

A Platform for Abuse Detection in Online Social Networks using Multimedial Data Analysis

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Introduction

For many years, online social networks (OSNs) have been prone to abuse and inappropriate behaviour such as cyber bullying, suicidal tendency or sexual transgressive behaviour. Due to the massive amount of (often concurrent) data transactions on these OSNs, it is impossible for moderators to manually check all content posted on the social networks. We therefore propose a pluggable architecture with reusable components, able to automatically analyse content based on text, image, audio and video analysis. The results are aggregated for specific use cases and, if necessary, reported to the moderators of the social network.

Requirements/Features

Performance/Scalability:

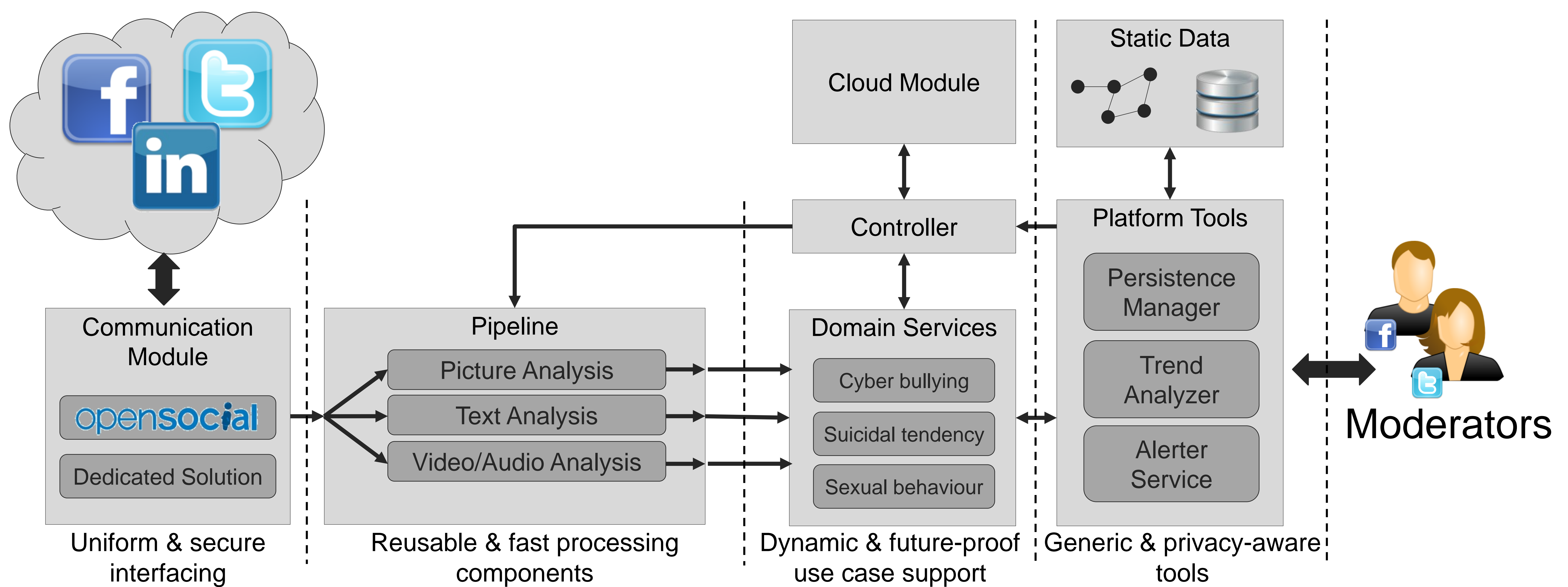
Large amounts of data need to be processed in real-time and daily batches. The platform will achieve this by leveraging a Lambda architecture in the domain services and pipeline.

Extensibility/Reusability:

New analysis modules and domain services should be supported in the platform without much overhead. The analysis modules in the pipeline will be reusable across different domain services.

