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April 28, 2023

Thomas Dohmke
CEO, GitHub
88 Colin P Kelly Jr St
San Francisco, CA 94107

Re: GitHub hosting source code for sexually exploitative technology, facilitating image-based sexual abuse (IBSA), sexual exploitation, and promoting the dangerous use of generative-AI

Dear Mr. Dohmke,

We are writing to inform you that the National Center on Sexual Exploitation—a non-partisan nonprofit organization in Washington, DC dedicated to addressing the full spectrum of sexual exploitation—is placing GitHub on the annual Dirty Dozen List featuring 12 major contributors to sexual exploitation and abuse. The list will be revealed to the public on May 2.

As the largest code-hosting community[1] globally and the most prominent code-hosting platform[2] for version control and collaboration, comprised of over 100 million active developers,[3] GitHub has incredible power and reach. Due to your platform's open-sourced design, reporting 413 million open-sourced code contributions in 2022 alone, GitHub has served as a primary leader in the democratization of the most recent software developments – such as with generative AI – and is arguably the most critical space in which AI tech develops.[4]

However, despite moving the tech industry forward in the last decade and establishing itself as a leader in the democratization of generative AI, **GitHub has also earned itself a title as a significant contributor to the creation of sexually exploitative technology**[5] **and has been noted for facilitating the growing crime of image-based sexual abuse** – the capture, creation, and/or sharing of sexually explicit images without the subject's knowledge or consent. GitHub hosts guides, codes, and hyperlinks to sexual deepfake community forums dedicated to the creation, collaboration, and commodification of synthetic media technologies, and AI-leveraged 'nudifiying' websites and applications that take women's images and "strip them" of clothing.[6] Open-sourced repositories dedicated to

IBSA thrive on GitHub, allowing users to replicate, favorite (star), and collaborate on sexually exploitative technology without repercussions.

In 2019, the source code for a 'nudifying' bot at the center of a deepfake ecosystem on Telegram that "stripped" images of more than 104,000 women was found on GitHub. Despite this technology violating GitHub's policies and the company reportedly banning the source code and all replications (forks) – **the source code and hundreds of replications remain active on GitHub four years later, continuing to victimize and traumatize the women depicted in the abusive content.**

GitHub has also come under fire from reputable academic researchers. A study by Winter and Salter found that GitHub allowed sexual deepfakes to "intentionally spread to spaces with limited moderation, which has allowed the continued creation of non-consensual pornography."[7]

DeepFaceLab,[8] **the most popular technology for creating sexual deepfakes (estimated to be used in the creation of 95% of all sexual deepfakes), is active on GitHub** and has been starred over 38 thousand times and replicated over 8.7 thousand times.[9] Further, DeepFaceLab's GitHub repository contains direct links to the most prolific sexual deepfake abuse website in the United States: Mr.DeepFakes.

In addition to the ones cited above, many more repositories dedicated to developing pornography and image-scraping technology/bots, as well as "save bots" that are frequently used to save sexually explicit and pornographic images from social media sites, remain rampant on GitHub. Image-based sexual abuse (IBSA) is occurring at unprecedented rates, and is facilitated by Internet and Communication Technologies – such as those being developed on GitHub. The online nature of IBSA limits the victim's ability to escape abuse, as evidence remains online forever. Once an image is shared, there is no guarantee that it can be removed, especially with technology further restricting a victim's ability to remove content, such as save bots. The technology being developed on GitHub is also part of a new wave of sexual violence. Sexual deepfakes allow anyone to be targeted and harassed online for something they never did or said.

We know GitHub prides itself on being an educational innovator – providing opportunities for teenagers (13+) and college students to learn coding and software development. These services are designed to be connected to learning management systems (LMS) such as Google Classroom.[10] Considering GitHub's lack of content moderation and meaningful age verification measures, the significant number of sexually exploitative and obscene repositories publicly accessible to minors on GitHub is alarming. GitHub does not age-gate software developments that may be inappropriate for underage users – despite having a population of 1.9 million students using GitHub Classroom. Further, GitHub defaults all student repositories to public.[11] Teachers/administrators must pay an extra fee to access features to privatize their repositories.

NCOSE recognizes the importance of and supports technological innovation and progress. **However, technological advances must not supersede or come at the cost of people's safety and well-being.** Technology should be built and developed to fight, rather than facilitate, sexual exploitation and abuse. GitHub's emphasis on developer happiness and free speech safety and well-being cannot mean allowing developers to commit crimes and harm others. By providing a space not only to create, but also to collaborate on and amplify abuse, GitHub is not only condoning criminal conduct – it is directly contributing to it.

