

# Transitioning to a career in Tech

by Anton Krug



- ▶ Congratulation on choosing this course
- ▶ Was closely involved with this course as tutor for a while
- ▶ Students do not regrets this choice
- ▶ Run and curated by smart people
  - ▶ Who know the technologies and the industry
- ▶ Job opportunities with decent companies

# Transition to IT

- ▶ Bleeding edge technologies
- ▶ Rapid R&D
  - ▶ Amazing things are happening
  - ▶ Great opportunities to learn
  - ▶ Can't stop learning!
- ▶ Stack Overflow/Google are your friends
- ▶ You can change the world
- ▶ Few lines of code can improve lifes of many
- ▶ High job satisfaction in IT

# Student to employment transition

- ▶ Free time
- ▶ Work / Projects / Code will get used
- ▶ A lot of responsibility
  - ▶ For some might be scary, but you can get time to adjust
  - ▶ Try to be self organized, do not expect to be micro-managed
  - ▶ Project lead to find a partner for us
    - ▶ Got encouragement and positive feedback from highest management
- ▶ I was underestimating soft skills
  - ▶ Giving talks. Writing essays/papers. Talking to customers/partners.
  - ▶ Business travel (Shannon, Barcelona, San Francisco demos, Germany paper/talk)

# Leadership and the team are very important

- ▶ Teamwork! Yet another surprise for me as I have heavy on hard skills
- ▶ It's great when your boss and your director are your heroes
  - ▶ Learned from them a good bit and have a lot more to learn
- ▶ No unnecessary meetings
- ▶ Strong culture, focus on important but not urgent tasks
- ▶ Fridays dedicated to learning new skills

## Resources and perks

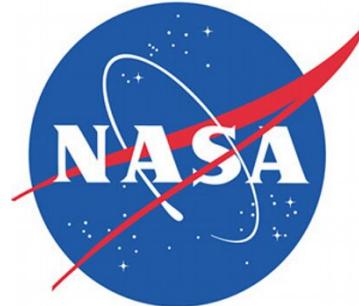
- ▶ Corporate infrastructure/servers
- ▶ Personal Xeon workstation and a server rack
- ▶ Free books / training (on-site or travel)
- ▶ Free HW/SW tools for work/projects
- ▶ Decent health insurance (for example: physio, relaxing massages covered)



- ▶ 18k employees
- ▶ For a big corporation we didn't lost the human feel
  - ▶ High management encourages people and cares about them
  - ▶ Lot of flexibilities, freedom and power
  - ▶ Your input is taken seriously (it's rewarding)
- ▶ Not a spot-light company (we are not Apple...)
  - ▶ BUT we are behind the scenes everywhere
  - ▶ And in many markets we are THE industry leader
  - ▶ Diverse
    - ▶ From chips costing cents and selling huge volume
    - ▶ To very expensive chips selling lower volume



- ▶ Aerospace / Space / Defense
  - ▶ Radiation tolerant and system critical instant on SoCs
  - ▶ Great reliability, power and security features of FPGAs
  - ▶ International Space Station PSU
  
- ▶ Machine Learning inference
  - ▶ 1500 cores, each core can do 8 operations per single clock
  - ▶ 24 SERDES lanes, combined 300Gbps throughput
  - ▶ Very power efficient
  
- ▶ Automotive/Communications/Data centers/Industrial/Medical
  - ▶ PCI-E server GPU switch
  - ▶ NVMe SSDs, self-encrypting and self-destructing SSD storage
  - ▶ Critical Timing (GPS)



