Real Time Video &
Driver ID Verification From Vehicles
Just like Mission Impossible, but real

• We develop TRUE real-time wireless video surveillance solutions to some of the world’s most demanding customers, where losing video feeds for even a few seconds can have life and death consequences.

• Our solutions deliver near-zero latency live video streaming from as little as 10kbps, over any wireless network (including congested cellular networks) with advanced edge analytics in an embedded device (or software).

• We transform any camera or vehicle into a secure wireless surveillance and intelligence gathering asset, anytime anywhere.

• If it’s Mission Critical... maybe we can help.
Lets Talk About Trust

**SECURITY**

Who is driving your car?
Who is driving your customer?

**SAFETY**

Can you help when something goes wrong?
How can you assist your passengers?
Who is driving your car?
Who is driving your customer?

Can you help when something goes wrong?
How can you assist your passengers?
Easy in the Real World?

Wireless Video Over Cellular

Challenges:
- Bandwidth Congestion
- Video latency
- Cyber security
- Data Costs
We Do This Everyday

- Real-time
- Secure
- Wireless
- Video
- Over
- Cellular

TVI Codec

- Live streaming from 10kbps
- ≤1 second latency
We Do This Everyday

The Vehicle Behind
- Unreliable Streaming
- More Bandwidth Needed
- More Latency (≥ 4 s)
- Less Secure
- Higher Data Costs

The Vehicle in Front
- Reliable Streaming
- Less Bandwidth Needed
- Near-Zero Latency (≤1 s)
- Gov-grade Security
- Lower Data Costs
TVI Codec

- Near-zero latency
- Uses 60% less bandwidth
- Secure
TVI Codec

Real-time Video Streaming, Only Better

- TVI Codec was developed to deliver high-def video, with near-zero latency, over congested cellular networks (even in very low or constrained bandwidths).
- Uses 60% less bandwidth than standard technologies.
- It can transform any camera into a secure wireless surveillance asset, streaming at ultra-low-bandwidths and near-zero latency, anytime anywhere.
- TVI employs a unique dynamic channel sizing that drives the bitrate of the video codec which in turn utilises a combination of hierarchical vector quantization, motion estimation and residual encoding to approximate the detail in each video frame such that the instantaneous bitrate does not exceed the estimated channel capacity.
TVI Codec & NVIDIA’s Jetson TX1

- By using NVIDIA’s Jetson TX1, we are able to stream mission-critical video from 4K (UHD) cameras over cellular networks and run analytics at the edge without impacting the video streaming quality.

![Graph comparing video quality and bandwidth usage for different codecs.](image)

- TVI is best
- TVI v5
- TVI v6 & TX1
- H.264
- H.265 (best case)
- H.265 is best
- TVI is more reliable
TVI Codec & NVIDIA’s Jetson TX1

Real-time video and patient telemetry streaming (4 kbps to 75 kbps)
TVI Codec & NVIDIA’s Jetson TX1

Live watch-list tripwires from surveillance vehicles
FaceRec in The Real World

**Easier to Solve**
- ISO 19794-5 full frontal image type checks (eGates, ePassports, Access Control)

**Harder to Solve**
- Policing crowded open spaces, counter-terrorism surveillance, driver ID verification, fintech

- **Consensual** vs. **Discreet / Uncontrolled**
- **Ideal** vs. **Irregular**

Digital Barriers
FaceRec in The Real World

Most Facial Recognition Providers

Where We Operate
(NVIDIA’s GPUs power our analytics)

Consensual

Discreet / Uncontrolled

Application Type

Environmental Conditions

Irregular

Ideal
Facial Recognition, Only Better

- SmartVis Face is helping Careem verify the identity of each driver, anywhere, anytime.
- Uses Drivers’ smartphones; works in the background, does not require selfie.
- Able to accommodate everyday changes in a driver’s appearance.
- Allows Careem to tag drivers’ ID verification with location and other data.
- SmartVis SDK adapts to the various workflows, helping combat driver fraud and misuse.
- SmartVis Face outperformed the competition (in accuracy as well as speed).
Solving an ID Assurance Problem

Live ID verification via smartphone
Lifeness checks & ID classifiers
1:1 and 1:N ID verification
Allows anonymisation & Privacy filters
It’s What We Do

SECURITY

- Near-zero latency
- 60% less bandwidth
- Robust Facial Recognition
- When It Really Matters

SAFETY
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