The exponential growth in innovation and creative solutions offered by artificial intelligence are to be celebrated. Yet the dizzying advancements bear several intuitive risks to its users and begs the question: Who bears the brunt? An injustice occurs when the purported benefits of artificial intelligence employed by

GitHub are annulled by acute risks and/or demonstrable harms. Humanity may not be close to an ethical consensus, but at least five ethical principles[12] from the global corpus of principles and guidelines on ethical AI are clear. These include transparency, justice and fairness, non-maleficence, responsibility, and privacy. Moreover, artificial intelligence systems learn and make decisions that can have a profound impact on human dignity and individual autonomy. GitHub's business model also breaches the 'legacy'[13] principle intrinsic to conversations concerning ethics. Rather than being compatible "with scenarios that most humans today would view as happy," GitHub ostensibly opts in for scenarios that most humans today "would view as terrible."

In recalibrating this imbalance, NCOSE urges GitHub to implement the following changes:

1. **Ban private and public repositories dedicated to sexual deepfake, 'nudifying,' and AI-generated pornography software development from GitHub;** this includes removing current repositories and preventing the replication of related repositories for sexually exploitative technology software development
2. **Ban private and public pornography and sexually explicit imagery scraping repositories from GitHub;** this includes removing current repositories and preventing the replication of related repositories for purposes of pornography and sexually explicit imagery scraping software development
3. **Proactively moderate content and community forums on GitHub**
4. **Default student repositories to private**
5. **Implement basic industrywide safety standards: parental controls, teacher/administrative controls, and age-gate repositories inappropriate for minor-aged users**

Image-Based Sexual Abuse (IBSA) is Facilitated on and through GitHub

Image-based sexual abuse (IBSA) is a broad term that includes a multitude of harmful experiences, such as non-consensual sharing of sexual images (sometimes called "revenge porn"), pornography created using someone's face without their knowledge (or sexual deepfakes), non-consensual recording or capture of intimate nude images (including so-called "upskirting" or surreptitious recordings in places such as restrooms and locker rooms via "spycams"), recording of sexual assault, the use of sexually explicit or sexualized materials to groom or extort a person (also known as "sextortion") or to advertise commercial sexual abuse, and more.[14]

Importantly, sexually explicit or sexualized material depicting children ages 0-17 constitutes a distinct class of material known as child sexual abuse material (CSAM – the more appropriate term for "child pornography"), which is illegal to knowingly possess, access, reproduce, and distribute under US federal law. CSAM should not be conflated with IBSA,[15] though the two crimes are closely related.

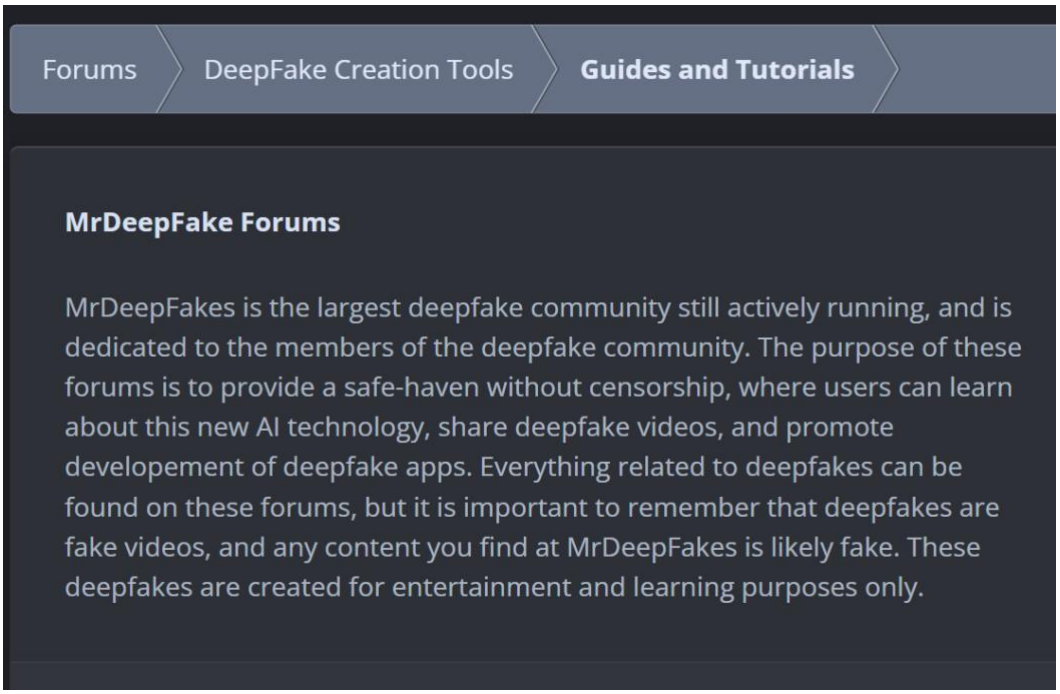
Although GitHub prohibits sexually explicit content, and has a specific policy banning non-consensual intimate imagery, "particularly where that content is amplified by its placement in profiles or other social contexts,"[16] the lack of effective content moderation practices allows sexually exploitative technology and IBSA to thrive. Although GitHub implements automated detection tools such as PhotoDNA to proactively scan for child sexual abuse material (CSAM),[17] GitHub fails to implement comprehensive moderation practices by permitting technology found to have generated CSAM and only moderating for CSAM itself.[18] **GitHub hosts three of the most notorious technologies used for synthetic sexually explicit material (SSEM) abuse: DeepFaceLab, DeepNude, and Unstable Diffusion.**

