

Tremors rock Lahad Datu and Kunak

LAHAD DATU: Residents around Lahad Datu and Kunak felt two tremors within 10 minutes of each other.

Private sector worker Baharudin Labahu, 28, said he felt a five- to six-second tremor at his home in Simpang Empat Kunak in Kunak.

"I was resting at home when the tremor occurred. It did not hit me that it was an earthquake. But when I looked at my WhatsApp, I realised that many of my friends also felt the tremor.

"After a few minutes, another tremor occurred," he said.

A resident of Taman Aman 3 in Lahad Datu, Ainul Durmahyanty Durming, also felt the tremors while sitting with her family.

The Meteorological Department's website stated that there was a weak earthquake measuring 3.8 on the Richter scale at 3.53pm, 8km north-west of Kunak at a depth of 10km. — Bernama

O&G ASSETS

Jurunature's new protection technology

KUALA LUMPUR: Oil and gas (O&G) services provider Jurunature Sdn Bhd will introduce a new technology that enables industry players to protect their O&G assets from corrosion, rust and extreme weather conditions.

Chairman Dr Farid Ravi Abdullah said the company's high-density dry-ice technology could provide surface protection by blasting O&G structures without shutting down facilities and halting production.

"This innovative technology, which was introduced in Europe in 2016, is sought-after by major O&G corporations worldwide. The technology can also be utilised in the petrochemical, marine and construction industries and added advantages include environmental friendliness with no salt residue, improved efficiency, cost savings and minimum wastage during blasting."

Jurunature and partners Dry Ice Global of Scotland and Acotec NV from Belgium are showcasing the product under the brand name Humidur.

LAMPIRAN 3
UTUSAN MALAYSIA (RENCANA) : MUKA SURAT 28
TARIKH : 28 MEI 2018 (ISNIN)

Pemikiran sains dan Islam Tun Dr. Mahathir



NOR AZARUDDIN HUSNI NURUDDIN

PEMIKIRAN Tun Dr. Mahathir Mohamad banyak mempengaruhi perubahan dan suasana politik, ekonomi, pentadbiran, pendidikan, hubungan luar negara dan Perlembagaan di negara ini. Iklim perubahan ini adalah berkait rapat dengan pemikiran beliau dan nilai-nilai falsafah di sebaliknya.

Kajian pemikiran Perdana Menteri ketujuh Malaysia ini merupakan bidang kajian penulis sejak 2008. Penulis ingin kongsi beberapa dapatan dalam artikel ini yang difokuskan kepada pemikiran Dr. Mahathir mengenai sains dan Islam.

Sains menurut beliau adalah alat yang dapat membangunkan sesebuah negara daripada negara membangun kepada negara maju melalui modenisasi.

Konsep modeniti yang berjaya membangunkan Barat menjadi contoh kepada Dr. Mahathir untuk membangunkan Malaysia. Sains juga menurut beliau selain mendapat ilmu, seharusnya mampu memberi impak terhadap ekonomi negara.

Sebagai contoh dapat menjana pendapatan negara, mewujudkan peluang pekerjaan, menambah bilangan tenaga mahir, penggunaan bahan watan dan lain-lain. Mekanisme tersebut adalah seperti pemindahan teknologi, pengindustrian, menjalankan pembangunan dan penyelidikan (R&D) dan lain-lain lagi. Malaysia tidak seharusnya bergantung kepada pertanian atau lain-lain sumber bumi untuk menjana pendapatan negara.

Antara misi beliau adalah mewujudkan masyarakat yang progresif dalam bidang sains, yang inovatif dan sentiasa memandang ke hadapan yang bukan menjadi pengguna teknologi tetapi penyumbang kepada tamadun.

Namun, untuk membangunkan sains dan teknologi bukanlah tugas mudah kerana beliau terpaksa berdepan dengan ber-



APABILA orang Islam berfikir secara terbuka serta mampu menggunakan ilmu Islam yang sebenar maka mereka memutuskan untuk mengatakan bahawa al-Quran itu tidak haram untuk dicetak. - GAMBAR HIASAN/UTUSAN

bagai-bagai cabaran. Salah satu cabarannya adalah salah tafsir mengenai Islam atau Islam seharusnya diberikan tafsiran betul seperti mana yang dikehendaki Allah SWT.

Bila memperkatakan mengenai Islam, beliau dalam buku Dilema Melayu menyarankan agar kefahaman Islam diberi penekanan dan diperhalusi kerana pada waktu itu masyarakat Melayu tiada kesungguhan untuk bersaing dengan bangsa lain terutama dari aspek ekonomi.

Bangsa Melayu lebih mengutamakan aspek spiritual. Oleh itu, corak keislaman yang diamalkan oleh orang Melayu menurut beliau adalah hasil tafsiran dan kefahaman agama yang salah dan sempit dan tidak memahami mesej sebenar yang dikehendaki tuntutan agama.

Menurut beliau lagi, naik turun Islam itu sebenarnya ada kaitan dengan agama Islam yang mereka anuti. Dr. Mahathir memberikan beberapa contoh. Pertama, berkaitan persoalan mengapa Arab jahiliyah apabila mereka menerima Islam mereka menjadi begitu dinamik.

