Graphika

A Revealing Picture

AI-Generated 'Undressing' Images Move from Niche Pornography Discussion Forums to a Scaled and Monetized Online Business

By Santiago Lakatos

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Key Findings

- The creation and dissemination of synthetic non-consensual intimate imagery (NCII) has moved from a custom service available on niche internet forums to an automated and scaled online business that leverages a myriad of resources to monetize and market its services. Creators of synthetic NCII, also known as "undressing" images, manipulate existing photos and video footage of real individuals to make them appear nude without their consent.

- A group of 34 synthetic NCII providers identified by Graphika received over 24 million unique visitors to their websites in September, according to data provided by web traffic analysis firm Similarweb. Additionally, the volume of referral link spam for these services has increased by more than 2,000% on platforms including Reddit and X since the beginning of 2023, and a set of 52 Telegram groups used to access NCII services contain at least 1 million users as of September this year.

- We assess the primary driver of this growth is the increasing capability and accessibility of open-source artificial intelligence (AI) image diffusion models. These models allow a larger number of providers to easily and cheaply create photorealistic NCII at scale. Without such providers, their customers would need to host, maintain, and run their own custom image diffusion models - a time-consuming and sometimes expensive process.

- Bolstered by these AI services, synthetic NCII providers now operate as a fully-fledged online industry, leveraging many of the same marketing tactics and monetization tools as established e-commerce companies. This includes advertising on mainstream social media platforms, influencer marketing, deploying customer referral schemes, and the use of online payment technologies.

- We assess the increasing prominence and accessibility of these services will very likely lead to further instances of online harm, such as the creation and dissemination of non-consensual nude images, targeted harassment [campaigns](#), [sextortion](#), and the [generation](#) of child sexual abuse material.

Analysis

Graphika has identified key tactics, techniques, and procedures (TTPs) employed by synthetic NCII providers across a range of online platforms. By examining these behaviors, we can better understand how these actors are able to operate at scale and monetize their activities.

Promotion and Sale on Social Media Platforms

Like countless other businesses, synthetic NCII providers use social media platforms to market their services and drive web traffic to affiliate links. The point of service, however, where the images are generated and sold, usually takes place on the provider's website or messaging services such as Telegram and Discord.

Mainstream platforms predominantly serve as marketing points where synthetic NCII providers can advertise their capabilities and build an audience of interested users. The bulk of these actors' activity appears to be focused on directing potential customers to off-platform spaces, such as their own websites, Telegram groups used to access their services, or mobile stores to download an affiliated app.

Some providers are overt in their activities, stating that they provide "undressing" services and posting photos of people they claim have been "undressed" as proof. Others are less explicit and present themselves as AI art services or web3 photo galleries while including key terms associated with synthetic NCII in their profiles and posts.

A subset of synthetic NCII services also leverage influencer marketing to promote their products. For example, we identified content aggregation accounts on Instagram that included referral links to synthetic NCII services in their posts and bios.
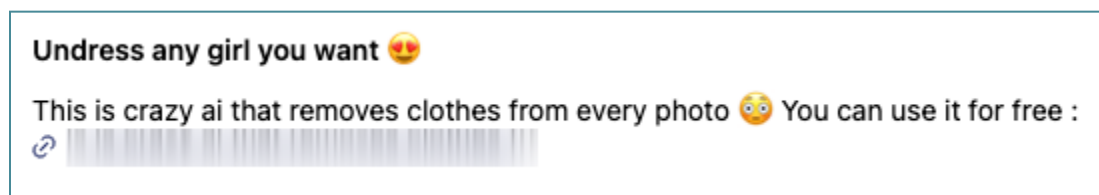
Account bio of a synthetic NCII provider on Instagram, which explicitly advertises the capability and includes a link to their website.

An image posted to X advertising the services of a synthetic NCII provider. The image suggests the NCII provider is marketing their services to users as a tool for harassment.

Referral Link Spam

Synthetic NCII providers regularly engage in comment and referral link spamming to promote their services. This practice involves replying to social media posts that mention keywords associated with synthetic NCII with referral links to synthetic NCII services. For example, a user commenting "Where can I find this app?" on a news story about synthetic NCII might receive a barrage of replies featuring links to synthetic NCII-related websites and chat groups.

While many of the accounts engaged in this activity show signs of automation and have previously engaged in similar spam-like behaviors, some also appear to be authentic users. All the services we identified offer incentives that give users additional "credits" to generate more images when someone uses their referral link. We also observed administrators of synthetic NCII services giving instructions to other users on how to manipulate platform engagement and boost the visibility of comments containing referral links.