***NORTHROP GRUMMAN***



# Smart Embedded Vision

Low power, high-speed, secure, real-time applications



## Machine Vision

- Secure communication
- High speed I/O

## Surveillance Systems

- 4k Resolution
- Image sensor muxing

## Drone Cameras

- Low Power
- Hi-Reliability
- IP security

## Medical Imaging

- Security
- High speed I/O
- Instant On

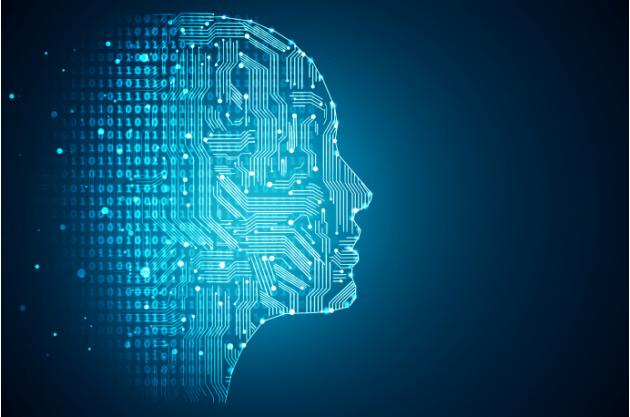
## Machine Learning

- Hi-Reliability
- High Speed I/O
- 4K Resolution

# Real-time, Low Power systems



Safety Critical Systems



Imaging and Machine Learning



Collaborative Robots



Industrial IoT



Secure Communications and Portable Embedded Systems



Smart Weapons, Drones and UAVs

## LEADING SPACE INNOVATION SINCE 1957

Microsemi technology has been used in many major U.S. and international space initiatives since 1957. A selection of programs that have chosen Microsemi products is presented here.


 Mars Recon. Orbiter  
NASA

 GOCE  
ESA

 GOES-R  
NASA

 Atlas  
NASA

 Mars Science Lab  
NASA

 International  
Space Station  
NASA

 Cassini-Huygens  
NASA

 Juno  
NASA

 Cygnus  
NASA

 Mars Rovers  
NASA

 Gaia  
ESA

Apollo
Atlas
Centaur
Delta
Mercury
NST-2
Termination
Polaris
Poseidon
Surveyor
Titan

FLTSATCOM
GPS I & IIIA
Landsat-D
Leasat
Mission 34
Telstar 4

Cassini
Envisat
GPS Block IIF
Intelsat 8
International Space Station
ORBCOMM
QuickBird 1 & 2
SBIRS HIGH
SBIRS LOW

CloudSat
Envisat
GOCE
Hayabusa
Lunar Recon. Orbiter
Mars Exploration Rovers
Mars Express
Mars Recon. Orbiter
MESSENGER
MUOS
Rosetta
SAOCOM
1A & 1B
SAR-2000
SBIRS
STEREO
Venus Express

AEHF
ALOS
Astro-F (IRIS/Akar)
ChIRP
Columbus
Cosmo N
GOSAT/IBUKI
GPS III
INTELSAT
KOMPSAT
MetOp
MUOS FS3-5
New Horizons
PAN
SBIRS
HIGH 3 & 4
SDS-1
SELENE
WINDS/KIZUNA
WorldView II

ALOS 2 (DAICHI-2)
ASNARO
ATV
Chandrayaan I
CLIO (PAN II)
Cygnus
DSAC
Gaia
Galleo
GOCE-W (SHIZUKU)
GOES-R
Hayabusa 2
PAN 2
Himawari 8
SBIRS 5 & 6
Iridium Next
Sentinel 1, 2, 3, 4
Skyfox
Juno
Teriasar & Tandem X
WorldView III
Mangalyaan
Mars Science Lab
MetOp SG

# RIP Opportunity

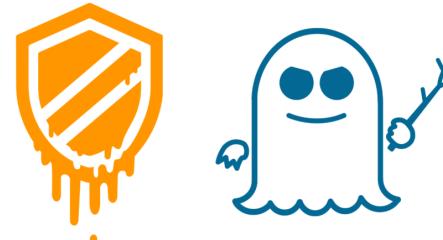
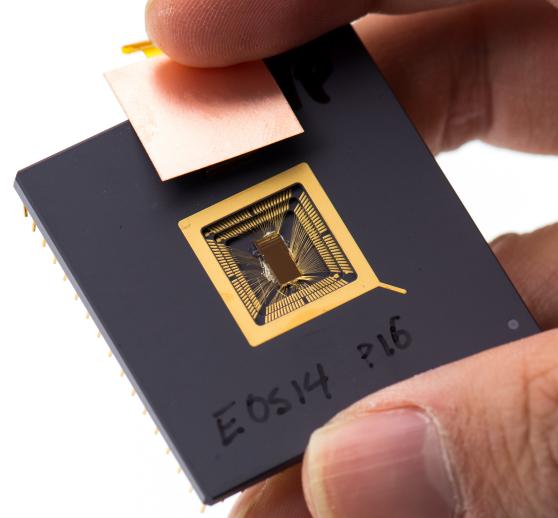
- ▶ Our FPGAs are very robust
- ▶ Planned 90 sols
- ▶ Survived 5352 sols







- ▶ Like Linux OSS revolution but in HW
- ▶ Running free SW on free HW
  - ▶ First open ISA capable of running Linux
  - ▶ Safe: No spectre/meltdown vulnerabilities
  - ▶ From small a microcontroller to a supercomputer
  - ▶ 32-bit / 64-bit / 128-bit CPUs
- ▶ Not vendor locked, skills are transferable
  - ▶ From Java/Scala to C/C++/assembly to HDL languages and many other
- ▶ Giving input (ebreak, csr), fixing stuff (Andrew's book)
  - ▶ Meting great people/engineers/architects (SiFive, IBM, Google...)
- ▶ Us, Si-Five and NVIDIA
  - ▶ Guess current members?