Mereka berjaya mendirikan tamadun tinggi yang jauh lebih moden daripada tamadun Yunani dan Romawi sedangkan sebelum menerima Islam mereka mundur, tinggal di padang pasir yang berbudaya kolot sehingga sanggup menanam anak perempuan hidup-hidup serta taksuf dengan kabilah masing-masing. Ini adalah contoh sekiranya Islam itu ditafsir dengan betul.

Tetapi semakin lama Islam itu berkembang, semakin banyak pula ajaran sesat yang tersasar daripada ajaran Islam. Semakin ramai pemimpin yang terlibat dengan perebutan kuasa dan masing-masing mendakwa mereka berjuang untuk Islam. Tafsiran berlainan berkaitan agama tidak henti-henti dibuat sama ada dari segi perbezaan mazhab, ijthad dan ijmak yang kerap mengeluarkan fatwa.

Sebagai contoh jika kita lihat dari segi sejarah, apabila mesin cetak mula-mula diperkenalkan ramai ulama Islam mengeluarkan fatwa mengatakan haram menggunakan mesin cetak.

Kesan pengharaman fatwa ini yang berlaku berabad-abad lamanya menyebabkan umat Islam tidak dapat memiliki al-Quran ini.

Akhirnya, apabila orang Islam berfikir secara terbuka serta mampu menggunakan ilmu Islam yang sebenar maka mereka memutuskan untuk mengatakan bahawa al-Quran itu tidak haram untuk dicetak.

Begitu juga dengan apa yang berlaku kepada Turki. Waktu itu, Turki menjadi kuasa dunia yang mampu menakluk sebahagian besar Eropah Timur tetapi pada masa itu timbul polemik daripada ahli-ahli agama yang mengeluarkan fatwa mengatakan haram hukumnya apabila askar memakai seluar untuk berperang. Perdebatan demi perdebatan berkaitan perkara ini telah mengambil masa yang panjang dan masing-masing ingin menyatakan bahawa merekalah yang lebih kuat pegan-

Antara misi beliau adalah mewujudkan masyarakat yang progresif dalam bidang sains, yang inovatif dan sentiasa memandang ke hadapan yang bukan menjadi pengguna teknologi tetapi penyumbang kepada tamadun

gan Islamnya daripada golongan lain sehinggalah akhirnya Turki diserang oleh kuasa Barat.

Golongan agama tidak mampu untuk mempertahankan Empayar Turki ini. Akhirnya, golongan tentera muda bangkit dan menentang Barat serta berjaya menyelamatkan Turki.

Pegawai tentera yang muda-muda ini amat kecewa dengan apa yang berlaku dan mereka menyalahkan golongan agama. Akibat kemarahan ini, mereka telah menubuhkan 'kerajaan sekular'.

Sekular yang mereka maksudkan ini adalah tidak tertakluk dengan golongan agama.

Perbuatan mereka ini dikesam hebat oleh pelbagai pihak tetapi yang mengecam tidak pernah sia-sat perkara sebenar. Ketika itu, Kerajaan Kesultanan Turki terlalu lemah kerana percayakan kepada golongan agama dan mengabaikan soal-soal lain seperti pertahanan.

Begitu juga dari bukti sejarah pemerintahan muslim Sepanyol yang hilang pada 1492 setelah menempuh zaman kegemilangan selama 500 tahun adalah kerana ahli agama menolak karya-karya bukan Islam yang dianggap tidak Islam.

Akhir sekali, menurut Dr. Mahathir apa yang penting adalah tafsiran yang betul terhadap Islam bagi membolehkan umatnya maju serta disegani di seluruh dunia serta dapat mengembalikan zaman kegemilangan Islam.

PENULIS ialah Felo Kanan Institut Kefahaman Islam Malaysia (IKIM).

Rock stars of the tech world

Nur Zarina Othman
finds out why data
science is the new
black

"IM a data scientist by trade as I see it more than just a profession," says Samira Emmerson, director of analytics and data science at The Center of Applied Data Science (CADS), in Bangsar South, Kuala Lumpur, Asean's first data science training institution.

With over 11 years of experience in numerous organisations, Samira's role ranges from understanding business problems to tapping into data in order to create analytics solutions to address the problems.

WHAT IS DATA SCIENCE?

Data science includes working with a suit of technologies either on the hard-side or the soft-side (algorithms) that one utilises to collect, store, manage, process, analyse and manage data.

According to Samira, these suits vary from the traditional format which is about data mining and statistical learning, to neuro analysis (also known as advanced analytics) that includes machine learning and artificial intelligence.

"Data science is a multi-disciplinary concept. It's like an umbrella term for a wide variety of concepts such as statistics, mathematics, computer science, programming, business intelligence, visualisation, and also advanced analytics — artificial intelligence and machine learning," she says.

On top of that, it also incorporates understanding the elements, building hypothesis and testing hypothesis. "It has strong roots in data but at the same time, it has a scientific approach," says Samira, whose interests are in all aspects of data life cycle, from storage to processing, as well as analytics, including relational and NoSQL engines.

