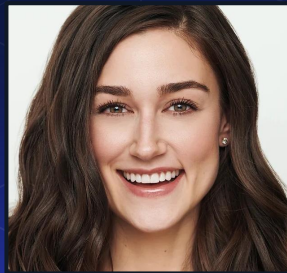




Introduction to Clouinary's Android SDK



Jen Brissman
Technical Curriculum Engineer

Topics

Introduction

- Mobile Development
- Android Course App
- Environment Setup

Upload

- Uploading an Asset
- Cloudinary Upload Widget
- Pre-Processing

Asset Delivery

- Transformations
- Optimizations

Video

- Cloudinary Native Video Player
- Creating a Video Feed

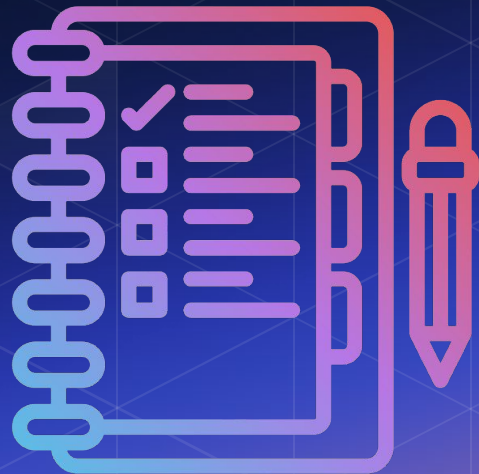
Download - Image Loaders

- Glide
- Picasso
- Fresco

Integration

- Glide Integration

Further Support



Mobile Statistics

There are currently **6.3 billion** Smartphone users in the world. The mobile traffic market share is **58.22%** as of January 2024 beating out desktop at 38.75% and tablet at 2.03%. Yearly worldwide app downloads are at a staggering **257 billion**.

The demand for mobile development is at an all time high.

- Mobile apps are expected to generate over \$935 billion in revenue in 2024.
- The Apple App Store has 1.96 million apps available for download.
- There are 2.87 million apps available for download on the Google Play Store.
- 21% of Millennials open an app 50+ times per day.
- 49% of people open an app 11+ times each day.
- 70% of all US digital media time comes from mobile apps.
- The average smartphone owner uses 10 apps per day and 30 apps each month.

Clouinary Mobile SDKs

Clouinary offers Mobile SDKs for both **iOS and Android** platforms, providing comprehensive image and video management capabilities for mobile applications.



iOS (Swift/ObjectiveC)

[Guide](#)

[Library](#)



android
Android

[Guide](#)

[Library](#)



Flutter

[Guide](#)

[Library](#)



BETA

React Native

[Guide](#)

[Library](#)



Kotlin

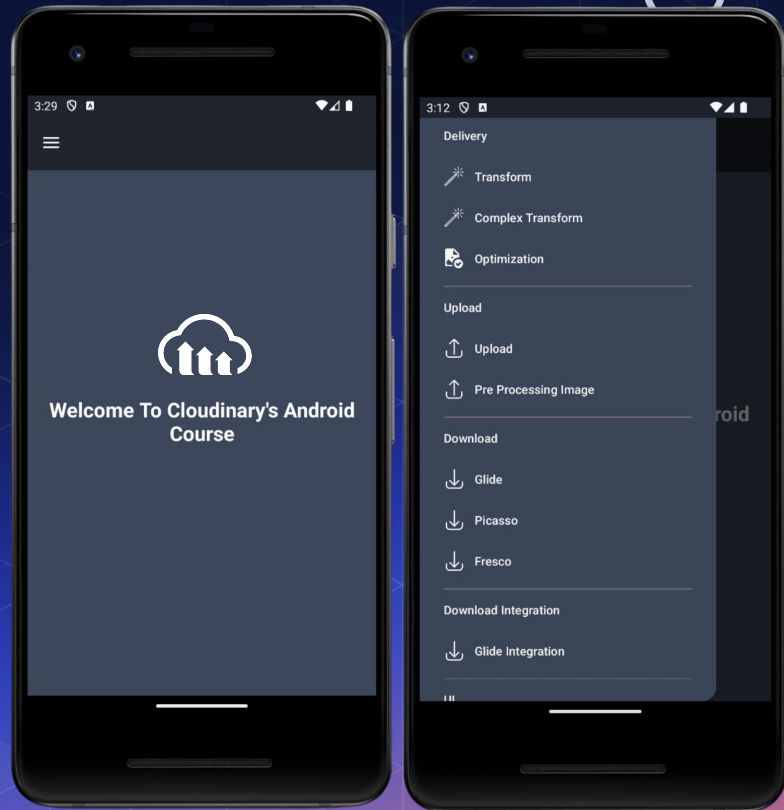
[Guide](#)

[Library](#)



Clouinary Android Course App

We have built an application specifically for this course which allows users to programmatically manipulate media assets.



Setting Up Your Environment



GitHub Repository

You can access all of the code for this course from the **clouinary-training** GitHub.

cld-intro-android-sdk

cld-intro-android-sdk Public

File	Commit Message	Time
jenbrissman Update README.md		13d6ca4 · 1 minute ago 74 Commits
app	initializing README.md	1 hour ago
gradle/wrapper	Changing transformations: original, sharpen, grayscale, bl...	last week
.gitignore	Add	8 months ago
LICENSE	Initial commit	9 months ago
README.md	Update README.md	1 minute ago
build.gradle	Changing transformations: original, sharpen, grayscale, bl...	last week
config	Add project files	8 months ago



Clouinary Training Academy

Repositories associated with Clouinary Academy coursework.

7 followers



<https://training.clouinary.com/>



support@clouinary.com

This repository is used in conjunction with the Clouinary Academy training course, **Introduction to Clouinary's Android SDK**.

If you would like to take this xx minute course, you can enroll for free at training.clouinary.com.