# Foundation: Platinum Members



C-SKY 中天微

M A R V E L L



NVIDIA.

Rambus

Cryptography Research



Berkeley  
Architecture  
Research

cortus



MICROCHIP

NXP

ORION  
猎户星空

SAMSUNG

THALES

bluespec

Google

Micron®

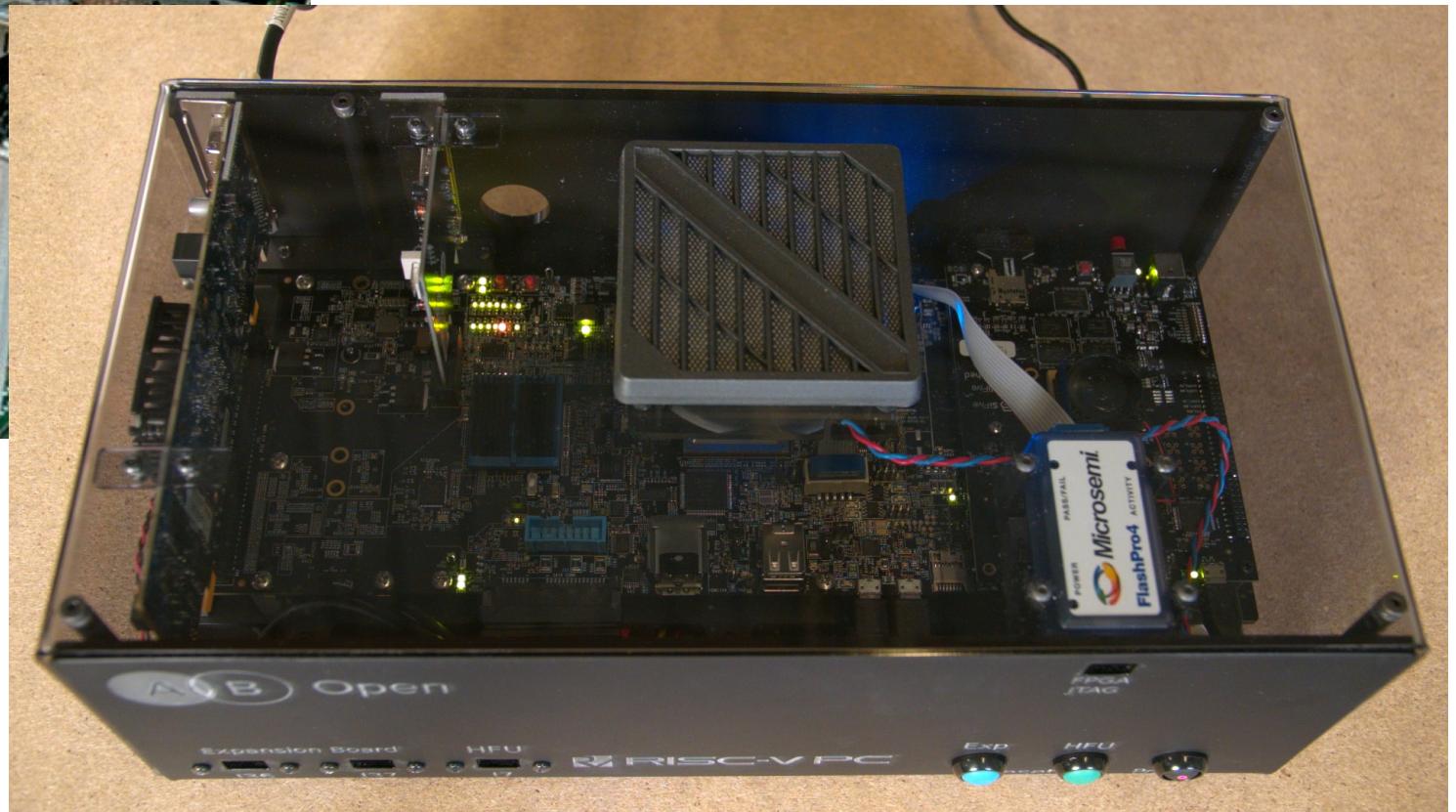
QUALCOMM®

SANECHIPS®  
中兴微电子

Western Digital®