However, not everyone understands fully what a data scientist is.

Most industries tend to look past the "science", which according to Samira, "You can't start a scientific study with a definitive outcome in mind. You can't look at it and say, 'I'm looking for a 20 per cent increase, so I'm going to run my study and I'm going to achieve that 20 per cent increase in my [for example] revenue.'"

"That's not scientific, that's a biased study," explains the 36-year-old data



Samira (second from right) and her team.

scientist who has been based in Malaysia for over a year now. "The scientific approach should be: I am going to go through this whole process to the end and get the result where I can either accept it or come up with an interesting outcome like a 20 per cent increase." Or I can say, I don't have enough data or evidence to conclude anything and start the whole process again, but change some variables or data to see what I can find."

SPECIALISATION IN DATA SCIENCE

Data science is a wide area and as a data scientist, you are required to know about the data life cycle. These are from collecting data, preparing and cleansing them, doing some modelling and visualisation and communicating it back. This is the job scope of a data scientist.

It is an extremely wide cycle. According to Samira, if one were to find someone that comprehensively knows it all, then they are talking about the unicorn, a mystical creature that doesn't exist, not even in data science.

A "unicorn" is what data scientists call rare individuals who excel in all aspects of data science. "But what I'm referring to is that everyone needs to know the concept and techniques — what they are about and how they work. There are different types of data scientists. Some are good at modelling, some at data processing and heavy

lifting of data and others at visualisation and storytelling. They focus on those specialisations because each requires different and specific skills," says Samira, who is partial to graph databases, modelling and machine learning.

Samira believes that not all data scientists know it all. There are two types of data scientists: data scientists who are academicians, and the other type who are industry-related experts.

"You get data scientists who are researchers and work in academia, and there are those like me who work with businesses and industries," she explains.

All the technical things that industry-focused data scientists do, they need to wrap them up in a business application, and ensure it drives some value to the business user. "If they don't understand the outcome of the analytics solutions, they will say 'No,'" says Samira, who is currently leading a team of industry-focused data scientists, while being client facing and designing solutions according to client's requirements.

"My team and I specialise in specific industries. We get to know the industry, work with the people in that industry and see how we can tailor solutions to the clients' requirements," she says.

"As an industry-focused data scientist, you not only need to know the technical side, variables, but also [in depth] the industries that you work in very well," she adds.

Samira who has three Masters' degrees — MBA, Technology Management and Data Science, with a degree in Software Engineering — started off in the financial services industry where she first realised how the repetitive data-related investment actions could be replaced by simple algorithms.

GROWTH POTENTIAL AND DEMAND

According to Forbes, about 1.7 megabytes of new information will be created every second for every person on the planet by 2020, and this certainly generates wider opportunities for companies to deliver

better customer experiences. What better way to deliver than by having a pool (maybe two) of data scientists at their disposal?

With data collection growing exponentially every year, big data is changing the way organisations conduct business and manage marketing. Companies are vying for data science talents that can translate data into ringgit.

Data scientists can be real change-makers within an organisation, offering insights that can illuminate the company's trajectory toward its ultimate business goals. They are integral to creating better products and paradigms.

Their role in big organisations are increasingly important, yet there is a shortage of talents.

According to IBM, demand for data scientists will increase to 2.7 million by 2020.

The Malaysian government has set its sights on developing 20,000 data professionals and 2,000 data scientists by 2020. Currently, there are only 7,000 data professionals.

There is an urgent need to create awareness about data science as a profession and to future-proof talents to meet the rising demand. The Center of Applied Data Science is committed towards growing the pool of talents.

"By looking at the demand in the near future, data scientists may just be the rock star job you're looking for," says Samira. "Just remember that it is not a 9 to 5 job. That is why we recognise it as a new breed of talent, skills and job," she says.

"Data scientists are very analytical. These are the people who ask the 'why' questions. Why something happens, how did it happen and why in this format, why this time frame, why in this situation, why this outcome, and so on," says Samira.

"They don't take anything at face value. If they're not good at questioning and probing the things that are said, it doesn't matter how good they are at programming; they are not going to go far in this field," she concludes.



By looking at the demand in the near future, data scientists may just be the rock star job you're looking for.

Samira Emmerson

LAMPIRAN 5
UTUSAN MALAYSIA (MEGA SAINS) : MUKA SURAT 17
TARIKH : 28 MEI 2018 (ISNIN)

KABEL CAS PINTAR

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SUKA atau tidak, kita perlu mengakui perbuatan mengelas telefon pintar atau apa juga peranti pada sebelah malam memang menjadi tabiat kebanyakan pengguna hari ini. Namun letupan telefon pintar semasa sedang dicas amat berbahaya dan puncanya antara lain kerana produk tidak berkualiti atau tempoh masa mengelas yang berlebihan. Bagi mengatasi masalah tersebut, sekumpulan anak muda dari Universiti Teknologi Malaysia (UTM) menawarkan satu penyelesaian bagi membantu sebahagian besar daripada kita yang mempunyai tabiat tersebut.