Course Outline:

This repository is used in conjunction with the Clouinary Academy training course, **Introduction to Clouinary's Android SDK**.

training.clouinary.com/

Readme

MIT license

Activity

Custom properties

0 stars

0 watching

0 forks

Report repository

Releases

No releases published

[Create a new release](#)

Packages

No packages published

[Publish your first package](#)

Contributors 2

adimiz1

jenbrissman Jen Brissman

Languages

Java 100.0%

Install Java



Java Download

www.oracle.com/java/technologies/javase/javase-jdk8-downloads

macOS x64 | **205.26 MB** | `jdk-8u281-macosx-x64.dmg`

Windows x64 | **166.97 MB** | `jdk-8u391-windows-x64.exe`

```
$ java -version
java version "1.8.0_281"
Java(TM) SE Runtime Environment (build 1.8.0_281-b09)
Java HotSpot(TM) 64-Bit Server VM (build 25.281-b09, mixed mode)
```


Install Android Studio



Android Studio

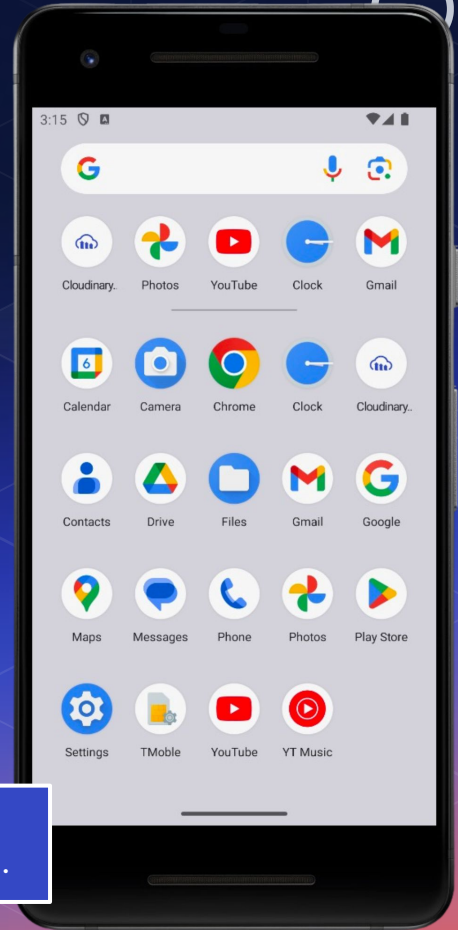
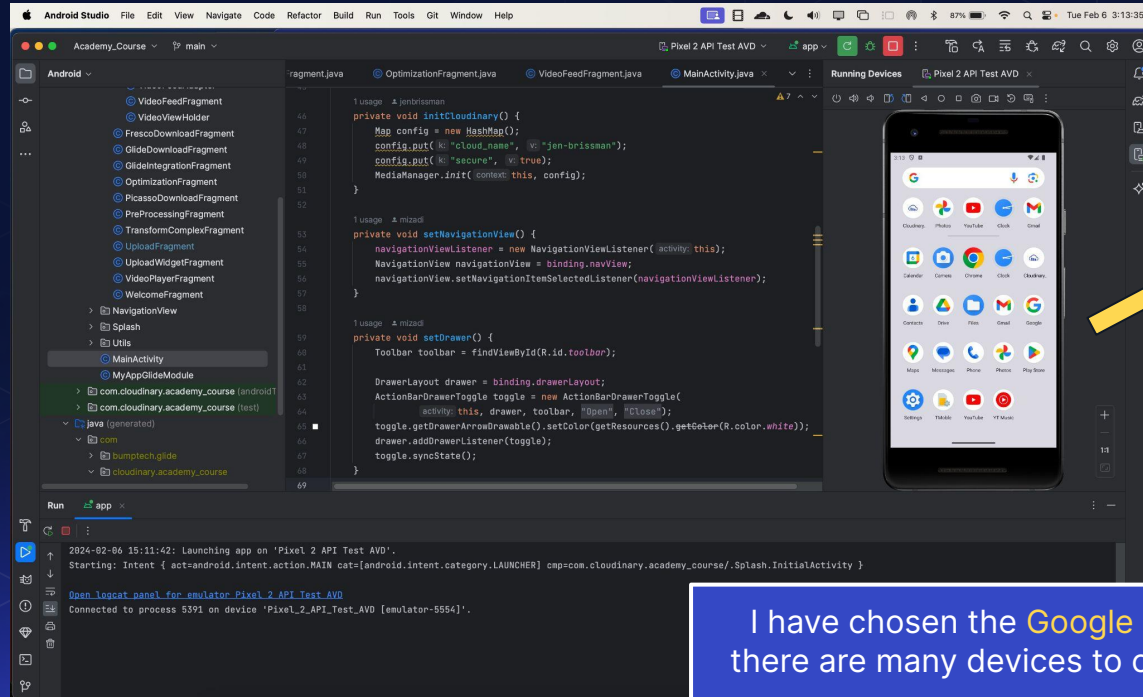
Get the official Integrated Development Environment (IDE) for Android app development.

Download Android Studio Giraffe 

<https://developer.android.com/studio>

Android Emulator

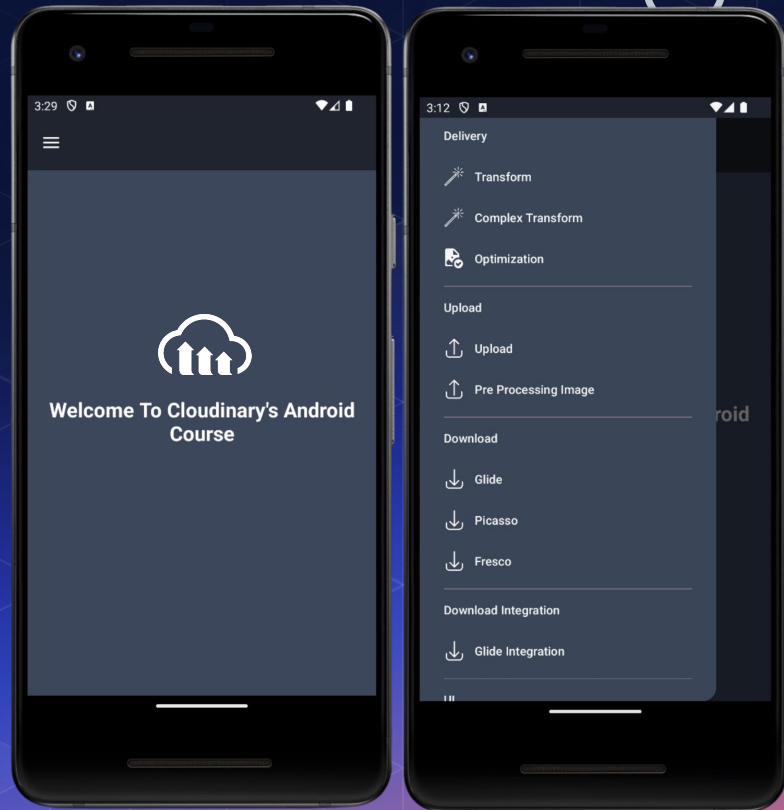
The Android Emulator simulates Android devices within the IDE on your computer so that you can test your application on a variety of devices and Android API levels without needing to have each physical device.



I have chosen the **Google Pixel 2**, but there are many devices to choose from.