Using data provided by Meltwater, we measured the number of comments and posts on Reddit and X containing referral links to 34 websites and 52 Telegram channels providing synthetic NCII services. These totaled 1,280 in 2022 compared to over 32,100 so far this year, representing a 2,408% increase in volume year-on-year.
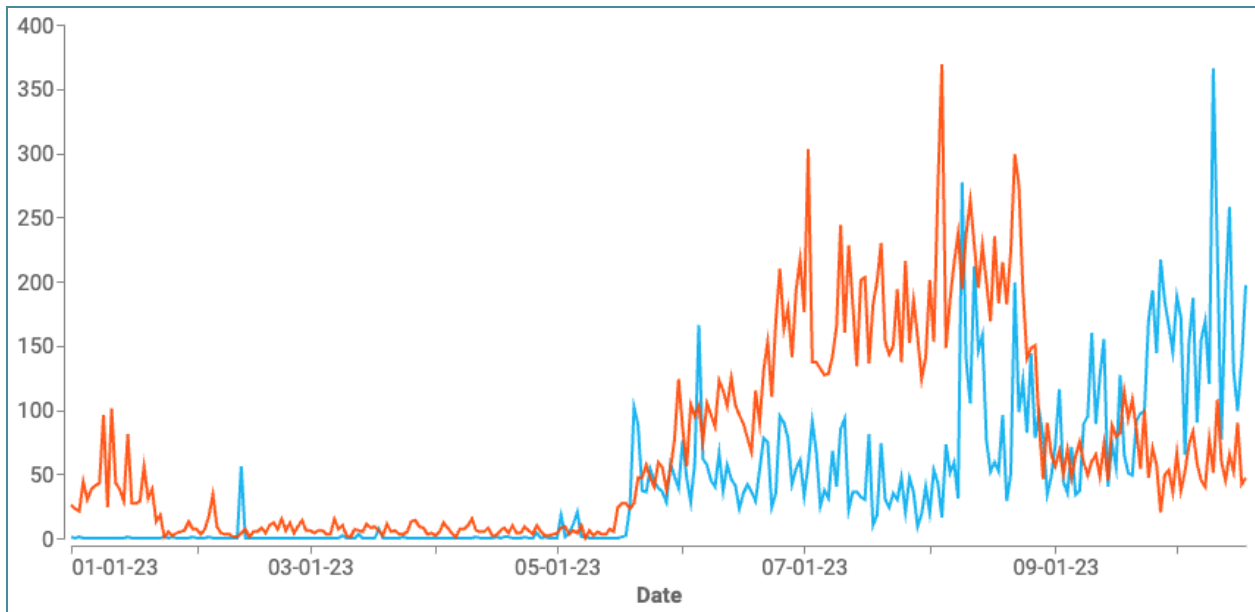
Volume of comments and posts on Reddit (orange) and X (blue) containing referral links to the websites of 72 synthetic NCII providers between January - September 2023. Source: Meltwater.
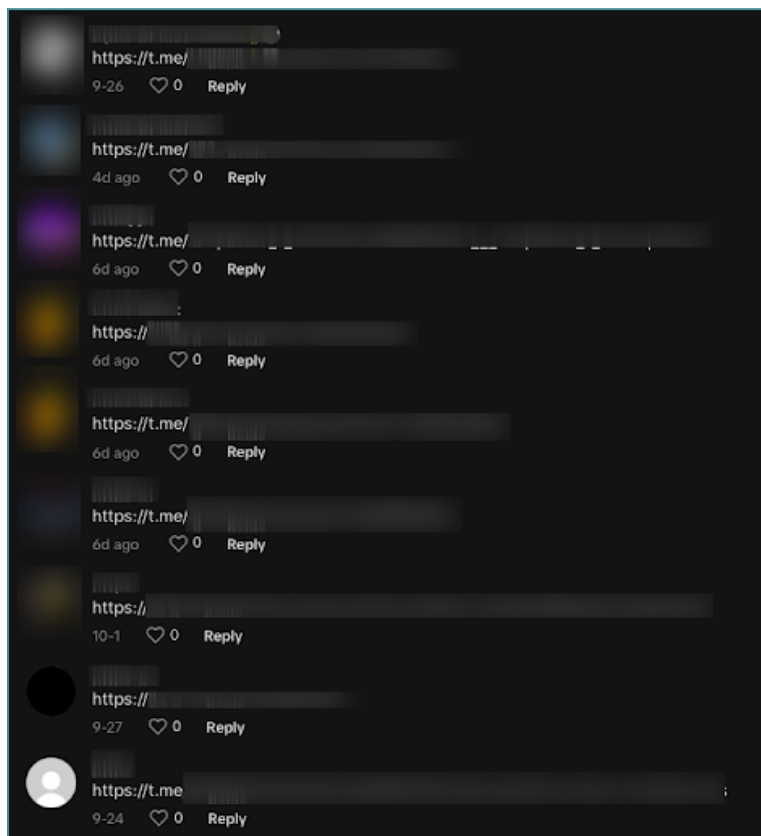

Comments under a TikTok video about an unrelated AI image editing tool. Each of the comments contains a link to a synthetic NCII service.