Penyelidikan yang dinamakan Kabel Pintar Charby Sense itu adalah berkaitan dengan litar elektrik pintar dan produk yang bertujuan memudahkan proses pengecasan telefon bimbit.

Kajian yang dijalankan pada September 2015 itu dianggotai sekumpulan tiga penyelidik dari Malaysia-Japan International Institute of Technology (MIIT) dan Fakulti Kejuruteraan Elektrik UTM, iaitu Lim Thol Yong (MJHT), yang merupakan ketua penyelidik dan dua lagi pelajar fakulti berkenaan Cheok Ming Jin dan Chik Sheng Fei.

Menceritakan bagaimana projek bermula, Thol Yong memberitahu, pada awalnya



LIM THOL YONG (tengah) dan rakan penyelidik, Cheok Ming Jin (kiri) dan Chik Sheng Fei bersama kabel cas pintar ciptaan mereka.

mereka mencipta rumah pintar (smart home), iaitu peranti yang boleh menutup suis elektrik secara automatik atau pun boleh dikawal melalui aplikasi telefon bimbit.

Kemudiannya, mereka mengadakan pertemuan dengan pengurusan Kolej UTM bagi mengemukakan cadangan untuk memasang suis pintar pada bilik mahasiswa. Cadangan tersebut bertujuan membantu mengelakkan pembaziran elektrik yang berpunca daripada sikap segelintir pelajar yang tidak menutup suis lampu dan kipas selepas keluar daripada bilik.

"Kami membuat cadangan selepas berbincang, namun ditolak berikutan kos pemasangan yang tinggi. Selepas itu kami menukar cadangan dengan menghasilkan produk 360 car sensor dengan menggunakan idea projek

tahun akhir peringkat sarjana muda saya yang memenangi pertandingan Innovate Malaysia Tahun 2014," ujarnya.

Idea itu ialah memasang capacitive sensor yang berbentuk nipsis pada bahagian dalam sekeliling kenderaan.

Dengan aplikasi telefon tersebut, ia dapat membantu pemandu kereta mengesan titik buta (blind spot) semasa memandu dan parkir.

Cabaran mereka tidak berakhir di situ kerana selepas cuba mendapat dana dari Cradle Fund Sdn. Bhd., cadangan sekali lagi ditolak.

Pada masa sama, pada sesi soal jawab, kumpulannya juga gagal meyakinkan panel bahawa idea tersebut boleh dikomersialkan memandangkan pengguna kenderaan yang akan berasa perlu pemasangan wayar semula dan berpotensi

membatalkan jaminan kenderaan serta sukar untuk dipasang.

Thol Yong berkata, pada malam permohonan dana ditolak oleh Cradle, mereka berbincang apa sumbangan yang boleh diberikan dengan kebolehan teknikal inovasi yang dicipta.

"Salah seorang tiba-tiba bertanya adakah kamu akan mengelas telefon sebelum tidur. Ada yang jawab 'ya' dan ada yang 'tidak'. Kami pun berfikir adakah mampu menghentikan pengecasan secara automatik dengan memakai teknologi rumah pintar dan sensor kenderaan kami apabila bateri telah penuh? Sejak malam itulah lahirnya idea ini," ujarnya lagi.

Maka dengan kajian tersebut, lahirnya produk kabel pintar yang boleh menghentikan pengecasan secara automatik apabila bateri telefon bimbit dicas sepenuhnya.

Justeru Thol Yong menjelaskan, selain idea dan kesungguhan, penyelidikan tersebut berjaya disiapkan hasil bantuan dana Cradle untuk menghasilkan prototaip dan peningkatan fungsi kabel pada bulan Jun 2016.

Prototaip terakhir tersebut siap April tahun lalu. Selepas itu,

pihaknya mula mencari kilang bagi pengeluaran besar-besaran, manakala jualan pratempahan dan promosi bermula September tahun lalu.

Mengenai penggunaan dan keistimewaan kabel pintar berkenaan, Thol Yong menjelaskan, apabila bateri telefon bimbit sedang dicas dan menghampiri tahap 100 peratus ia akan memasuki trickle charging iaitu akan akan mengelas sampai penuh dan berhenti.

Walaupun bagaimanapun, apabila cas bateri turun kepada 99 peratus, ia akan cas semula hingga mencapai 100 peratus dan proses tersebut berulang hingga arus elektrik dihentikan.

Katanya, lebih daripada 90 peratus telefon di pasaran sekarang menggunakan bateri Lithium-Ion, dan jangka hayatnya akan terjejas apabila tahap bateri berada hampir dengan kosong peratus atau pun

100 peratus. Haba yang tinggi juga akan mengurangkan hayat bateri telefon bimbit.

Katanya, litar bersepadu (IC) atau cip pintar pada kabel berkenaan akan mengesan bacaan arus elektrik, ia akan memotong arus elektrik daripada masuk ke bateri telefon apabila bacaan arus elektrik menunjukkan bateri dicas sepenuhnya.

Selain itu, dengan kebolehan untuk membaca arus elektrik, kabel pintar berkenaan dapat membezakan pengecas atau bekalan kuasa mudah alih yang berkualiti, dan ia akan memberitahu pengguna apabila pengecas yang arus elektrik rendah sedang digunakan.