Unstable Diffusion.

Unstable Diffusion, an AI-generating "NSFW Community"[19] that began on Reddit and now operates a Discord server of over 254,000 members, has reportedly collected over 15 million "user donated" pornographic and sexually explicit images to create their training database.[20] They openly refer users to the GitHub source code for Stable Diffusion, a text-to-image generator for photorealistic image generation, and provide detailed instructions for necessary checkpoints to implement their own 'NSFW' additions.[21] Further, they attribute Stable Diffusion's source code to building the entirely 'NSFW' text-2-image generating website, Unstability AI.[22] Considering the method in which sexually explicit images were obtained via user "donations," there is no way meaningful age or consent verification could have occurred. However, AI-generated pornography is not the only sexually exploitative source code GitHub hosts. GitHub also allows sexual deepfake source codes, collaboration, and communities to operate on the platform.

DeepFaceLab.

DeepFaceLab's GitHub repository contains direct links to the most prolific sexual deepfake abuse website in the United States – Mr.DeepFakes. Not coincidentally, the creator of DeepFaceLab is also a founder of Mr.DeepFakes and advertises this connection openly on GitHub. DeepFaceLab is the leading deepfake software used in about 95% of all deepfake videos.[23] As of 2023, Mr.Deepfakes contains over 20,000 videos of sexual deepfakes (a rapidly expanding form of image-based sexual abuse), 13 million monthly visitors, and a community of over 250,000 members.[24] These communities further contribute to the sexual exploitation of women and the expansion of IBSA.



The DeepFaceLab repository on GitHub directly sends users to the Mr.DeepFakes website – a website dedicated to creating, requesting, and selling sexual deepfakes of celebrities and 'other' women.[25] Links to the software's primary source material – guides and tutorials, supplementary material, and communication groups – are provided on the repository's profile. The only way to learn how to use DeepFaceLab is by accessing the guide located on Mr.DeepFakes. While these guides are marked "SFW," they directly refer

