0:00:00
Requirement already satisfied: triton==2.2.0 in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0->accelerate)
Collecting nvidia-nvjitlink-cu12 (from nvidia-cusolver-cu12==11.4.5.107->torch>=1.10.0->accelerate)
  Downloading nvidia_nvjitlink_cu12-12.4.99-py3-none-manylinux2014_x86_64.whl (21.1 MB)
    21.1/21.1 MB 40.7 MB/s eta 0:00:00
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2)
Requirement already satisfied: mpmath>=0.19 in /usr/local/lib/python3.10/dist-packages (from sympy)
Installing collected packages: nvidia-nvtx-cu12, nvidia-nvjitlink-cu12, nvidia-nccl-cu12, nvidia-cu12
Successfully installed accelerate-0.28.0 nvidia-cublas-cu12-12.1.3.1 nvidia-cuda-cupti-cu12-12.1.105
```

```
!pip install accelerate
```

```
Requirement already satisfied: accelerate in /usr/local/lib/python3.10/dist-packages (0.28.0)
Requirement already satisfied: numpy>=1.17 in /usr/local/lib/python3.10/dist-packages (from accelerate)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from accelerate)
Requirement already satisfied: psutil in /usr/local/lib/python3.10/dist-packages (from accelerate) (5.9.3)
Requirement already satisfied: pyyaml in /usr/local/lib/python3.10/dist-packages (from accelerate) (6.4.2)
Requirement already satisfied: torch>=1.10.0 in /usr/local/lib/python3.10/dist-packages (from accelerate)
Requirement already satisfied: huggingface-hub in /usr/local/lib/python3.10/dist-packages (from accelerate)
Requirement already satisfied: safetensors>=0.3.1 in /usr/local/lib/python3.10/dist-packages (from accelerate)
Requirement already satisfied: filelock in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0)
Requirement already satisfied: typing-extensions>=4.8.0 in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0)
Requirement already satisfied: sympy in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0->accelerate)
Requirement already satisfied: networkx in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0->accelerate)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0->accelerate)
Requirement already satisfied: fsspec in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0->accelerate)
Requirement already satisfied: nvidia-cuda-nvrtc-cu12==12.1.105 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: nvidia-cuda-runtime-cu12==12.1.105 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: nvidia-cuda-cupti-cu12==12.1.105 in /usr/local/lib/python3.10/dist-packages
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Requirement already satisfied: nvidia-cudnn-cu12==8.9.2.26 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: nvidia-cublas-cu12==12.1.3.1 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: nvidia-cufft-cu12==11.0.2.54 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: nvidia-curand-cu12==10.3.2.106 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: nvidia-cusolver-cu12==11.4.5.107 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: nvidia-cusparse-cu12==12.1.0.106 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: nvidia-nccl-cu12==2.19.3 in /usr/local/lib/python3.10/dist-packages (from torch)
Requirement already satisfied: nvidia-nvtx-cu12==12.1.105 in /usr/local/lib/python3.10/dist-packages
Requirement already satisfied: triton==2.2.0 in /usr/local/lib/python3.10/dist-packages (from torch)
Requirement already satisfied: nvidia-nvjitlink-cu12 in /usr/local/lib/python3.10/dist-packages (from torch)
Requirement already satisfied: requests in /usr/local/lib/python3.10/dist-packages (from huggingface)
Requirement already satisfied: tqdm>=4.42.1 in /usr/local/lib/python3.10/dist-packages (from huggingface)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests)
Requirement already satisfied: mpmath>=0.19 in /usr/local/lib/python3.10/dist-packages (from sympy->t
```

```
from transformers import AutoTokenizer, pipeline

# Load tokenizer and model
model = "gpt2"
tokenizer = AutoTokenizer.from_pretrained(model)
code_generation_pipeline = pipeline(
    "text-generation",
    model=model,
    tokenizer=tokenizer,
    device=0 # Use GPU if available
)

def generate_code(text, max_length=150, num_return_sequences=1):
    """
    Generate code based on the given text description.

    Args:
    - text (str): Text description of the code to be generated.
    - max_length (int): Maximum length of the generated code.
    - num_return_sequences (int): Number of code snippets to generate.

    Returns:
    - List of generated code snippets.
    """
    output = code_generation_pipeline(text, max_length=max_length, num_return_sequences=num_return_sequences)
    generated_code = [out['generated_text'] for out in output]
    return generated_code

# Interactive interface
print("Welcome to the Code Generation Interface!")
print("Please provide a text description of the code you want to generate.")

while True:
    user_input = input("\nEnter a text description (or 'exit' to quit): ")

    if user_input.lower() == 'exit':
        print("Exiting the Code Generation Interface. Goodbye!")
        break

    generated_code = generate_code(user_input)

    print("\nGenerated Code:")
    for i, code in enumerate(generated_code):
        print(f"\nGenerated code snippet {i+1}:\n{code}")

...
*** Welcome to the Code Generation Interface!
Please provide a text description of the code you want to generate.
```

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](#).

2024-02-21

- 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

- 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

2024-01-08

- Avoid nested scrollbars for large outputs by using `google.colab.output.no_ver` ([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
 - `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
- 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
 - tensorflow 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.
 - scipy 1.10.1 -> 1.11.2
 - cython 0.29.6 -> 3.0.2
- Python package inclusions

- geemap 0.26.0

2023-08-18

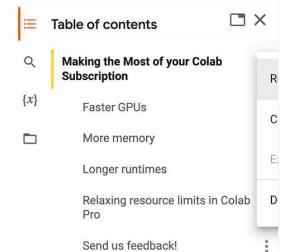
- Added "Change runtime type" to the menu in the connection button
- Improved auto-reconnection to an already running notebook ([#3764](#))
- Increased the specs of our highmem machines for Pro users
- Fixed add-apt-repository command on Ubuntu 22.04 runtime ([#3867](#))
- Python package upgrades
 -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

- 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
 - `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](#))
- 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:
 - gcfs 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-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
 - urlib3 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-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-firebase 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, 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 pycm 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](#)), drivesfs 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, fbpredict 0.7 to prophet 1.1, tensorflow-datasets from 4.0.1 to 4.6.0, drivesfs 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](#) 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

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

