# FutureHorizons

The Global Semiconductor Industry Analysts

## FH MONDAY

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### Robots Get AI from Startup

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**TALK TO US**

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### iPhone X's TrueDepth Module Dissected

PARIS — Although experts in the imaging industry are aware of a complex "TrueDepth" module that Apple has devised for its iPhone X, most other details inside the device's 3D system — chips, components, and all the way down to substrates — remain a deep, dark secret.

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## Robots Get AI from Startup

SAN JOSE, Calif. — In the next few months, industrial robots will learn how to do their jobs by watching humans, using software from a startup that debuts today. The neural-networking program from Embodied Intelligence also will let robots improve their performance over time.

The work marks a step toward a future in which robots will understand the visual world. Today, human experts typically train factory-floor robots to repeat motions in a relatively slow two-step process that sometimes requires humans writing custom software.

“Instead of programming each procedure, we demo it — it doesn’t require an expert … the robot learns from trial and error,” said Peter Chen, a co-founder and chief executive of the company.

## Chip Incubator Warms New Startups

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Like most of its partners, ON Semi joined Silicon Catalyst to get a better view of its pipeline of startups. The incubator screens hundreds of startups every year to select a handful that become portfolio companies, getting access to EDA and test tools and services from partners, including a shuttle run at TSMC.

“My role is to look outside the company and fill innovation and technology gaps,” said Mamoon Rashid, senior vice president of strategic ventures at ON Semi. “This partnership gives us a view of the semiconductor startup environment … there are a lot of incubators in software, but not a lot in semiconductors.”

## PA Semi, Apple ‘Interconnect’ At Startup

PARIS — With a body of engineering experience at LSI, Cisco, SiByte, Broadcom, PA Semi and Apple, Shailendra Desai is confident of his knowledge in SoC designs and what needs to be done.

Desai was senior engineering manager at Apple from 2007 to January 2013, where he cut his teeth on issues of interconnect architecture, as well as third-party and in-house IP integration. Desai said, “You can license individual IPs from various sources. But none of these IP vendors gave us a platform” to build and connect different IP blocks, in ways that might enable designers to optimize performance per watt for their SoCs.

Desai established Provino Technologies Inc. in 2015 to create a scalable platform for SoCs and IP subsystems. Provino hopes to help designers of SoCs for consumer, automotive and industrial applications where safety, security and energy efficiency are paramount, he explained.

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Combining the two companies will enable mCube to create new markets for motion sensing and tracking solution, especially in the medical devices and sports science motion tracking, said Ben Lee, mCube's CEO, in an interview with EE Times.

MCube's claim to fame is that it makes the world's smallest and lowest power inertial sensor, a 3-axis accelerometer that in a 1.1×1.3 mm CSP and a profile of just 0.74mm. By combining that with Xsens' suite of technologies for converting motion sensor measurements into application data,

## iPhone X’s TrueDepth Module Dissected

PARIS — Although experts in the imaging industry are aware of a complex “TrueDepth” module that Apple has devised for its iPhone X, most other details inside the device’s 3D system — chips, components, and all the way down to substrates — remain a deep, dark secret.

EE Times talked to Yole Développement, which completed this week a teardown of Apple iPhone X TrueDepth module in collaboration with its partner, System Plus Consulting. They deduced that silicon-on-insulator (SOI) wafers are being used in near-infrared (NIR) imaging sensors. They noted that SOI has played a key role in improving the sensitivity of NIR sensors — developed by STMicroelectronics — to meet Apple’s stringent demands.