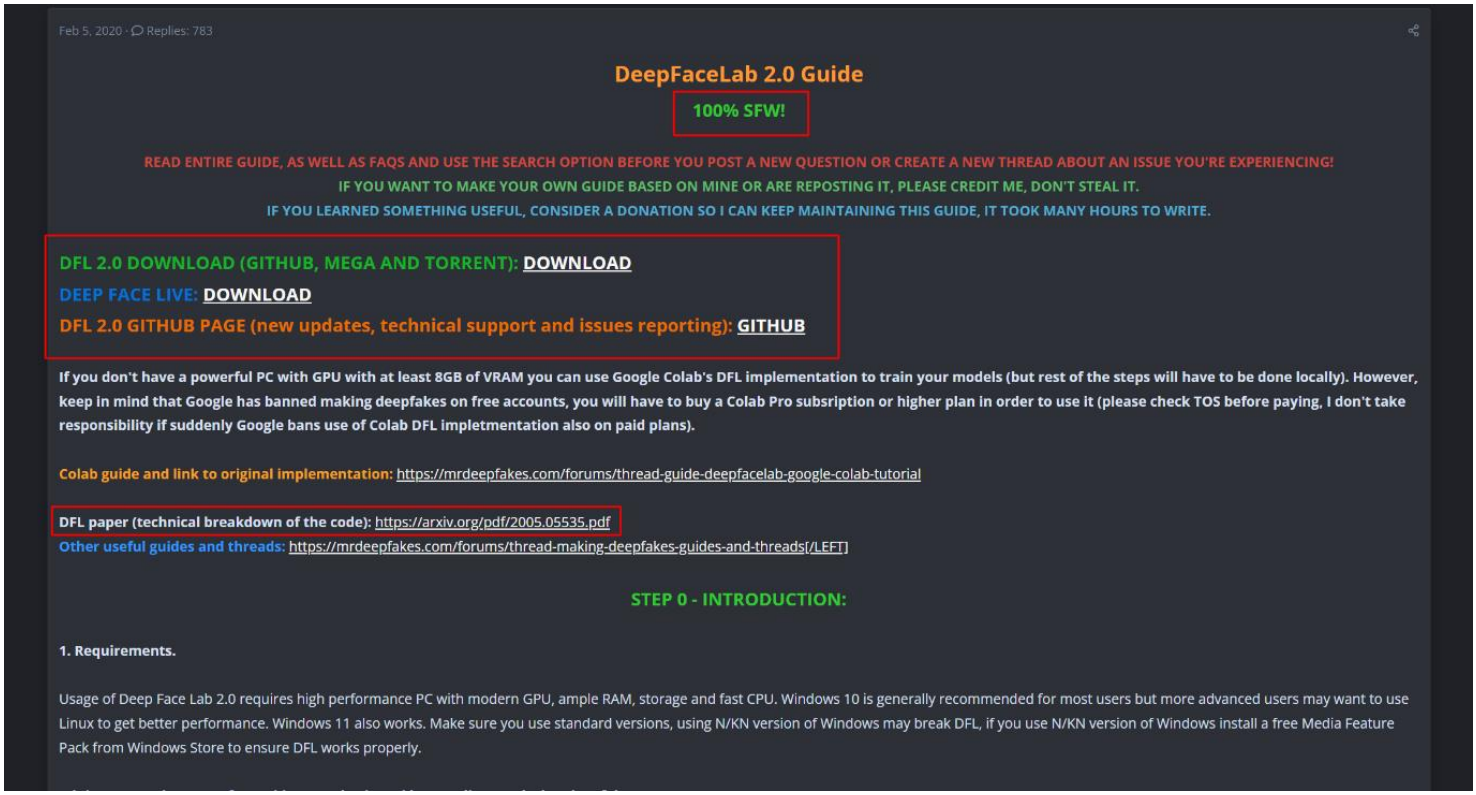
interested users to the Mr.DeepFakes website, in which misogyny, sexual objectification, and violence against women are seemingly commonplace.[26] As a 2022 Vice article pointed out, "[i]t is impossible to support the DeepFaceLab project without actively supporting non-consensual porn."[27]

The image below depicts the 'communication groups' section on DeepFaceLab's GitHub repository profile, containing direct links to dedicated sexual deepfake websites and social media groups.

Communication groups	
Discord	Official discord channel. English / Russian.
Telegram group	Official telegram group. English / Russian. For anonymous communication. Don't forget to hide your phone number
Русский форум	
mrdeepfakes	the biggest NSFW English community
reddit r/DeepFakesSFW/	Post your deepfakes there !
reddit r/RUdeepfakes/	Постим русские дипфейки сюда !
QQ群124500433	中文交流QQ群，商务合作找群主
dfldata.xyz	中文交流论坛，免费软件教程、模型、人脸数据
deepfaker.xyz	中文学习站（非官方）

Search was conducted in April 2023

Once users click on the 'mrdeepfakes' link in the communication groups section on GitHub, they are directly sent to the Mr.DeepFakes Forum page in which the Official DeepFaceLab 2.0 Guide is available.