LAMPIRAN 6
UTUSAN MALAYSIA (MEGA SAINS) : MUKA SURAT 17
TARIKH : 28 MEI 2018 (ISNIN)



Teknologi diperluas

KUMPULAN tersebut, yang mempunyai kepakaran dalam Pemrograman Reka Bentuk Skematik dan Terbina Dalam bercadang untuk menggunakan teknologi berkenaan bagi menghasilkan produk pengecas, bekalan kuasa mudah alih (power bank) dan kabel yang pintar untuk memenuhi keperluan pengguna yang berbeza.

Semua produk tersebut akan mempunyai ciri yang boleh membantu memudahkan proses pengecasan dan juga kebolehan memanjangkan hayat telefon bimbit.

Ketika ini, kebanyakan telefon pintar mempunyai kebolehan pengecasan wayarles tetapi ia masih belum popular dalam kalangan pengguna.

Menurut Lim Thol Yong, ada dua sebab mengapa masalah tersebut berlaku iaitu harga pasaran yang lebih tinggi berbanding pengecas biasa dan kedua, pengecas wayarles menggunakan pengecasan

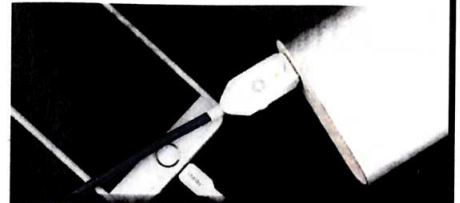
induktif iaitu tidak pantas penggunaan kabel.

"Di samping itu, masalah pengecas wayarles yang berkualiti rendah akan menyebabkan telefon menjadi panas.

"Namun, teknologi ini dijangka terus dimajukan dan menjadi lebih popular dalam kalangan pengguna dalam masa dua tahun, terutama apabila ada syarikat antarabangsa bersedia menghasilkan pengecas wayarles yang pantas serta berkualiti tinggi pada harga yang murah.

Mengenai harapan pada masa akan datang, pihaknya berharap usaha mereka dapat memberi lebih inspirasi dan galakan kepada golongan muda untuk menceburi bidang perniagaan dan membantu menaik taraf ekonomi negara.

"Perancangan kami ialah untuk mewujudkan perniagaan produk yang bertaraf antarabangsa dan dapat menaik taraf penggunaan telefon bimbit dalam pengecasan," ujarnya.



KELEBIHAN

■ Memudahkan pengguna terutama bagi mereka yang suka meninggalkan telefon semasa dicas.

■ Dapat mengelakkan bahaya semasa mengecas telefon dan juga memanjangkan jangka hayat telefon bimbit.

■ Mampu mengesan pengecas dan bekalan kuasa mudah alih yang berarus elektrik rendah kerana lampu diod pemancar cahaya (LED) pada kabel akan berkelip apabila ia mengesan arus elektrik yang rendah dan mengelakkan pengecasan yang lama.

■ Pengecasan dua kali lebih pantas

dengan menekan butang pada kabel tersebut apabila telefon sedang mengecas dari USB pelabuhan (port) komputer riba dan komputer peribadi.

■ Ia dapat membantu pengguna yang mengecas dengan komputer riba untuk cas dengan lebih laju apabila pemindahan data tidak diperlukan, pengguna boleh bertukar ke mod penjanaan (booster) pengecasan yang dua kali lebih cepat dengan menekan butang.

■ Kabel tersebut juga dibina dengan wayar tembaga yang berkualiti tinggi.

LAMPIRAN 7
THE STAR (SMEBIZ) : MUKA SURAT 9
TARIKH : 28 MEI 2018 (ISNIN)



More efficient: A new system has also enabled the company to reduce its production of defective extrusion sheets, says Lim.

Green element: Danapac's R&D head Louis Lee (right) shows off its trays made through more environmentally-friendly processes for various use.

By DAVID TAN
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WITH the business environment getting tough, due mainly to shortage of skilled workers and the slow down in some industries, some local SMEs are turning to producing environmentally-friendly products to stay competitive in the market.

Environmentally-friendly products are gaining popularity, especially among the generation-X and generation-Y.

According to a 2018 Green Industry Analysis by the US-based Franchise Help, some 55% of consumers across 60 countries are willing to pay higher prices for goods from environmentally-conscious companies. A 2015 study by The Nielsen Company also shows that in the US, despite high unemployment rates and low wages, millennials are willing to spend more for products that are environmentally-friendly.

"Just over the span of one year, millennials willing to pay more for products and services from companies committed to positive environmental and social change increased from 55% in 2014 to 72% in 2015. Although seen by some as a niche minority, eco-minded consumers are now a major concern and opportunity for marketing departments across the country," the report said.

Walta Engineering Sdn Bhd managing director Goh Kheng Sneah says the company has also observed similar trends in Malaysia and in South-East Asia.

"This is why, a couple of years ago, we invested in designing and development activities to produce detergent-free dishwashers. The targeted segments are hawker centres and restaurants," Goh says.