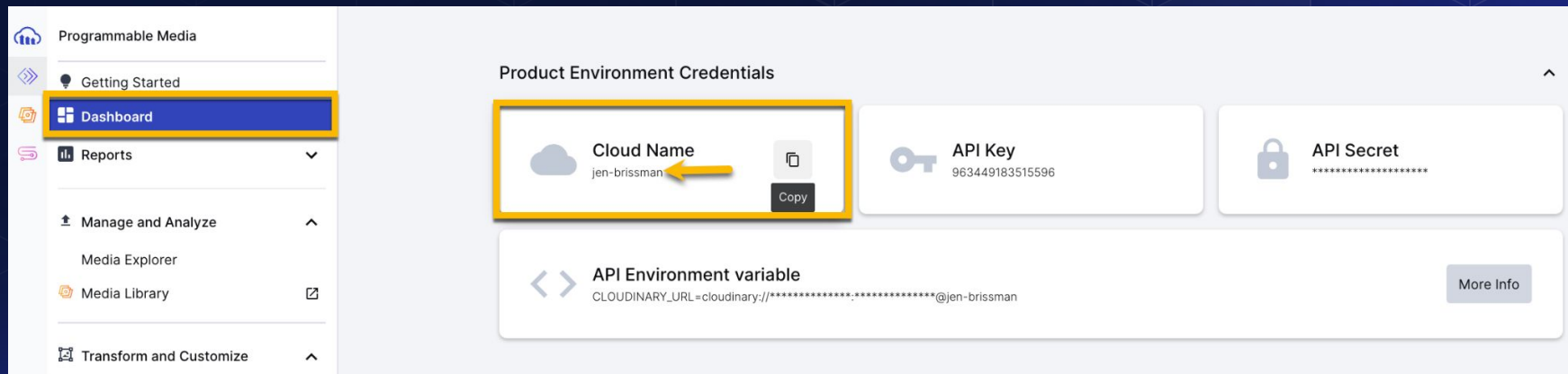
Android Emulator

If you run the code you've cloned from the repository, this application will appear in the emulator and allow you to see the output of your code in real time.



Product Environment Credentials

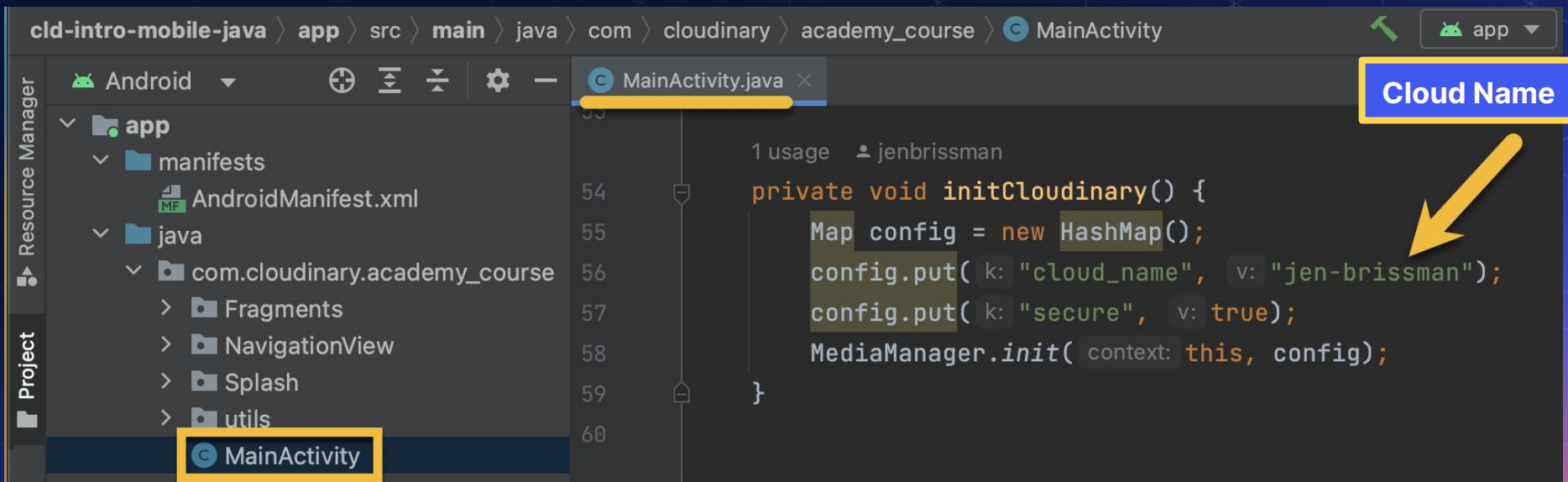
You can locate your **Cloud Name** within your **Clouinary Dashboard** under **Product Environment Credentials**.



The screenshot displays the Clouinary dashboard interface. On the left, a navigation sidebar lists various sections: Programmable Media, Getting Started, Dashboard (highlighted with a yellow box), Reports, Manage and Analyze, Media Explorer, Media Library, and Transform and Customize. The main content area is titled "Product Environment Credentials" and contains three credential cards: "Cloud Name" (jen-brissman, highlighted with a yellow box and an arrow), "API Key" (963449183515596), and "API Secret" (masked with asterisks). Below these cards is an "API Environment variable" section showing the variable `CLOUDINARY_URL=cloudinary://*****:*****@jen-brissman` and a "More Info" button.

Configuring Your Environment

All you need to do is enter your `cloud_name` in the `MainActivity.java` file.



```
cld-intro-mobile-java > app > src > main > java > com > cloudinary > academy_course > MainActivity
```

Android

Resource Manager

- app
 - manifests
 - AndroidManifest.xml
 - java
 - com.cloudinary.academy_course
 - Fragments
 - NavigationView
 - Splash
 - utils
 - MainActivity**

MainActivity.java

```
1 usage  jenbrissman
54
55 private void initCloudinary() {
56     Map config = new HashMap();
57     config.put( k: "cloud_name", v: "jen-brissman");
58     config.put( k: "secure", v: true);
59     MediaManager.init( context: this, config);
60 }
```

Cloud Name

Upload

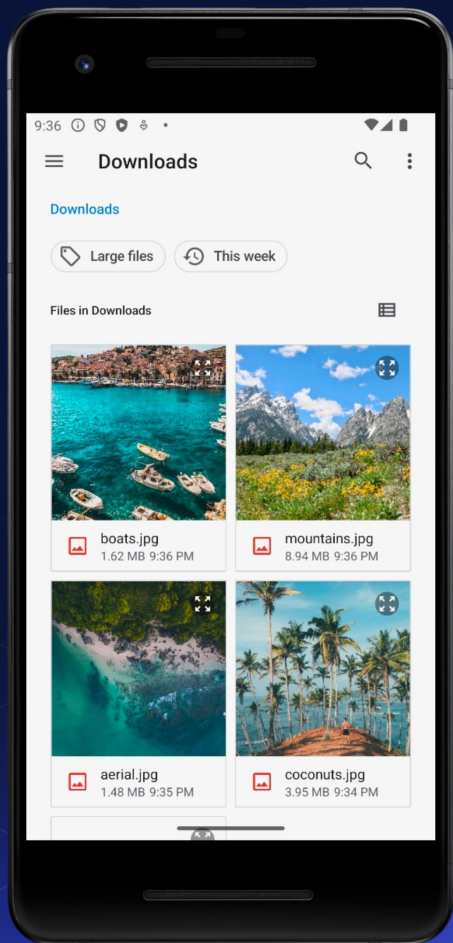
- Uploading an Asset
- Cloudinary Upload Widget
- Pre-Processing



