



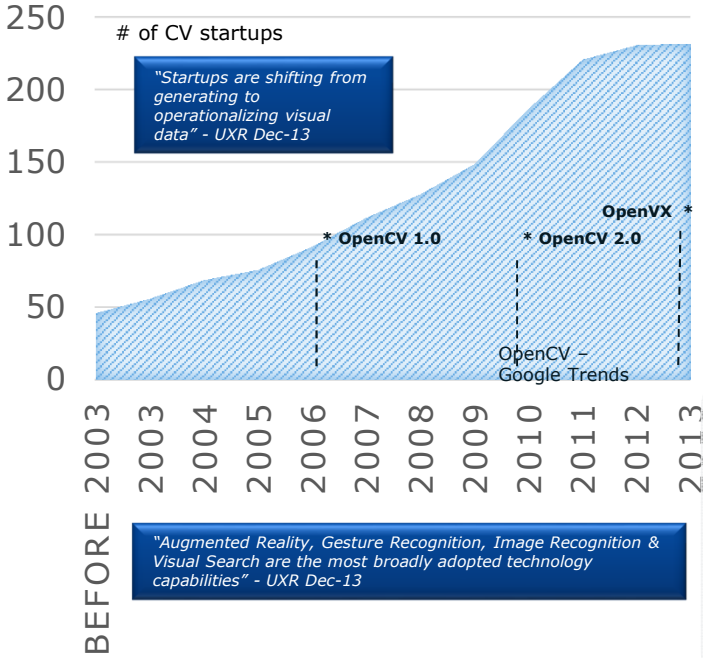
Computer Vision trends

An Intel, hardware-centric perspective

Frank Ghenassia, Intel Israel
March 2015

Intel

Computer vision becomes mainstream across industries



End products



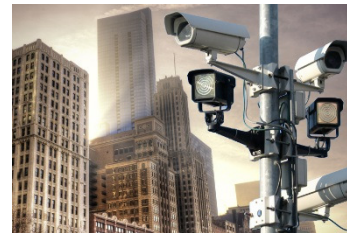
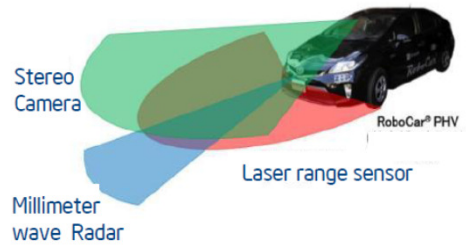
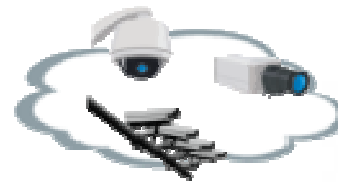
HW IP dedicated solutions



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Plethora of emerging devices/apps



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2 camps: ASSP vs. General Purpose

ASSP



Common theme:
multi-DSPs + HW Acc

Cost

Performance/Watt

General Purpose



Common theme:
CPU+GPU

Eco-system

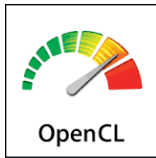
Applicability

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Intel CV middleware

- Based on standards when available
- Contribute to openCV to enhance transition from prototyping to production



2D

Intel AVX

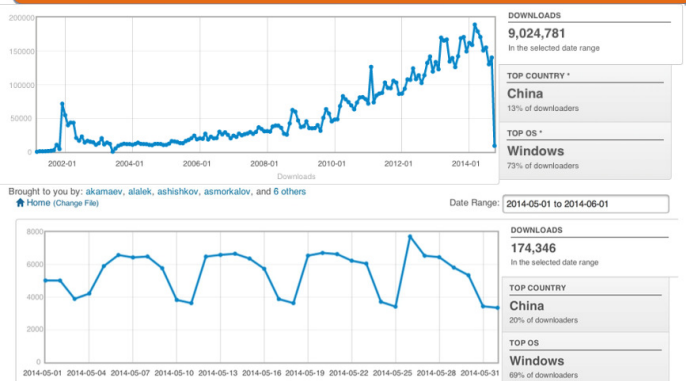
Intel Iris Pro Graphics

3D

A photograph of the Intel RealSense Developer Kit hardware.

