Enhancing AMBER Alert using Collaborative Edges
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AMBER Alert
\begin{itemize}
\item Distributed: Radio stations, cable TV, emergency alert system, and so on.
\item Information: Time, location, characteristics for kid and kidnapper, license number.
\item Searching: Reports of witnesses.
\end{itemize}

Motivations
\begin{itemize}
\item Manual vs. automated:
\item Bandwidth and latency Requested by data uploading.
\item Real time vehicle tracking Limited by computing capability and tracking area manager.
\end{itemize}

A3: AMBER Alert Assistant
An automating kidnapper vehicle tracking application via edge video analytics and collaborative edges.

Entities
\begin{itemize}
\item Control Center
\item Job Receiver
\item Data Processor
\end{itemize}

It works
\begin{itemize}
\item Real-time video analytics
\item Job Receiver will collaboratively analyze the video data with Data Processors connected with the same router.
\item Controlling of tracking area
\item Job will be transferred between Job Receivers.
\end{itemize}

Tracking algorithm
\begin{itemize}
\item Distance-related diffusion
\item The tracking area radius increases by a fixed number as the time goes.
\item Location-direction-guided diffusion
\item The tracking job diffuses according to the road topology and limitation, e.g., the speed of the road.
\end{itemize}

Collaboration of local edge nodes
The targeted vehicle will appear at the red point one by one.

Conclusion
\begin{itemize}
\item Real time video analytics
\item Effective for tracking vehicle
\item Flexible for customized algorithm
\end{itemize}

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Collaboration of edge nodes

Demonstration of A3

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