



B R A C K E T



The digital era has revolutionized our lives, but it also fueled an unprecedented surge in the online sexual abuse of children

Alarming surge in the sexual abuse of children

Growth of enabling technologies



2

The scale, variety and severity of online child sexual abuse challenges prevention, detection and prosecution efforts



Parents, caregivers and policymakers are often unable to keep children safe online

• Children share more compromising images online, as they gain a sophisticated understanding of the internet

Failure to prevent and safeguard Parents, caregivers and policymakers often have more rudimentary digital skills and lack a basic awareness of the risks their children are exposed to



Failure to

and disrupt

detect

Internet and technology companies are often unable to detect online sexual abuse of children

- Growing volume of abusive activity across the web makes it challenging to identify child sexual abuse material and even more so victims and perpetrators
- Image hosting sites and social media sites **continue to proliferate**, making it increasingly difficult to spot and remove abusive content at its source



Law enforcement and NGOs often face challenges in prosecuting perpetrators

 Human analysts are not able to process the massive volumes of data involved in an average global sex trafficking case

Failure to investigate and prosecute • A lack of resources and technical capacity to process the volumes of data lead to significant backlogs of potentially criminal material

AI is uniquely positioned to address this problem; the solutions, which are in pilot stage, are showing enormous potential



Al technology used today builds on basic analytics, web and device technologies. **Computer vision, natural language processing and predictive Al can play a key role** in combatting online CSAM, sex trafficking and emerging forms of digital abuse

Tool	Technology	Description
	Image Classi- fication	 Automatically categorizes images as belonging to a group. The algorithms are trained by CSAM databases.
Computer vision Al	Facial, Object Recognition	 Detects human features such as faces and body parts within an image and compares them to existing images to determine similarity.
	Natural Lan- guage Under- standing	 Uses algorithms to extract the words, syntax and semantic meaning of a piece of text data.
Natural language processing	Natural Language Generation	 Artificially produces text that mimics human communication. can be trained to carry on conversations and mimic tone of individuals.
& Voice Al	Sentiment Analysis	 Extracts subjective opinion or sentiment from text, video or audio data
	Speech Recognition, Voice Analytics	 Processes and uniquely identifies the "vocal fingerprint" voices of individuals
	Data Mining for Patterns, Trends	 Explores large datasets for insights, patterns or relationships between variables.
••••••••••••••••••••••••••••••••••••••	Early Risk Identification	 Assigns a risk score to a piece of content using algorithms trained on past data and continuously fed with new data to improve accuracy over time.

Current solutions rely heavily on basic analytics and humans, leaving significant potential to shift to AI-based tools



- Proactively **stop online grooming** attempts through chatbots that mimic human conversations with potential perpetrators
- Deter perpetrators search processes through natural language understanding in search filters



Prevent

& Safeguard

- Flag CSAM for human review using automated image-based tools
- Detect signs of abuse through data mining of large datasets of text and images
- Identify specific individuals or locations through speech recognition and voice analytics



- **Collect additional information** on traffickers by datamining signals from images, metadata and text communications
- **Increase speed** of investigation through tools that visualize and simplify trends and patterns

Our mapping of 50+ global technology solutions provides a snapshot of the major players and current tools used to **prevent**, **detect and prosecute** child sexual abuse

AI has tremendous potential to upgrade analytics tools, expand focus beyond detection and assist in prosecution efforts



Next generation network analytics and ondevice AI

- Advanced network analysis using deep learning can flag suspicious accounts and prevent grooming attempts on childfriendly platforms (social media, games)
- On-device, operating system-based AI, pre-installed with parent consent, can prevent children from engaging with perpetrators, uploading images, sexting, etc.
- Deterrence tools can interfere in all attempts of searching for CSAM by engaging the (potential) perpetrator actively in a real-time conversation to collect evidence for law enforcement and prevent abuse
- Network analysis can help identify and remove ads that are likely to contain trafficking



Bridging image and text-based AI and tools

- Context-rich image classifiers for automated detection of non-encrypted CSAM can enable efficient detection without need for human reviewers
- Automatic, flagging of CSAM on relevant platforms "at its source" can help remove material before it is circulated
- Data-rich pattern recognition and natural language processing can triangulate multiple data sources and remove ads that are likely to contain trafficking
- Proactive crawling of dark web, combined with natural language processing and text analysis, can find CSAM repositories
- Real-time capabilities can help detect and cut out live-streamed abuse
- Advanced identification technologies using voice and other biometric footprints can help identify victims and perpetrators



New generation of investigative tools that can predict and prioritize

- Advanced network analysis technology can trace perpetrators to physical location to arrest them, as well as to detect and prioritize top of the pyramid perpetrators
- Al-powered digital forensic tools can help gather evidence

Full participation and efforts from stakeholders is required TODAY to bring the full strength of AI technology to the fight



About the authors

B R A C K E T

Bracket Capital is a global multi-asset investment manager based in Los Angeles, California. Founded in 2017, Bracket Capital develops strategies that quickly meet and respond to the needs and aspirations of its investors. Bracket Capital employs a systematic methodology which identifies unique risk/reward profiles across the venture landscape. This hybrid strategy leverages access, insights and deal flow through its investments. As a partner and investor to the early-stage venture community, Bracket Capital is an ally to both entrepreneurs and fund managers. This approach provides Bracket Capital with the highest quality deal-flow, enhanced networks, and increased ability to diligence founders.

B R A C K E T Foundation

Bracket Foundation is the newly established venture philanthropy arm of Bracket Capital. Its mission is to harness the power of technology for social good. Each year Bracket Foundation pursues a theme with the aim to contribute to a global conversations on pressing social issues, raise awareness on how to leverage leading technologies in their respective fields and bring them to the forefront to tackle growing global challenges. This year's theme is "Making the Internet Safer for Children" where Bracket Foundation in collaboration with its partners in both the private and public sector is working to unlock Al's potential in the fight against Online Sexual Abuse of Children.

value for good.

Value for Good is a consultancy specialized in the field of social impact that envisions a world in which effective action is taken to solve societal challenges. To achieve this Value for Good inspires through insights, advises through consulting and empowers through training. Value for Good serves leaders from private sector, governments, international institutions, foundations and non-profits and equips them with the knowledge and tools to make a positive and sustainable difference. For further information visit www.valueforgood.com.

Acknowledgments

The following individuals supported this study with interviews and input

Robert Beiser	Freedom Signal (Seattle Against Slavery)
Irakli Beridze	UNICRI Centre for AI and Robotics
Adam Blackwell	Development Services Group
Anna Borgström	NetClean
Sarah Brown	STOP THE TRAFFIK
Laura Clawson	International Justice Mission
Aldo Faisal	Imperial College London
Kevin Guo	HIVE
Cyrus Hodes	The AI Initiative (Future Society Initiative)
Jonas Kaiser	Berkman Klein Center for Internet & Society
Mayank Kejriwal	Memex, Information Sciences Institute (USC)
Dr. Unni Krishnan	Save the Children
Dr. Florian Ostmann	The Alan Turing Institute
Ahmed Ragab	Harvard Kennedy School
Lloyd Richardson	Project Arachnid
Lars Roemheld	QuantCo
Caitlin Ryan	Mayor's Office of Policy, Washington DC
Homayra Sellier	Innocence en Danger
Rob Spectre	childsafe.ai
Michael Tunks	Internet Watch Foundation
Livia Wagner	Global Initiative Against Transnational Organized Crime for Tech Against Trafficking