Upload

Uploading media using Cloudinary's Android SDK is easy. Cloudinary streamlines the process for seamless integration into your Android app. In just a few lines of code, you can upload images and videos to Cloudinary.

```
private void uploadImage(Uri fileUri){  
    String requestId = MediaManager.get().upload(fileUri)  
        .unsigned("unsigned-image")
```

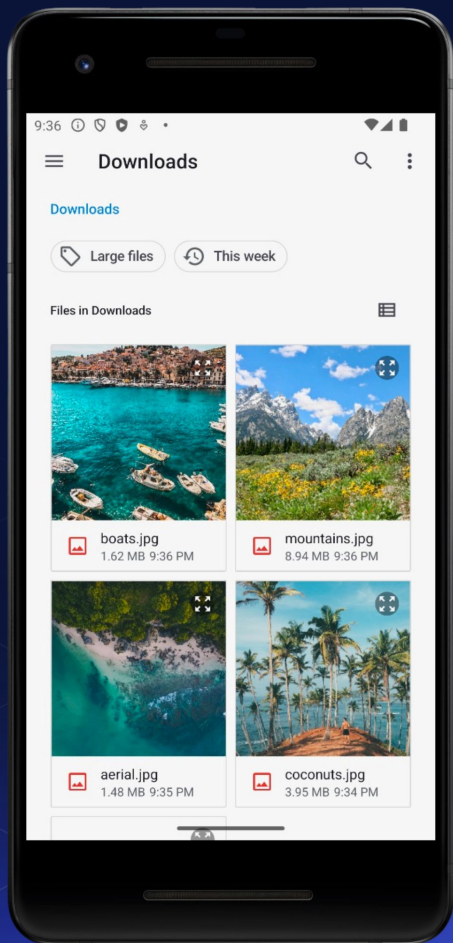


Upload Widget

You can implement Cloudinary's Upload Widget in the Android SDK to easily upload assets from the frontend directly to your Cloudinary account, without involving any servers in the process.

This ready-to-use widget offers developers a hassle-free integration, empowering users to effortlessly select and upload images or videos from their devices. This simplifies the user experience, enhances your app's media capabilities, and expedites development.

You can customize the widget to match your app's design all while benefiting from Cloudinary's powerful features.



Upload Widget - Code

```
private void setUpUploadButton() {  
    Button uploadButton = binding.uploadWidgetButton;  
    uploadButton.setOnClickListener(view -> openUploadWidget());  
  
private void openUploadWidget() {  
    UploadWidget.startActivity(getActivity(), UPLOAD_WIDGET_CODE);  
    binding.uploadWidgetProgressbar.setVisibility(View.VISIBLE)}  
}
```

Pre-Processing

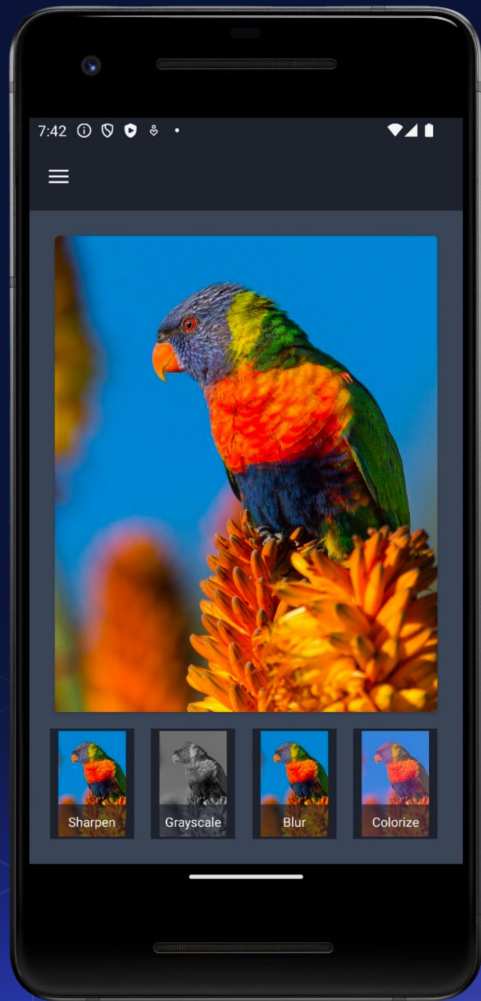
Pre-processing allows you to perform image or video transformations **before** uploading them to the Cloudinary server.

Developers can manipulate and optimize media files on the client-side, such as resizing, cropping, adding effects, or adjusting quality, before transferring them to Cloudinary's cloud storage.

```
private void preprocessImage(){
    Uri fileUri = Uri.parse("android.resource://" + getActivity().getPackageName
    () + "/drawable/coffee_with_a_view");
    String requestId = MediaManager.get().upload(fileUri)
        .unsigned("unsigned-image")
        .preprocess(new ImagePreprocessChain()
            .loadWith(new BitmapDecoder(1000, 1000))
            .addStep(new Limit(1000, 1000))
            .addStep(new DimensionsValidator(10, 10, 1000, 1000))
            .saveWith(new BitmapEncoder(BitmapEncoder.Format.JPEG, 80)))
    );
}
```

Asset Delivery

- Transformations
- Optimizations



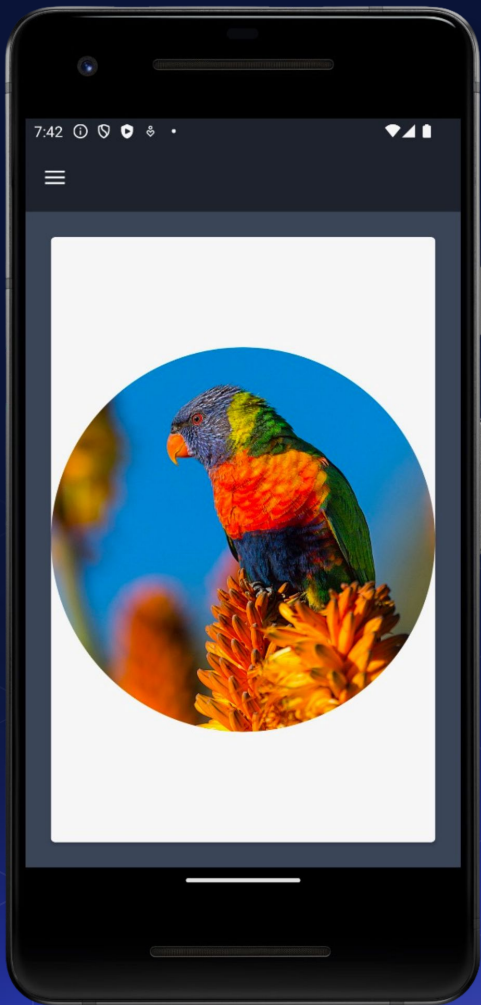
Transformations

Cloudinary allows you to seamlessly integrate transformations into your workflow. These transformation capabilities include resizing, cropping, format conversion, and other advanced effects.

