

Developing automated methods to detect and match face and voice biometrics in child sexual abuse videos

Dr. Russell Brewer – The University of Adelaide, Australia

Dr. Bryce Westlake – San Jose State University, United States

Moving Towards Identification within CSA Videos

- Need for new automated technologies that can:
 - Extract multiple biometric features from videos.
 - Match/link victims and offenders across media.
 - Identify previously unknown CSAM.
 - Match this “new” content to pre-existing databases.
 - Triangulate matches to reveal co-offending/co-victimization.
 - Reduce investigator workload and psychological harms
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PLAY VIDEO



Future Directions - Performance and Capabilities

- Increase performance
 - Cloud infrastructure.
 - Increases media types that can be analysed.
 - Upgrade to graphical user interface.
 - Increase capabilities
 - Implementation of multiple-speaker identification methodologies.
 - Additional filtering and matching attributes.
 - Nudity, age estimation, race, language/dialect spoken, device make/model, vascular patterns
 - Victim/Offender profile generation.
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For more information:

Russell.Brewer@adelaide.edu.au

Bryce.Westlake@sjsu.edu

Rick.Brown@aic.gov.au



Australian Government
Australian Institute of Criminology

Trends & issues in crime and criminal justice

No. 648 March 2022

Abstract | The proliferation of child sexual abuse material (CSAM) is outpacing law enforcement's ability to address the problem. In response, investigators are increasingly integrating automated software tools into their investigations. These tools can detect or locate files containing CSAM, and extract information contained within these files to identify both victims and offenders.

Software tools using biometric systems have shown promise in this area but are limited in their utility due to a reliance on a single biometric cue (namely, the face). This research seeks to improve current investigative practices by developing a software prototype that uses both faces and voices to match victims and offenders across CSAM videos. This paper describes the development of this prototype and the results of a performance test conducted on a database of CSAM. Future directions for this research are also discussed.

Developing automated methods to detect and match face and voice biometrics in child sexual abuse videos

Bryce Westlake, Russell Brewer, Thomas Swearingen, Arun Ross, Stephen Patterson, Dana Michalski, Martyn Hole, Katie Logos, Richard Frank, David Bright and Erin Afana

The proliferation of child sexual abuse material (CSAM) online is outpacing law enforcement's ability to manage the problem (National Center for Missing and Exploited Children 2020). These increasing workloads have significant and severe implications for investigators, with recent evidence tying this work to a range of serious psychological harms, including secondary traumatic stress disorder, emotional exhaustion, intrusive thoughts, burnout, and interpersonal and marital problems (Bourke & Craun 2014; Burns et al. 2008; Powell et al. 2015; Seigfried-Spellier 2018). To address these problems, investigators are increasingly integrating automated software tools into their investigatory workflows. These tools can be used to detect or locate files containing CSAM (eg using hash values), as well as extract information from within files (eg biometrics) that can be used to identify both victims and/or offenders (Canadian Centre for Child Protection 2021; Council of Europe 2021; Internet Watch Foundation 2021; Interpol 2022, 2018).

Child Sexual Abuse Material
Reduction Research Program