Because the dishwashers do not use detergent, they are environmentally-friendly, he adds.

Instead, its technology makes use of high-pressure hot water to clean dishes. Each unit has the ability to clean 1,800 to 2,500 plates in an hour, says Goh.

Walta has spent a few million ringgits to design and develop the dishwasher.

"About 50% of the raw materials are imported and the remaining sourced locally," he says.

About 250 units of the dishwasher will be rolled out for introduction into the local market this September, with selling price at US\$10,000 per unit.

Local SMEs producing more green products

Companies keeping up with consumer demands for environmentally-friendly goods



New product: Goh demonstrating the use of the advanced rotary dishwasher at its plant in Perai.

The company has already received enquiries from the local market, Singapore, Thailand, and the Philippines.

"The new business segment will drive the company to achieve turnover of RM70mil in 2019 from RM60mil targeted for 2018.

"In 2020, we expect to be able to do RM100mil, of which 40% will be the contribution from the dishwasher business segment. We aim to sell 500 units in 2019 and 1,000 by 2020," he adds.

Walta will generate revenue from direct sales and rental of the dishwashers.

The dishwasher is expected to help restaurants and hawker centres reduce the use of foreign labour.

"This is why the product is appealing. Furthermore, the product is environmentally-friendly," says Goh.

The shortage of workers makes it difficult for Walta to stay competi-

tive as an automated equipment company focused on making customised equipment, which needs a lot of skilled workers.

"When we have successfully trained the foreign workers to do the work, they have to return to their respective countries. Some of them may choose to work in another country after acquiring the experience and training here.

"So it becomes necessary for us to develop a fresh product that could be produced according to a standard manufacturing process that does not require so much skilled labour," Goh explains.

Goh urges the new federal government to make SME grants more accessible so that local SMEs can undertake development activities to produce more innovative products for new markets.

International reports have noted a steady growth in the global market for industrial and institutional cleaning products. This will pro-

vide local players with an opportunity to take part in that growth, particularly those with ready products for the export market.

According to a Smithers Apex report, the global market for industrial and institutional cleaning products will reach US\$51bil by 2021 with a CAGR of 4%.

"The demand for using green products for cleaning is increasing through to 2021, in order to prevent creating non-biodegradable waste water and effluent.

"Manufacturers of cleaning products for industries and institutions have adhered to the changing societal demands and have started using bio-based ingredients, innovating cleaning products that require less or no water with eco-friendly and recyclable packaging," the Smithers Apex report said.

Another local company banking in on the green movement is Danapac Industries (M) Sdn Bhd.

The company has adopted new manufacturing processes to make new environmentally-friendly products to drive growth, as its traditional markets - the electronic, food, and medical device sectors - are not performing well.

The electronic sector, for example, is saturated with mobile telecommunication devices.

"For this reason, new mobile devices are slow coming into the market, which has affected orders for trays to package the electronic components used inside the devices. To continue selling to these markets, we need products with environmental features.

"The electronic sector is phasing out the older trays and is switching gradually to the new environmentally friendly trays," says director Jansen Lim.

The company is using a hot laminated process technology to manufacture pre-printed high impact

polystyrene (HIP) and polypropylene (PP) extrusion sheets that are used for making trays to hold medical devices, electronic components and food items.

"Innovation is key to survival. Since early this year, we have ventured into the production of pre-printed extrusion sheets with colours and logos on them, using a special hot laminated process technique.

"Previously, the extrusion sheets were printed with logos and colours only after the manufacturing process of the sheets is completed. Because the logos and colours were not pre-printed, the chemicals from the sheets can migrate to the environment, causing environmental problems," Lim explains.

Lim says the company has invested about US\$400,000 into the hot laminated manufacturing process to make the new pre-printed extrusion sheets.

Danapac has also invested into a total interactive quality assurance management system (TIQAMS) to cut down the production of defective extrusion sheets. The TIQAMS basically provides information for the manufacturers and customers to know about the defects and the ingredients used for the sheets.

"We have managed to reduce the number of defective extrusion sheets by 70% to 80%, which has strengthened the confidence of our customers in our company.

"As a producer, we are familiar with the problems that are linked to the manufacturing process of extrusion sheets that could be shared with our customers. The system allows the manufacturers to share the information collected by TIQAMS," he says.

Danapac has been enjoying brisk sales thanks to the TIQAMS as the system lets its customers in on the manufacturing process of its products and ingredients used. This helps build rapport with its customers.

"From the information, we will also be able to improve the production process used," Lim adds.

LAMPIRAN 8
THE STAR (TECHNOLOGY) : MUKA SURAT 5
TARIKH : 28 MEI 2018 (ISNIN)

By TIM JOHNSON

SHOPLIFTERS beware: Closed-circuit cameras in stores might be observing more than you think.

As facial recognition software gets better, the battle against retail theft is moving into high tech.

Retail stores with facial recognition systems can spot convicted or admitted shoplifters in about the time it takes to walk two paces into an establishment.