Search was conducted in April 2023

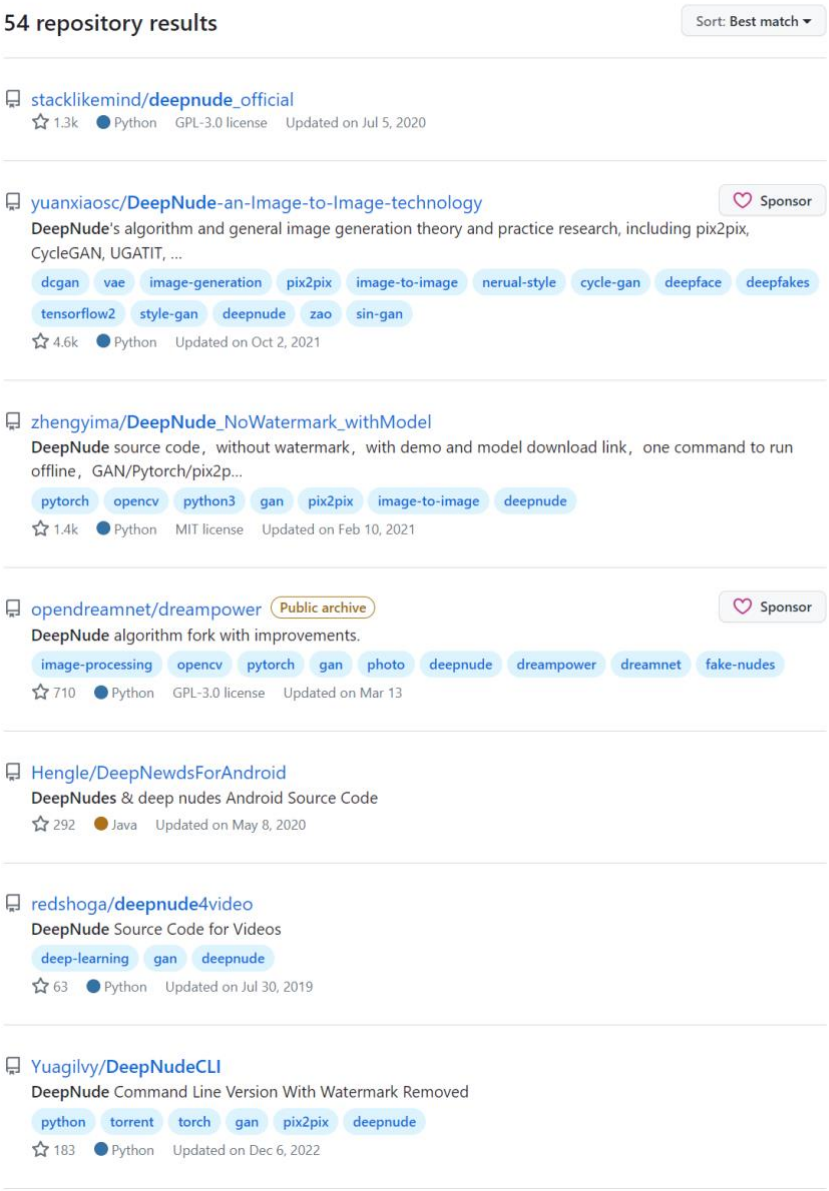
In a BBC Documentary, Mr.Deepfakes expressed no concern or remorse for abusing women by creating sexual deepfakes of them, stating, "I think that as long as you're not trying to pass it off as a real thing, that shouldn't really matter because it's basically fake. I don't really feel that consent is required – it's a fantasy, it's not real."[28] **By allowing repositories such as DeepFaceLab, GitHub is not only facilitating image-based sexual abuse, sexual exploitation, and the expansion of the deepfake marketplace, but it is also normalizing the use of generative-AI for these purposes.**

Research by NISOS and Sensity AI have established GitHub's role as a primary actor in the commoditization of sexual deepfakes and the development of the sexual deepfake marketplace, which is currently the only marketplace identified for deepfake content.[29] More recently, academic research found that **GitHub was cited as one of the top ten referral sites to Mr.DeepFakes from January – February 2023.**[30] GitHub has undeniably been a significant contributor in the democratization of sexually exploitative technology and the development of the sexual deepfake marketplace.

	Domain (193)	Industry	Global Rank	Traffic Share ↓	
1	theporndude.com	Adult	#809	5.4M	51.69%
2	urporn.com	Adult	#2,150	1.1M	10.44%
3	simpcity.su	Adult	#560	646.1K	6.16%
4	shufflesex.com	Adult	#5,244	488.9K	4.66%
5	yandex.com	Search Engines	#113	468.1K	4.46%
6	xxxporn123.com	Adult	#6,547	457.3K	4.36%
7	forums.socialmediagirls.com	Adult	-	322.1K	3.07%
8	vervesex.com	Adult	#13,414	152.3K	1.45%
9	pornhub.com	Adult	#11	149.7K	1.43%
10	github.com	Programming and Developer Software	#70	118.2K	1.13%

DeepNude.

Additionally, despite GitHub's public statement against sexually exploitative source codes on the platform in 2019, which cited codes such as DeepNude as violating their policies and said similar codes or replications would be banned and removed from GitHub if they appeared,[31] as of April 2023, similar codes remain active.[32] NCOSE researchers searched "deepnude" on GitHub and received 54 results for similar repositories, some of which contained the original source code for DeepNude.[33]



Pornography and sexually explicit imagery scrapers.