# Gold, Silver & Auditor Members





Photos: Drew Fustini, AB Open

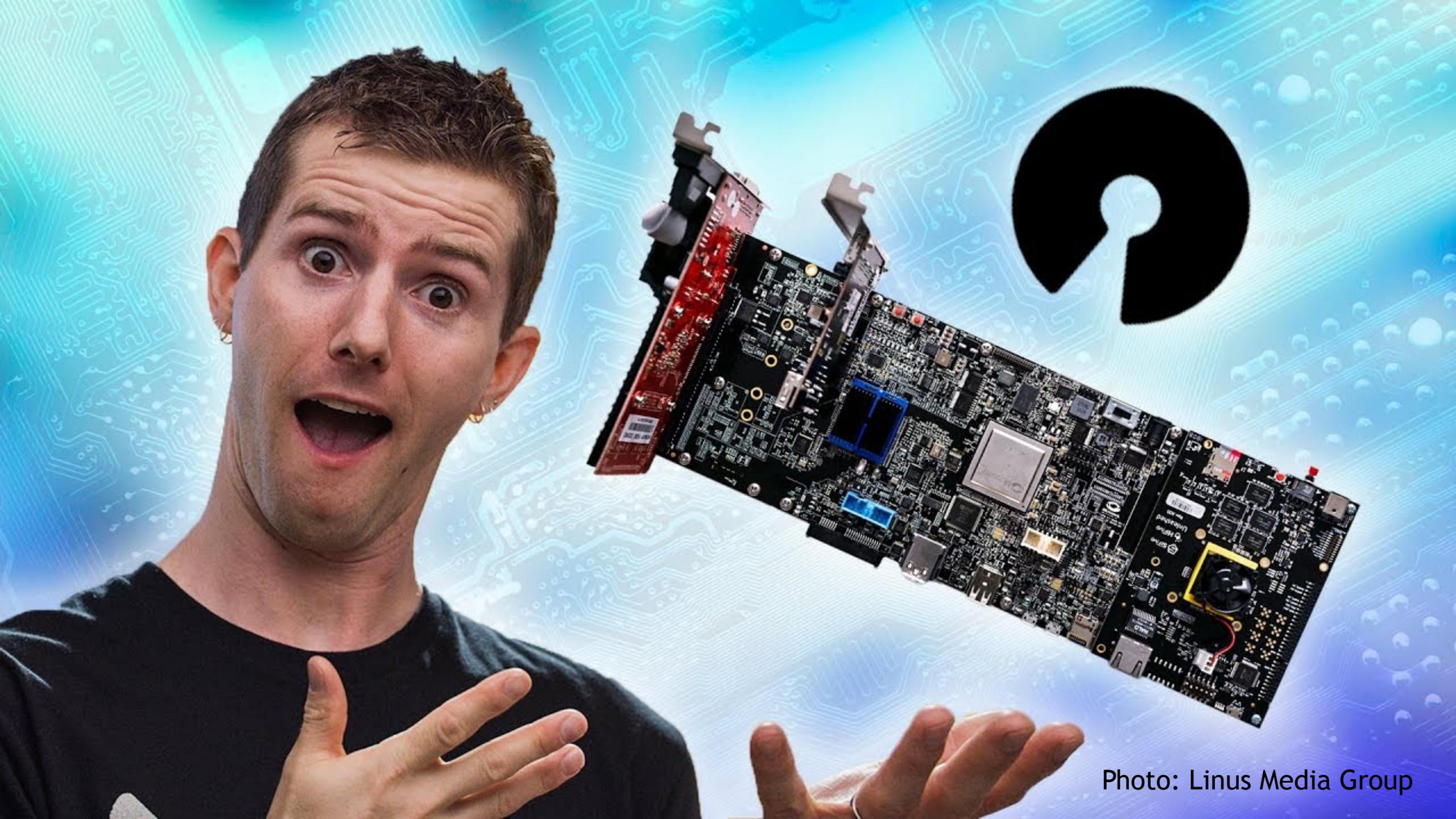


Photo: Linus Media Group

- ▶ High volume market of consumer devices (I do not get involved in these)
  - ▶ Arduinos
  - ▶ Devices everywhere (Amazon Echo)
  - ▶ IoT / Cloud
  - ▶ Many others