"We can match a face against the database of 25 million people in just under a second. Two or three years ago, that was just unheard of," said Peter Trepp, chief executive of FaceFirst, an Encino, California, firm that is a leader in retail surveillance tools.

Civil libertarians are up in arms over widespread use of facial recognition software, fearing that errors could victimise innocent shoppers, but industry experts say the use of the software is here to stay.

That's because theft remains a bane to the nation's 3.8 million retail establishments, which suffered US\$48.9bil (RM194bil) in losses in 2016, the most recent year for which the US National Retail Federation tallied estimates. Average stores lose between one and three percent of revenue to theft each year, experts say.

"Most people, when they envision what retail theft looks like, they probably envision someone taking something off the shelf and hiding it in their jacket," said Malay Kundu, chief executive of StopLift, a Cambridge, Massachusetts startup.

But Kundu said less than half of retail losses come from shoplifters or organised retail crime gangs. More losses occur from employee theft, often at the check-out counter. In this area, too, surveillance technology is advancing.

Kundu's startup provides a service that weds ceiling cameras over checkout lanes with artificial intelligence to send alerts when the system detects cashiers failing to scan products.

"If you've got a friend or family member or a fellow employee who is the cashier, they can give you things for free just by not scanning them. It goes right into the bag," Kundu said.

Using the cameras and highly

Scanning for dishonesty

Shoplifters meet their match as retailers deploy facial recognition cameras.



A facial recognition system shows visitors' faces and ages during the 2nd AI Expo at Tokyo Big Sight in Tokyo. — TNS

advanced software, Kundu said clients report a reduction in such inventory losses of as high as 40%. His company says its technology has already confirmed more than 2.7mil incidents of scan avoidance.

The use of high-tech anti-theft technology remains in its infancy, experts said.

"It's not well-embedded in retail yet (but) it's becoming more affordable," said Karl F. Langhorst, executive vice president of Alto US, a Miami subsidiary of a Chilean company that uses computer analytics to combat theft in 7,000 stores in 100 cities.

Skeptics of facial recognition software say they worry about reports of errors, especially with non-white customers.

"These algorithms were less accurate on people of colour and

women," said Jeremy Gillula, the tech policy director at the Electronic Frontier Foundation, a San Francisco group that advocates for privacy rights in the digital age.

Hundreds of thousands of cameras already gaze on passersby at airports, schools, stadiums, hotels, casinos and at retail outlets like convenience and liquor stores and gas stations.

"You're being recorded almost everywhere you go these days. No one's up in arms about that. No one's marching on Washington," Trepp said.

But major retailers worry about liability and consumer skittishness. "It's true that shoplifters don't engender sympathy," said Jay Stanley, a senior analyst with the speech, privacy and technology project of the American Civil

Liberties Union, a group that advocates for individual rights. But Stanley said people convicted once of retail theft could find it difficult to enter retail outlets without intense scrutiny.

"Now, instead of being shut out of one mom-and-pop store, you get shut out of hundreds," Stanley said.

Change is washing over retail, as stores adopt self-checkout, employ fewer clerks and watch the experimentation by Seattle-based giant Amazon, which earlier this year opened Amazon Go, a concept store filled with cameras and sensors. Shoppers there grab prepared foods off shelves and walk out without passing a cashier. Computers later notify customers of what they've been charged.

Other retailers worry about

possible glitches in surveillance technology.

"If you for some reason have a mistake in your database or someone interprets your information incorrectly and some innocent person all of a sudden comes up that they committed a crime, you're opening yourself up to liability," said Terry Sullivan, president of the Loss Prevention Foundation, a non-profit in Matthews, North Carolina, that educates retail employees about how to fight theft. "There's a lot of moving pieces to that," he added.

Among major retailers, only a few acknowledge using facial recognition. Among them is Lowe's, the home improvement and appliance chain.

"In some stores, we may use facial recognition technologies to identify known shoplifters," the retailer's privacy and security statement says.

Cameras have to be placed near entrances for facial recognition software to succeed.

"Lighting has to be appropriate. Resolution has to be higher in quality," said Roger Rodriguez, a facial recognition expert who left the New York Police Department after two decades to join Vigilant Solutions, a Livermore, California, company that sells platforms of license plate readers and facial recognition to law enforcement.

Retailers still debate whether consumers should be told facial recognition is in use.

"Legally, you don't have to have signage," Trepp said. "You don't have to say anything to anybody in most of the states of the US. There is no federal law."

Rodriguez said retailers should tell shoppers anyway to dissipate fears, and advertise positive uses, such as for finding missing children or identifying elderly people with Alzheimers.

"I do believe it is the wave of the future," echoed Sullivan of the Loss Prevention Foundation. — Tribune News Service

From Industrial 4.0 to Finance 4.0

Think Asian
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MOST people are somewhat aware about the Fourth Industrial Revolution.

The first industrial revolution occurred with the rise of steam power and manufacturing using iron and steel. The second revolution started with the assembly line which allowed specialisation of skills, represented by the Ford motor assembly line at the turn of the 20th century.

The third industrial revolution came with Japanese quality controls and use of telecommunication technology.