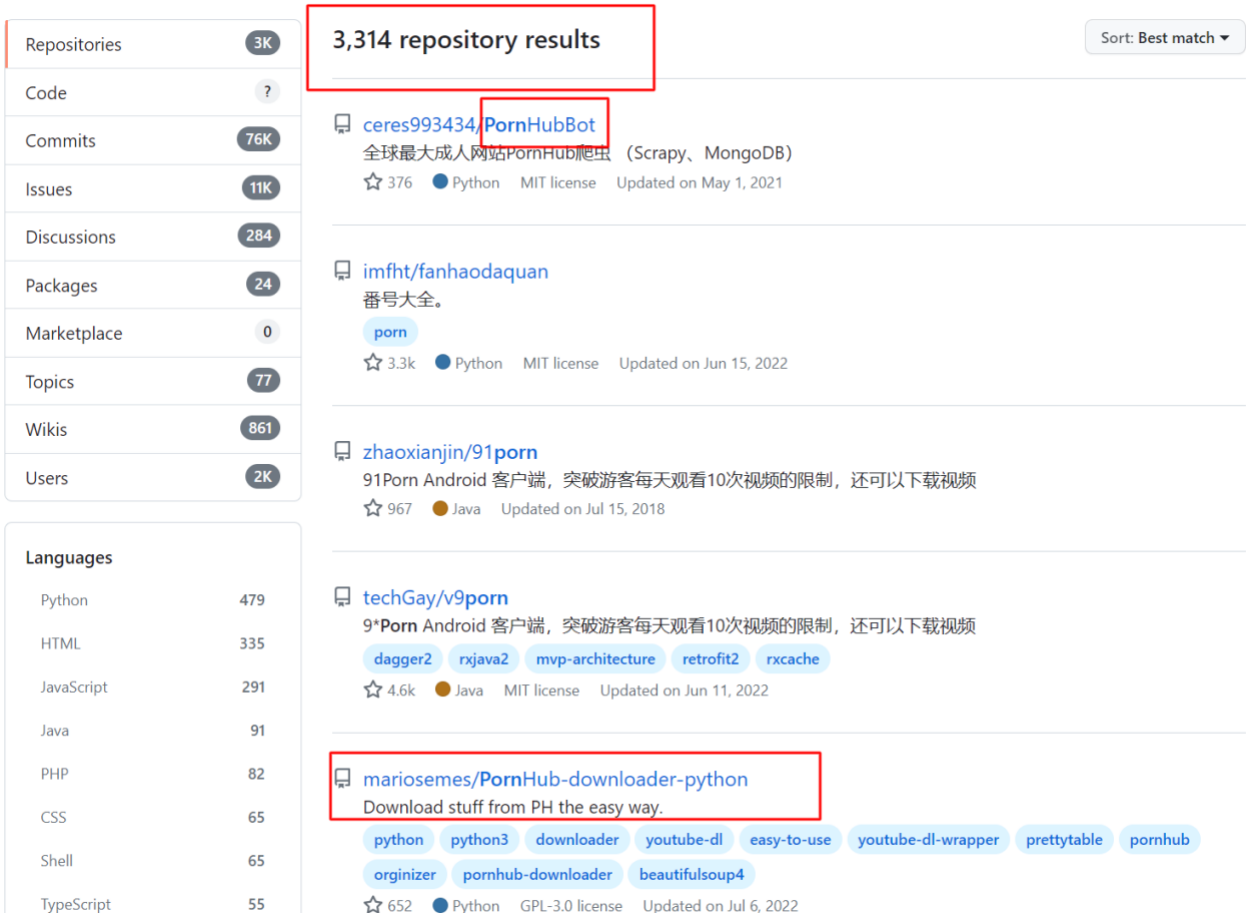
Pornography and sexually explicit imagery scrapers also thrive on GitHub. These have been used to scrape images from pornography and social media websites. Considering the growing body of evidence, survivor testimony, and lawsuits against the most visited pornography sites (Pornhub, XVidoes, and XHamster) for hosting actual depictions of sex trafficking, child sexual abuse material (CSAM), rape, and various forms of image-based abuse ("revenge porn," "upskirting/downblousing," and "spycam shower footage"), GitHub's allowance of these scrapers further contributes to the dissemination of criminal and/or nonconsensually captured content.

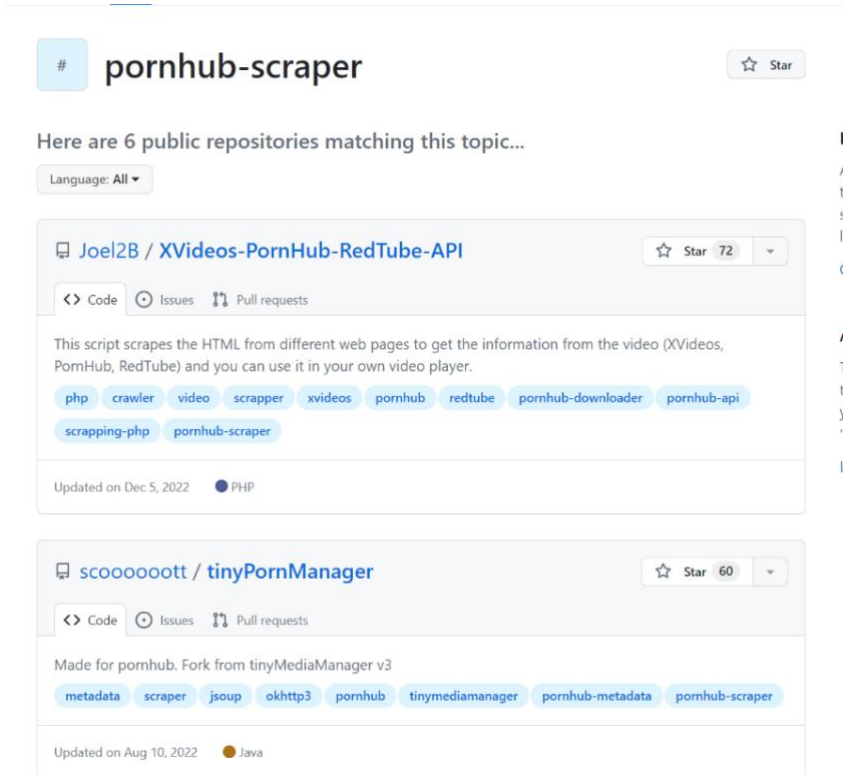
GitHub actively contributed to the creation of a dataset circling deepfake and AI communities that contained content depicting *actual instances* of sex trafficking, physical abuse, drugging, and rape of women from both Girls Do Porn and Czech Casting. Videos from Girls Do Porn and Czech Casting were