This enhances user experiences, improves performance, and delivers streamlined media assets at scale across the web.

Transformations - Code

```
private List<String> buildTransformUrls() {
    String lorikeetOriginalUrl = MediaManager.get().url().generate("lorikeet");
    String lorikeetSharpenUrl = MediaManager.get().url().transformation(new
Transformation().effect("sharpen:400")).generate("lorikeet");
    String lorikeetGrayscaleUrl = MediaManager.get().url().transformation(new
Transformation().effect("grayscale")).generate("lorikeet");
    String lorikeetBlurUrl = MediaManager.get().url().transformation(new
Transformation().effect("blur:500")).generate("lorikeet");
    String lorikeetColorizeUrl = MediaManager.get().url().transformation(new
Transformation().color("violet").effect("colorize:30")).generate("lorikeet");
    return Arrays.asList(lorikeetOriginalUrl, lorikeetSharpenUrl,
lorikeetGrayscaleUrl, lorikeetBlurUrl, lorikeetColorizeUrl);}
```



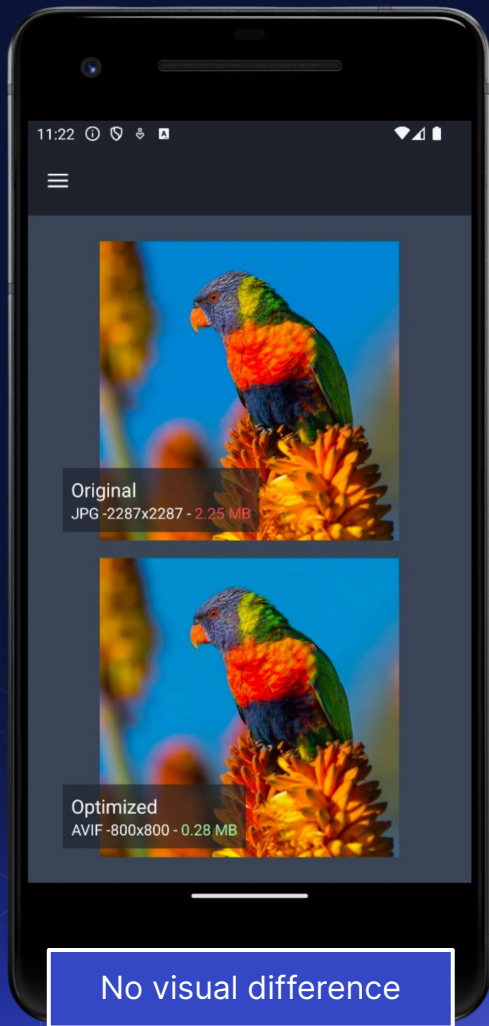
Complex Transformations

Cloudinary allows you to combine multiple transformation features to customize your media assets precisely to your needs.

Whether resizing, cropping, adding effects, or converting formats, Cloudinary simplifies the process, allowing you to seamlessly integrate and apply multiple transformations in the same call.

Complex Transformations - Code

```
public void onViewCreated(@NonNull View view, Bundle savedInstanceState) {  
    super.onViewCreated(view, savedInstanceState);  
    String url = MediaManager.get().url().transformation(new  
Transformation().gravity("auto").effect("sharpen:400").radius("max")  
.fetchFormat("auto").quality("auto")).generate("lorikeet");  
    setMainImageView(url);}
```



Optimization

Cloudinary allows you to enhance your images and videos for optimal performance and user experience with just a few simple steps.

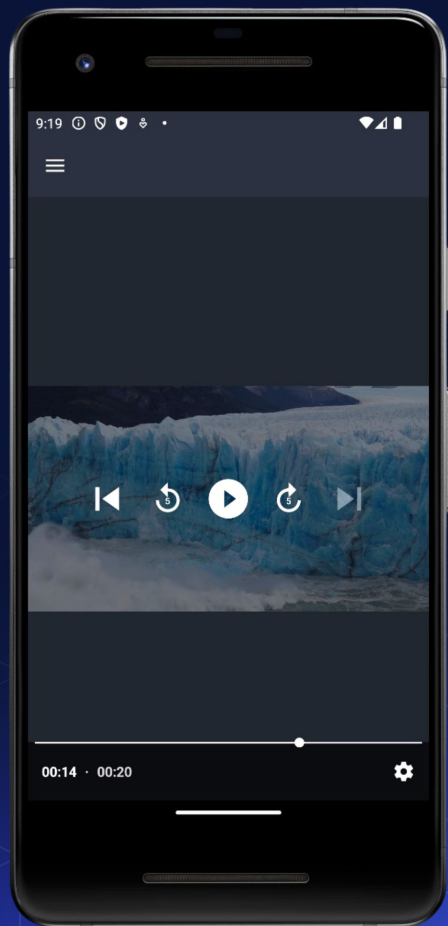
From automatic format selection (**f_auto**) and quality adjustment (**q_auto**) to intelligent resizing and compression, Cloudinary's optimization tools are designed to streamline your workflow and improve load times across all devices and platforms.

Optimization - Code

```
private void setOptimizationImageView((String publicId)){  
    String url = MediaManager.get().url().transformation(new  
Transformation().crop("scale").width(800).fetchFormat("avif").quality("auto")  
.dpr("auto")).generate(publicId);
```


Video

- Clouldinary Native Video Player
- Creating a Video Feed



CldVideoPlayer

The Cloudinary Video Player, allows developers to easily embed and customize video playback experiences within their Android apps.