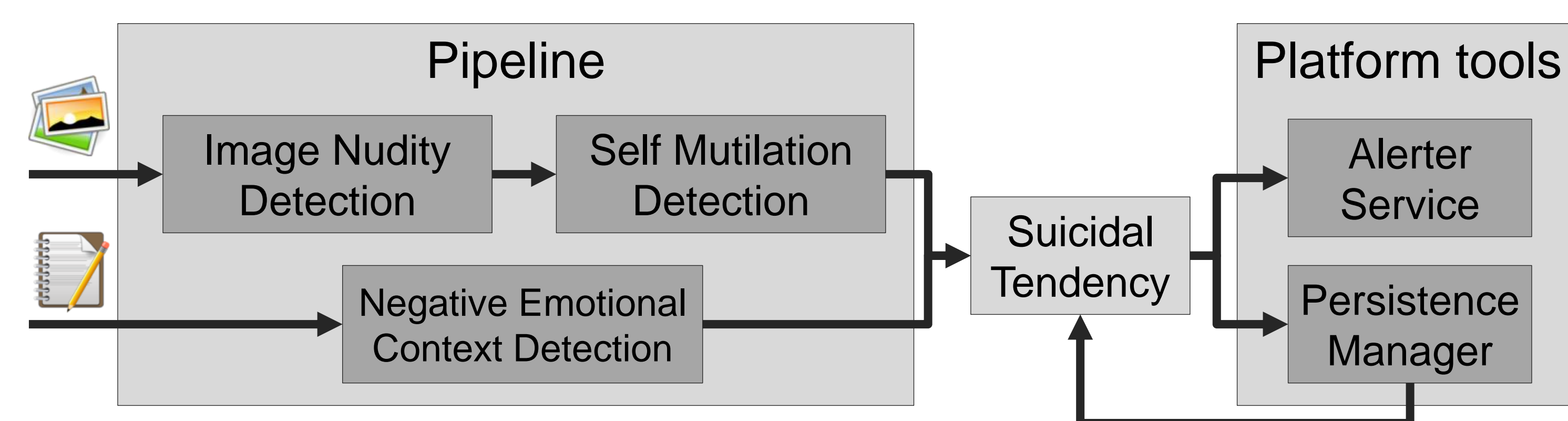
Security/Privacy:

Data handled by the platform might be of a personal nature and therefore needs to be handled securely.

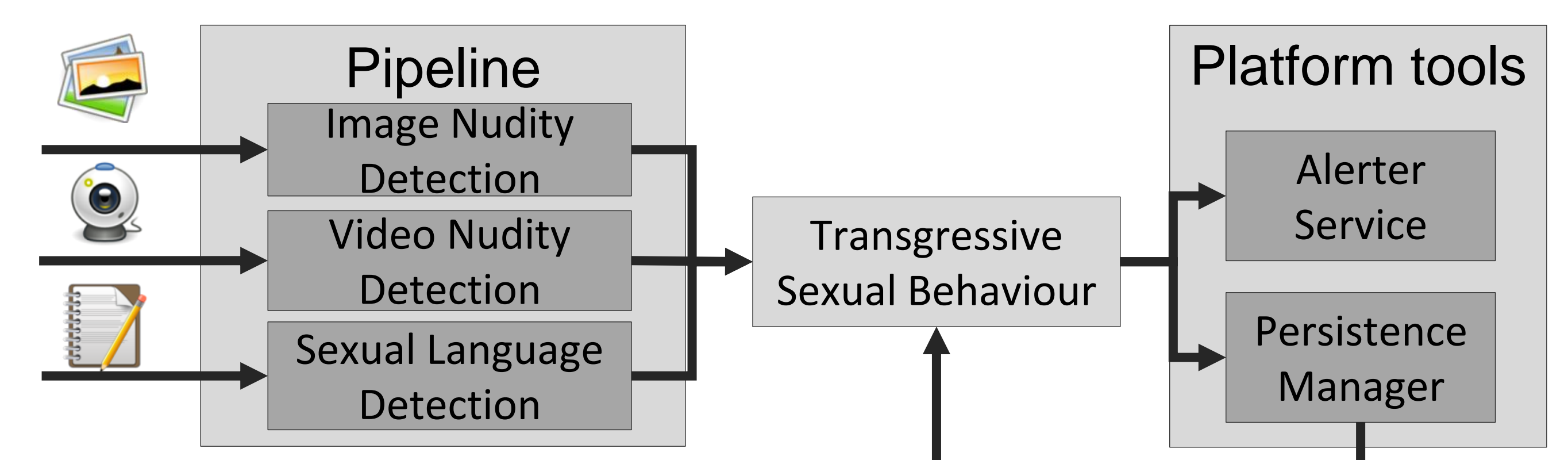


Example Workflows

Suicidal Tendency



Transgressive Sexual Behaviour



Challenges

Aggregation of analysis results

As shown in the example workflows, domain services aggregate results from different analysis modules. The influence of each result however may vary and depend on the domain service. Further research is needed to identify the influence of the analysis results on the use cases.

Scaling Domain Services

If a domain service is scaled upwards/downwards, the analysis modules it is using also need to scale. However, this may not influence other domain services, causing them to become idle or a bottleneck. This requires intelligent dynamic scaling by the controller between domain services and analysis modules.

Selective profile data storage

Saving all data of social networks in the platform is impossible and inefficient. Thoughtful decisions should be made as to which data is relevant to the platform and what the lifetime of this data is, especially concerning the privacy of social network users.