found to have been used to create a dataset for AI and deepfake communities to generate sexual deepfake and AI-generated pornography.[34]

"Hubbers," as GitHub refers to its users, utilized pornography scrapers on GitHub to scrape these images from mainstream pornography sites such as Pornhub.[35] One Czech Casting video that was identified in the database was of a woman crying during filming and asking the man to stop – and once he does, the camera zooms in on the woman and shows she is bleeding.[36] Disturbingly, the man in the video throws the woman a towel and directs her to clean her blood up.

When NCOSE researchers searched 'porn' in GitHub, over 3,000 results appeared. Based on the repositories on the first page of results, 'porn' frequently refers to pornography scrapers on GitHub – directly violating GitHub's policies.

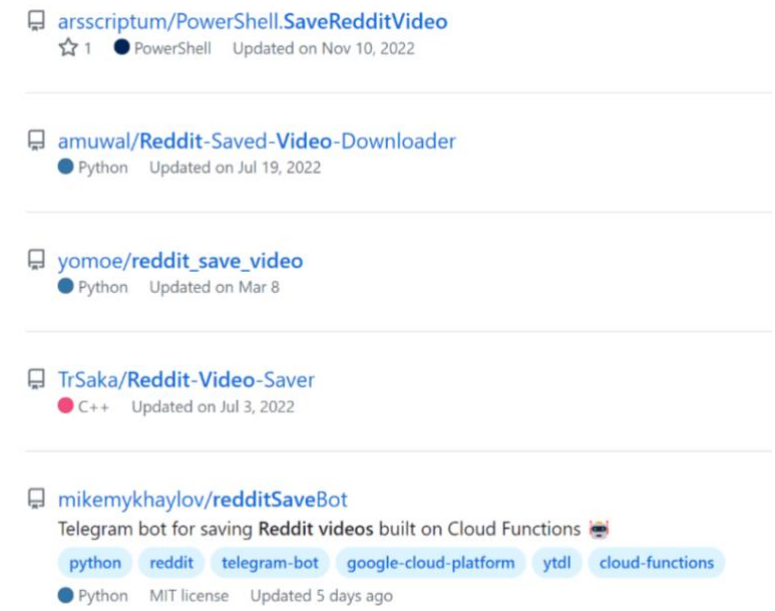


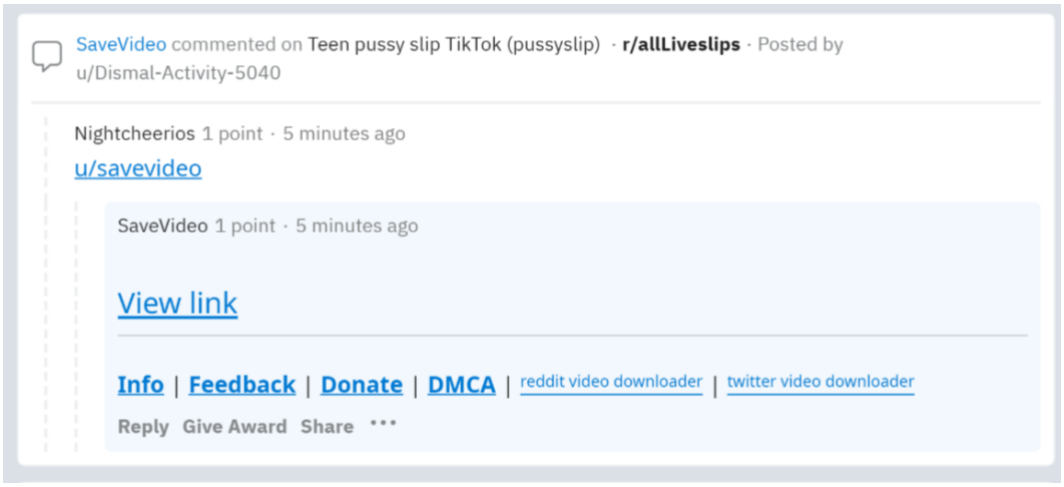


Unfortunately, pornography is the perfect content to generate photorealistic images because it demonstrates the most explicit and detailed portions of the human body, providing a unique sense of realism lacking in other types of AI-generated content. However, because AI-generated pornography requires large quantities of data, how this 'data' is acquired is not always consensual … enter GitHub.