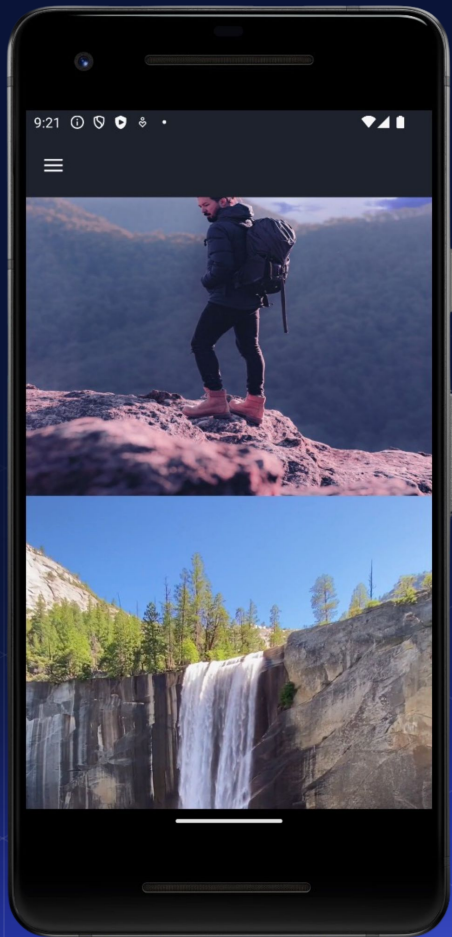
The player supports various video formats and codecs, ensuring compatibility with a wide range of devices and platforms.

Additionally, it offers advanced features such as adaptive bitrate streaming, allowing for smooth playback even under varying network conditions.

CldVideoPlayer - Code

```
private void setVideoPlayer() {
    CldVideoPlayer player = null;
    player = new CldVideoPlayer(getContext(),
        (MediaManager.get().url().resourceType("video")
        .transformation(new
        Transformation<>().quality("auto")).generate("glacier"))));
    binding.playerView.setPlayer(player.getPlayer());
    player.getPlayer().play();}
```

CldVideoPlayer is a wrapper around ExoPlayer, an open-source media playback library for Android developed by Google. To get the video player, we need to call getPlayer().



Video Feed

You can also create a video feed using the Android SDK.

Video Feed - Code

```
public view onCreateView(@NonNull LayoutInflater inflater, ViewGroup container,
    Bundle savedInstanceState) {
    binding = VideoFeedFragmentBinding.inflate(inflater, container, false);
    ViewPager2 recyclerView = binding.viewPager;
    List<String> videoUrls = new ArrayList<>();
    videoUrls.add(MediaManager.get().url().resourceType("video").transformation(new
Transformation<>().quality("auto").generate("backpack")));
    videoUrls.add(MediaManager.get().url().resourceType("video").transformation(new
Transformation<>().quality("auto").generate("test-assets/waterfall")));
    videoUrls.add(MediaManager.get().url().resourceType("video").transformation(new
Transformation<>().quality("auto").generate("cove")));
    videoUrls.add(MediaManager.get().url().resourceType("video").transformation(new
Transformation<>().quality("auto").generate("kids-hiking")));
    VideoFeedAdapter videoFeedAdapter = new VideoFeedAdapter(requireContext(), videoUrls);
    recyclerView.setAdapter(videoFeedAdapter);
    return binding.getRoot();}
```

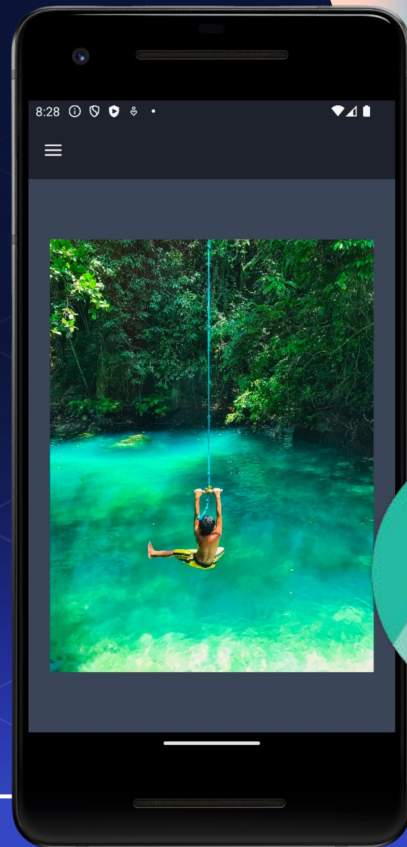
Download - Image Loaders

- Glide
- Picasso
- Fresco

Glide Download

Glide for Android is a powerful and flexible open-source image loading and caching library developed by the Google engineering team.

Glide's robust caching mechanisms are designed to enhance the performance and efficiency of image loading tasks in your Android application, with support for fetching images from various sources like URLs, local files, and content providers.

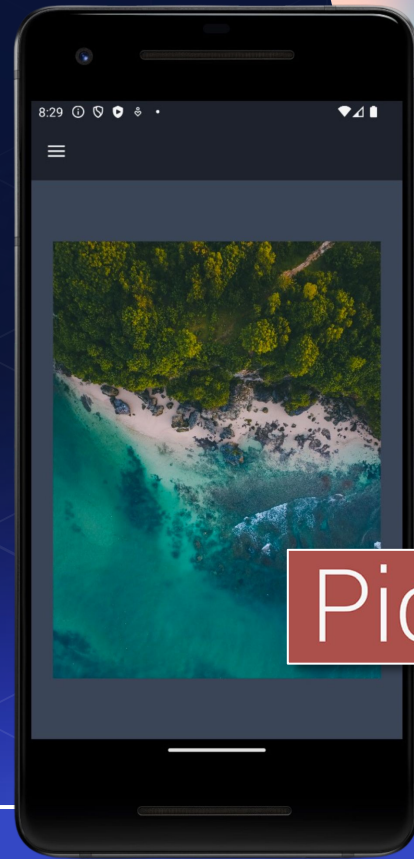


```
private void setImageViewWithGlideIntegration() {  
  
    MediaManager.get().setDownloadRequestBuilderFactory(new GlideDownloadRequestBuilderFactory());  
    ImageView imageView = binding.glideDownloadImageview;  
    MediaManager.get().download(getActivity()).load(MediaManager.get().url().generate("swing")).into(imageView);  
}
```

Picasso Download

Picasso for Android is an open-source image loading library developed by Square.

Picasso provides features such as image resizing, caching, and transformation, making it a popular choice among Android developers for efficiently handling image loading tasks.



Picasso

```
private void setImageViewWithPicassoIntegration() {  
    MediaManager.get().setDownloadRequestBuilderFactory(new PicassoDownloadRequestBuilderFactory());  
    ImageView imageView = binding.picassoDownloadImageview;  
    MediaManager.get().download(getActivity()).load(MediaManager.get().url().generate("aerial")).into(imageView);  
}
```

Fresco Download

Fresco for Android is an open-source image loading library developed and maintained by Facebook.