Monetization

Many of the synthetic NCII services we identified operate on a freemium model, initially offering users a small number of free generations while keeping additional generations and enhanced services behind a paywall. Users are required to purchase additional "credits" or "tokens" to access features such as higher resolution exports, "age" and "body trait" customization, and inpainting - a feature where the AI model will replace a highlighted part of the image with requested content, such as removing clothing. Prices for generations range from $1.99 for one credit to $299 for API access and other added features.

Currently, many of these services monetize their offerings through credit and debit card payment platforms such as PayPal and Stripe, as well as cryptocurrency platforms, including Coinbase Commerce. In a possible attempt to avoid detection by mainstream payment providers, many of which prohibit the sale of nonconsensual pornography, some synthetic NCII services offer "credits" through crowdfunding platforms such as Patreon or subscriptions to other adult websites. We also identified synthetic NCII providers operating peer-to-peer marketplaces, allowing users to purchase and sell credits or images.
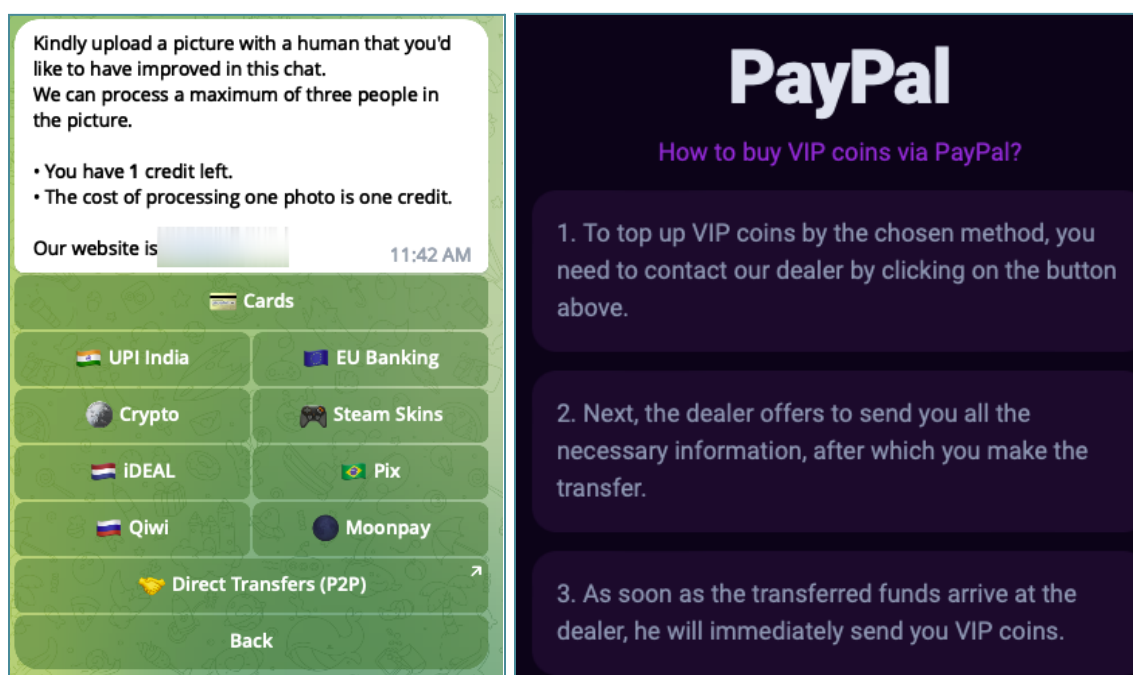

Payment options offered by a synthetic NCII service on Telegram.

User Experience

Synthetic NCII providers appear to prioritize user experience, providing an easy-to-use and quick-to-access service. In many cases, users can begin generating and accessing synthetic NCII within minutes of first visiting a provider's website or Telegram group, often for no upfront cost. This drastically lowers the barrier to entry for these services, which would otherwise require users to find, download, and operate custom image diffusion models.