Eco-system around openCV and RealSense

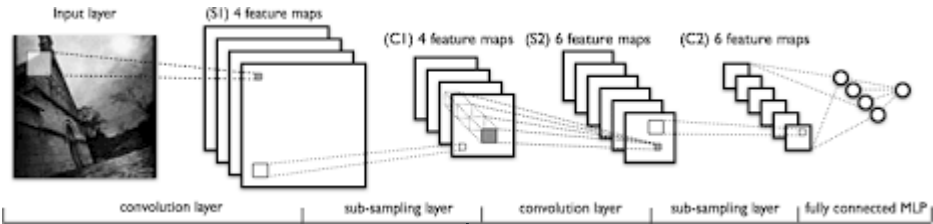
Over 9M downloads!



Ramping to > 160K downloads/month
Source: cvgl.stanford.edu/BAVM14/slides/Bradski.pdf



What about Deep Learning ?



Intel-optimized Libraries

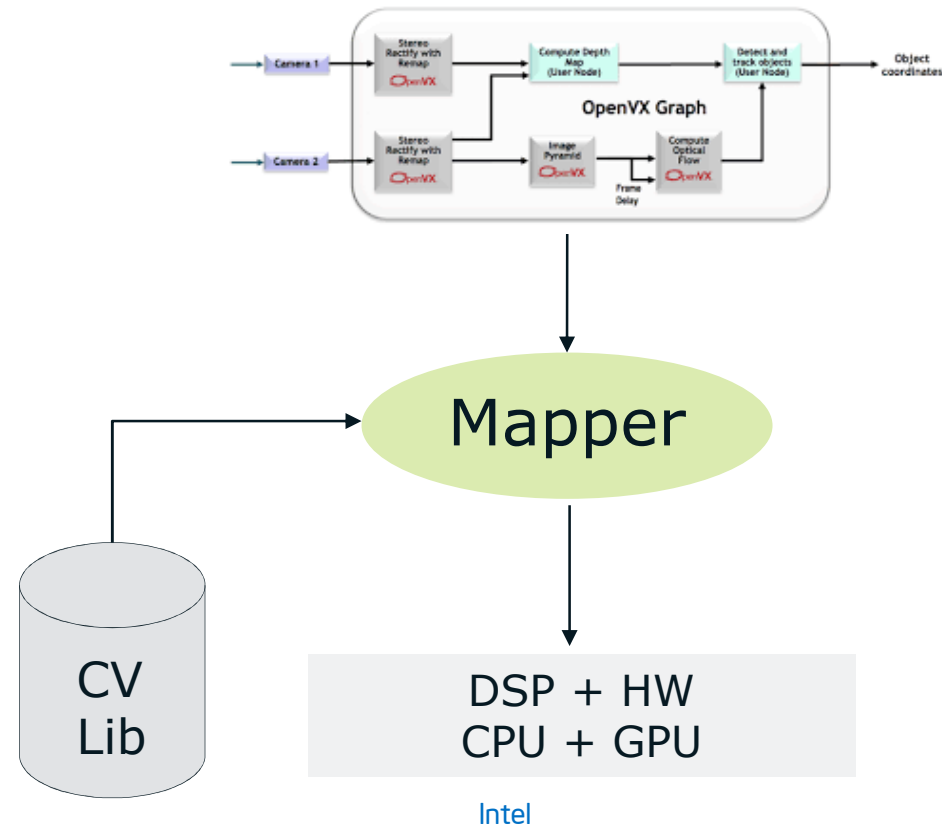
<https://github.com/borisgin/caffe/tree/openmp>



A potential best-of-both worlds ?

- openVX: A standard for describing CV pipeline
- A mapper to translate an abstract pipeline into HW “commands”

➔ ASSP performance with Advantages of a General Purpose machine



Take-aways

- Computer vision: getting ready for primetime, but still in its infancy !
- Program on Intel platforms today using openCV, RealSense and underlying libraries
intel.com/realsense
software.intel.com/en-us/intel-index
opencv.org
- Performance of an ASSP with flexibility of General Purpose ?
- Want to know more ? Influence ? Participate ?

Come and discuss ! frank.ghenassia@intel.com