Fresco offers features such as memory management, image caching, progressive image loading, animated GIF support, and more. It enhances the image loading and display experience within Android apps.



```
private void setImageViewWithFrescoIntegration() {
```

```
    MediaManager.get().setDownloadRequestBuilderFactory(new FrescoDownloadRequestBuilderFactory());
```

```
    ImageView imageView = binding.frescoDownloadImageview;
```

```
    MediaManager.get().download(getActivity()).load(MediaManager.get().url().generate("coconuts")).into(imageView);}
```

Integration

- Glide Integration

Glide Integration

Integrating Cloudinary with Glide, allows developers to easily fetch, transform, and display images and videos from Cloudinary's cloud storage while benefiting from Glide's efficient caching and image loading capabilities.

This integration streamlines the process of fetching and displaying media assets in Android apps, while also providing the flexibility to apply dynamic transformations and optimizations to images and videos on-the-fly, based on the specific requirements of the application.

```
private void setImageViewWithGlideIntegration() {  
    ImageView imageView = binding.glideIntegrationImageview;  
    GlideApp.with(imageView)  
        .load(new CloudinaryRequest.Builder("boats")  
            .transformation(new  
Transformation().effect("blur"))  
            .responsive(ResponsiveUrl.Preset.AUTO_FILL)  
            .build())  
        .into(imageView);}
```



Next Steps and Further Support



Cloudinary Academy

The Cloudinary Academy offers both self-paced courses and live classes taught by Cloudinary experts.

LIVE TRAINING SELF-PACED COURSES PODCASTS LEARNING PATHWAYS SUPPORT SIGN IN

Blast off with the Cloudinary Academy!

Cloudinary's training program and portal for new and seasoned users.

[EXPLORE OUR COURSES](#)



All Learning Styles

Do you work better at your own pace? Or do you prefer to learn from a seasoned instructor in person? We have built coursework and lessons for all types of learners, regardless of their preferred style.

[VIEW OUR LESSONS](#)

training.cloudinary.com

Recommended Courses

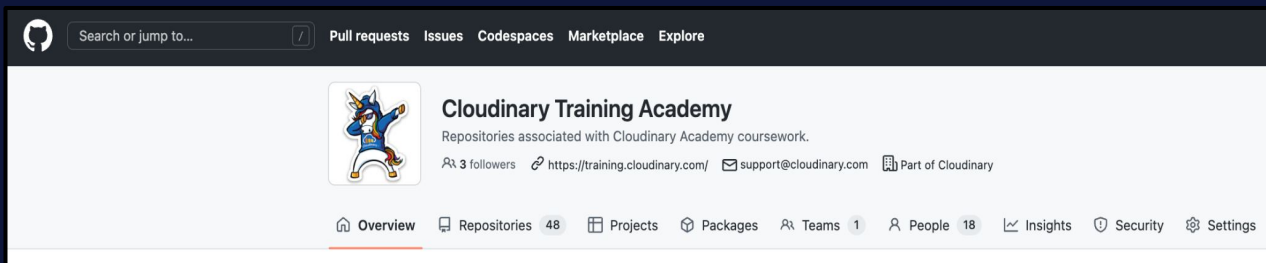
Those who are new to Cloudeary's APIs can benefit from a variety of helpful, self-paced courses that provide comprehensive learning resources.

- [Introduction to Cloudeary Programmable Media \(90-Minutes\)](#)
- [Understanding Cloudeary Programmable Media Terminology \(30-Minutes\)](#)
- [Cloudeary JumpStart for New Developer Users \(~40-Minutes\)](#)
- [Advanced Concepts for Developers \(~16 hours\)](#)
- [Introduction for Node.js Developers \(90 minutes\)](#)
- [Fundamentals for Developers \(~9 hours\)](#)



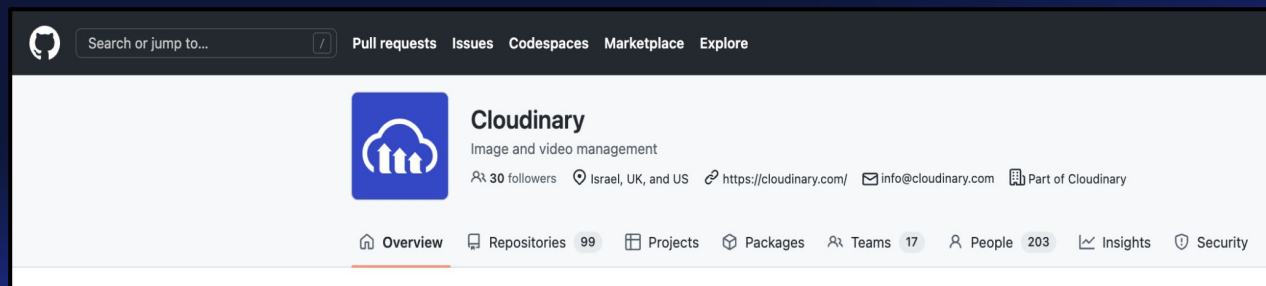
Review our GitHub Repositories

Access our sample projects to help you with building your own work using Cloudinary.



The screenshot shows the GitHub profile page for 'Cloudinary Training Academy'. At the top, there is a search bar and navigation links for 'Pull requests', 'Issues', 'Codespaces', 'Marketplace', and 'Explore'. The profile header includes the GitHub Octocat logo, a search bar with the text 'Search or jump to...', and the repository name 'Cloudinary Training Academy'. Below the name is a description: 'Repositories associated with Cloudinary Academy coursework.' and statistics: '3 followers', 'https://training.cloudinary.com/', 'support@cloudinary.com', and 'Part of Cloudinary'. The main navigation bar shows 'Overview' (selected), 'Repositories 48', 'Projects', 'Packages', 'Teams 1', 'People 18', 'Insights', 'Security', and 'Settings'.

github.com/cloudinary-training



The screenshot shows the GitHub profile page for 'Cloudinary'. At the top, there is a search bar and navigation links for 'Pull requests', 'Issues', 'Codespaces', 'Marketplace', and 'Explore'. The profile header includes the GitHub Octocat logo, a search bar with the text 'Search or jump to...', and the repository name 'Cloudinary'. Below the name is a description: 'Image and video management' and statistics: '30 followers', 'Israel, UK, and US', 'https://cloudinary.com/', 'info@cloudinary.com', and 'Part of Cloudinary'. The main navigation bar shows 'Overview' (selected), 'Repositories 99', 'Projects', 'Packages', 'Teams 17', 'People 203', 'Insights', and 'Security'.