One example of a user experience feature employed by synthetic NCII providers is the single sign-on service provided by many mainstream social media companies. This allows a customer to create and maintain an account with a synthetic NCII provider using their existing social media login details, significantly reducing the time required to access and begin using the service.
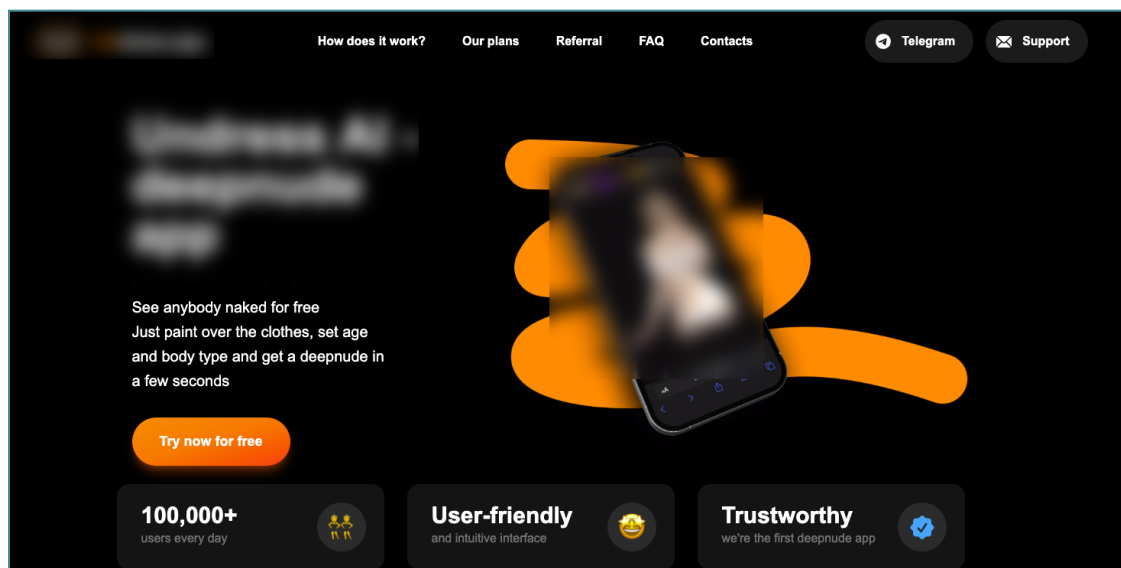
Screenshot of the homepage of a synthetic NCII provider website, including links to launch their app and Telegram bot. The website claims to receive over 100,000 users per day.
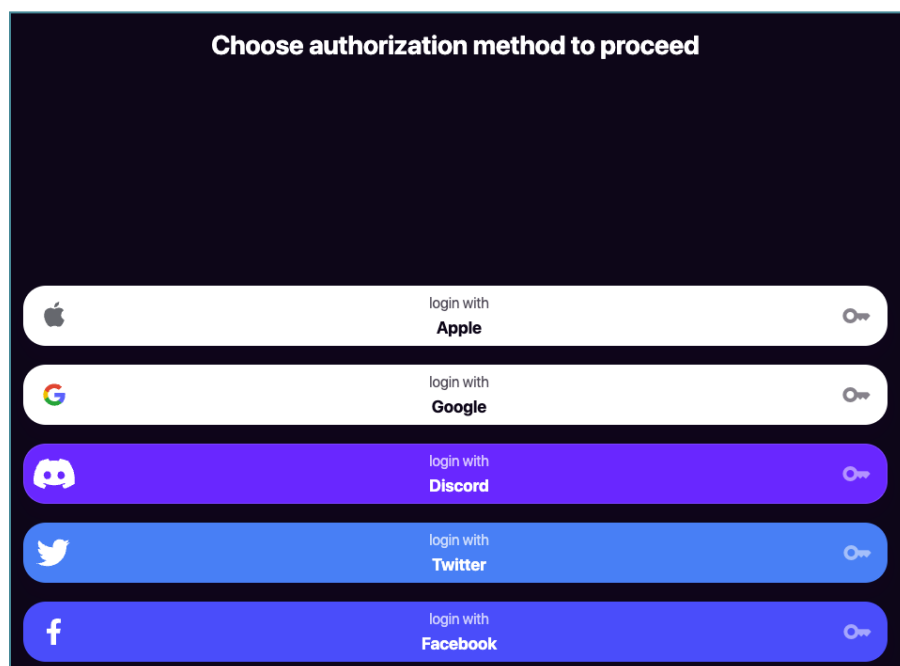
The sign-up page of a synthetic NCII provider showing the option to create an account using your existing social media credentials.

Graphika

About Us

Graphika *is an intelligence company that maps the world's online communities and conversations. We help partners worldwide, including Fortune 500 companies, Silicon Valley, human rights organizations, and universities, discover how communities form online and understand the flow of information and influence within large-scale social networks. Customers rely on Graphika for a unique, network-first approach to the global online landscape.*

For more information, please contact: info@graphika.com