The pornography and sexually explicit imagery scrapers hosted on GitHub 'scrape' popular pornography tube sites to collect content for deepfake and generative AI pornography datasets.[37] These scrapers identify and download free content from mainstream sites such as Pornhub and XVideos, essentially creating an infinite personal pornographic database. GitHub facilitates the creation of personal pornographic databases created without the consent or knowledge of the individuals in the stolen content. This forgoes meaningful age and consent verification, particularly because pornography sites fail to implement their own age and consent verification methods. **Hosting such repositories further demonstrates GitHub's pivotal role in contributing to IBSA and sexual exploitation.**

Similar repositories host codes for "save image" bots. These are deployed on social media sites such as Reddit and are often used to save pornographic and non-consensual sexually explicit imagery.[38]





These are only a *few* of the examples of IBSA and sexual exploitation occurring as a result of GitHub's lack of moderation practices. NCOSE urges GitHub to ban repositories dedicated to the creation of sexual deepfakes, 'nudifying' apps/bots/sites, AI-generated pornography, pornographic and sexually explicit image-scraping, and "save bots" on social media sites.

GitHub is a primary actor in the democratization of developing software, especially generative-AI. NCOSE welcomes technological innovation and development. However, the trauma and embodied harms from SSEM are unequivocal. Without GitHub's proactive moderation of sexually exploitative technology and obscene content, IBSA will continue to proliferate.

Minors' Accessibility and Exposure to Pornography and Sexually Explicit Content

NCOSE is deeply concerned about the extent of features on GitHub that may increase risk of harm to minors, such as limited content moderation policies and a lack of caregiver and teacher/administrative controls.[39]

GitHub rates itself as 13+, and actively promotes numerous educational opportunities for students from middle school to college to learn software development and coding. Over 1.5 million students[40] signed up for the Student Developer Pack,[41] geared toward minor-aged users and student-teacher collaboration and development on GitHub, by 2019. GitHub allows teachers and administrators to connect GitHub accounts to learning management systems such as Google Classroom, Canvas, and Moodle. The use of Google Classroom in primary education exponentially rose during the pandemic and surpassed 150 million student users by 2021.[42] **GitHub requires a valid email to create an account, but fails to implement other basic safety features for students, such as age verification and meaningful content moderation.**

NCOSE researchers did not find evidence of teacher/administrative safety controls for underage student users. While teachers can restrict public access to joining classroom repositories, "by default visibility to student repositories is public."[43] GitHub places the responsibility on administrators to upgrade their accounts to access private student repository capabilities – *for a fee*. Every child should be safe online, especially in an environment promoted for his or her education and learning services. **GitHub is asking parents and teachers to put a price on their child's safety. This feature should be free and on by default.**

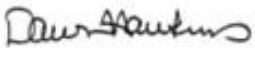
Further, NCOSE researchers also did not find evidence of parental controls for underage users. Considering the open-sourced format of the platform and the amount of sexually exploitative source coding available, parental controls are urgently necessary to further protect GitHub's youngest users.

GitHub is already a complex and daunting platform for even knowledgeable users, and is not widely known among the general public (including parents and guardians). These factors, combined with its open-sourced format, and the lack of proactive content moderation, gives minors near unmitigated access to GitHub's slew of sexually exploitative technology source codes.

Open-sourced repositories are crucial to the exchange and access of information and technology, but they must not come at the price of abuse and exploitation of others. As sexual deepfakes and AI-generated pornography continue to grow at unprecedented rates, GitHub must hold itself accountable for providing sexually exploitative technologies. GitHub has the chance to slow IBSA from the beginning, as limited access to sexually exploitative technology would significantly reduce its presence and victim pool.

GitHub is in a unique position to implement meaningful change and lead the industry in ethical AI technology innovation. We are optimistic that your corporation will rise to the challenge.

Respectfully,



Patrick Trueman, Esq.
President

Dawn Hawkins
CEO

Cc:

Mike Hanley, Chief Security Officer & SVP of Engineering

Inbal Shani, Chief Product Officer

Shelley McKinley, Chief Legal Officer

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