github.com/cloudinary

Engineering Support

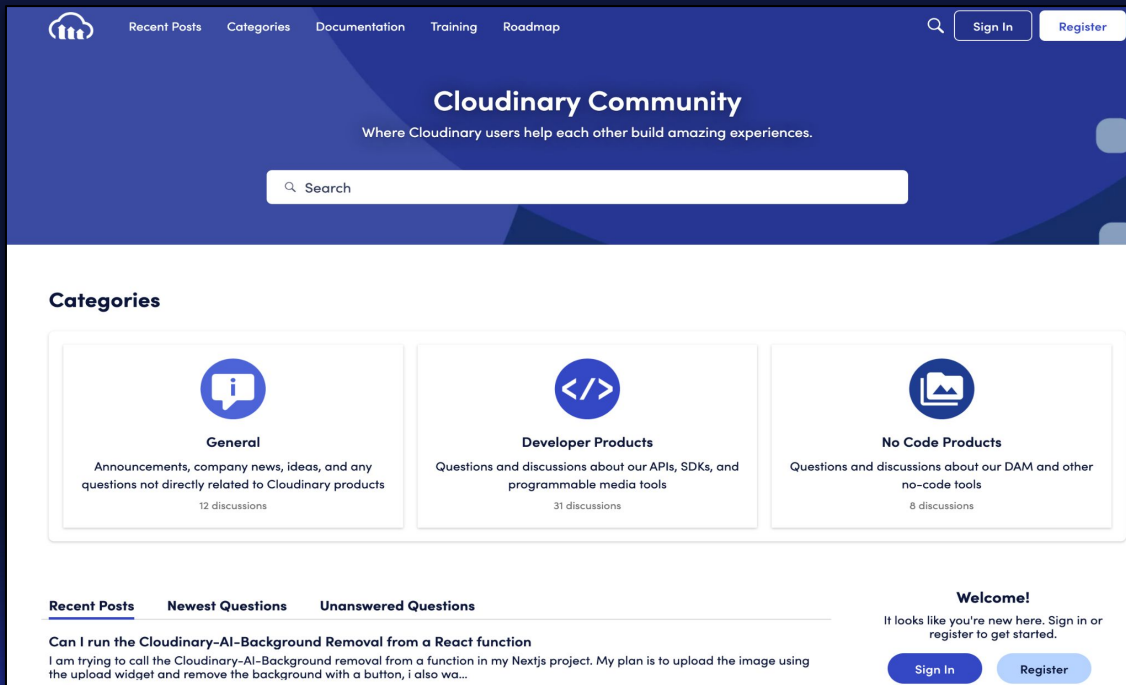
We are always happy to answer your questions, as we have dedicated support staff for our developer community.

The screenshot shows the Cloudinary Academy website. At the top, there is a navigation bar with the Cloudinary logo on the left and links for "Submit a request", "Documentation", "Training", "Community", "Product Roadmap", and "Sign in" on the right. Below the navigation bar is a large banner with a dark blue background and abstract geometric shapes. A search bar is centered in the banner. Below the banner is a section for "Cloudinary academy" with the text "New to Cloudinary? Sign up for our Academy's Training Courses!". The main content area is titled "Knowledge Base Topics" and features five topic cards: "Uploading, Managing and Transforming Assets", "Client Libraries and Integration Guides", "Plans, Billing and Accounts", "Asset Delivery", and "Security, Privacy and Compliance". Each card has an icon and a "View more" link.

support.cloudinary.com/hc/en-us/requests/new

Join Our Community Forums

Ask questions to staff or other users in our dedicated communities.



The screenshot shows the Cloudinary Community forum homepage. At the top, there is a navigation bar with links for 'Recent Posts', 'Categories', 'Documentation', 'Training', and 'Roadmap'. On the right side of the navigation bar, there are search and user action buttons: 'Sign In' and 'Register'. The main header area features the 'Cloudinary Community' title and the tagline 'Where Cloudinary users help each other build amazing experiences.' Below this is a search bar. The 'Categories' section is prominently displayed, containing three cards: 'General' (12 discussions), 'Developer Products' (31 discussions), and 'No Code Products' (8 discussions). At the bottom, there are tabs for 'Recent Posts', 'Newest Questions', and 'Unanswered Questions'. A 'Welcome!' message is visible, along with 'Sign In' and 'Register' buttons. A sample post is partially visible under the 'Recent Posts' tab.

Recent Posts Categories Documentation Training Roadmap


Search Sign In Register


Cloudinary Community


Where Cloudinary users help each other build amazing experiences.

Search

Categories


General
Announcements, company news, ideas, and any questions not directly related to Cloudinary products
12 discussions


Developer Products
Questions and discussions about our APIs, SDKs, and programmable media tools
31 discussions


No Code Products
Questions and discussions about our DAM and other no-code tools
8 discussions

Recent Posts Newest Questions Unanswered Questions

Welcome!
It looks like you're new here. Sign in or register to get started.

Sign In Register

Can I run the Cloudinary-AI-Background Removal from a React function
I am trying to call the Cloudinary-AI-Background removal from a function in my Nextjs project. My plan is to upload the image using the upload widget and remove the background with a button, I also wa...

community.cloudinary.com

Join Our Discord Discussions

Connect with Cloudinary users and staff on Discord!

The screenshot shows the Discord interface for the 'Cloudinary Community' server, specifically the 'cloudinary-apis' channel. The interface is in dark mode. On the left, there is a sidebar with server navigation options: 'GET STARTED' (rules, introductions, tips), 'NEWS AND ANNOUNCEMENTS' (academy-news, cloudinary-news), 'COURSES' (dam-security, api-security, dam-bootcamp), 'MEDIA FLOWS' (media-flows-support, media-flows-annou...), and 'PRODUCT DISCUSSIONS'. A 'Boost This Server' button is visible, along with a goal of 'LVL 2' (2/7 Boosts). The main chat area shows a message from 'SamBrace' dated 04/08/2022, announcing a new DevJams podcast episode. The message includes a link to the episode and a list of platforms where it can be accessed: Cloudinary.com, Cloudinary Academy, YouTube, Spotify, Apple Podcasts, and Google Podcasts. Below this, there is a message from 'Thunderstorm' dated 07/30/2022, asking for help with a Cloudinary API call. The code snippet shown is:

```
cloudinary_api
.delete_all_resources("hala/random-photos")
.then(console.log)
.catch(console.log);
```

 The right sidebar shows a list of server members, including 'Becky Peltz', 'Emily.lee', 'colbyfayock', 'Danny', 'Damien9', 'Hrafnkell (Alan)', 'JoyZ', 'MEE6', 'MickeytheGreat', 'Richie Rob', 'Sayanta', 'Scott O'Connor', 'Tessa', and 'williamskhnicorp'. There are also 'ONLINE' (10) and 'OFFLINE' (382) counts.

discord.gg/cloudinary



Thank you