The Fourth Industrial Revolution, or first called by the Europeans Industry 4.0, is all about the use of artificial intelligence, robotics, genomics and process, creative design and high speed computing capability to revolutionise production, distribution and consumption. Finance is a derivative of the real economy – its purpose is to serve real production. Early finance was all about the finance of trade and governments to engage in war.

It is no coincidence that the first central banks (Sweden and England) were established in the 17th century at the start of the First Industrial Revolution. Industrialisation became much more sophisticated as Finance 2.0 brought the rise of credit and equity markets in the 18th and 19th centuries.

Industrialisation and colonisation came about at the same time as the globalisation of banks, stocks and bond markets.

Again, with the invention of first the fax machine, then Internet that speeded up information storage and transmission in the 1980s, finance and industry took a quantum leap into the age of information technology. Finance 3.0 was the age of financial derivatives, in which very complex (and highly leveraged) derivatives became so opaque that investors and regulators realised they became what Warren Buffett called "weapons of mass destruction". Finance 3.0 stalled



in 2007 with the Global Financial Crisis and was only propped up with massive central bank intervention in terms of unconventional monetary policy with historically unprecedented interest rates.

We are now on the verge of Finance 4.0 and it may be useful to explore what it really means.

The common definition of Industry 4.0 is the rise of the Internet of Things, in which cloud computing, artificial intelligence and global connectivity means that cyber-physical systems can interact with each other to produce, distribute and trade across the world in a massively distributed system of production.

But what does Finance 4.0 really mean?

What truly differentiates Finance 4.0 from the earlier version is the arrival of Blockchain or distributed ledger technology. The best way to think about the difference is the architecture of the two different systems.

Finance 3.0 and earlier versions were all about a top-down or hierarchical ledger system, like a pyramid, in which trade and settlements between two parties are settled across a higher ledger.

A simple example is payment from Joe in bank A to Jim in bank B is finally settled across the books of the central bank in local currency. But in international trade and payments, the final settlements (at least more than 60%) are settled in US dollar finally across the ledgers of the Federal Reserve bank system.

Finance 3.0 was not perfect and those who

wanted to avoid regulation, taxation or any official oversight basically moved trading and transactions off-balance sheet and also off-shore. This was the "shadow banking" system that financial regulators and central banks conveniently blamed on their failure to see or stop the last global financial crisis.

Although technically the shadow banking system is the non-bank financial system, which would include bond, stock and commodity markets, the bulk of illegal, illicit transactions traditionally was done in cash.

Welcome to the technical innovation called cyber-currencies, which was made possible for peer-to-peer (P2P) transactions across a distributed ledger system (commonly known as blockchain). In architectural terms, this is a bottom-up system which technically can avoid any official oversight. Indeed, cyber-currencies or tokens were invented precisely because the users do not trust the official system.

As the populist philosopher Stephen Bannon said, "central banks are in the business of debasing the currency". Hence, those who want to avoid the debasement of their savings prefer to deal with either cash or cyber-tokens like bitcoin (pic).

What is happening in the rapidly evolving Finance 4.0 is that as the world moves from a unipolar order to a multi-polar world in which other reserve currencies also contend for trade and store of value, the top-down architecture is fusing (or merging) with a bottom-up architecture in which trade, transactions and stores of value are shifting

towards the P2P shadow system.

Why this is taking place is not hard to understand. Post-global financial crisis, the amount of financial regulations have tripled in terms of number of rules and complexity on what the official sector can regulate, which is mostly the banking system. It is therefore not surprising that all the innovation, talent and money are moving to outside the banking system into the asset management industry, which is much more lightly regulated.

No talented banker, however dedicated to the values of banking probity, can resist the temptations of working in asset management, away from the heavily regulated environment where he or she is 24x7 under regulatory internal and external oversight.

Another reason why the cyber-P2P business is flourishing is because the official sector is worried that further regulation would hinder innovation. But those who want to increase the complexity of regulation must remember that for every 50 foot wall, someone will invent a 51 foot ladder.

So competition in the 21st century has already moved from the physical and financial space into cyber-space.

If there is one thing I learnt as a former regulator, it is that if the banks are behind the curve in terms of technology, the regulators are even further behind, since they learn mostly from those whom they regulate. But if financial regulators deal with financial innovation through "regulatory sandboxes" where they allow their regulated banks to experiment in sandboxes, they are treating their regulated institutions as kids in an adult game of ruthless technology.

Time for the official sector to make their stand clear or else Finance 4.0 promises to be very different from the orderly world that they are used to imagining. Nothing says this clearer than a recent survey by the Chartered Financial Analyst Institute, which showed that 54% of institutional investors surveyed and 38% of retail believe that a financial crisis in the next one-three years is likely or very likely.

You have been warned.

Tan Sri Andrew Sheng writes on global issues from an Asian perspective.

Astronaut-turned-artist Bean dies at 86

WASHINGTON — US astronaut Alan Bean, the fourth person to walk on the moon, has died, his family announced in a statement released by NASA. He was 86.

The moonwalker, who went on to become a painter, died on Saturday in Houston after suddenly falling ill weeks before, the statement said.

He was among the elite group NASA chose for its third group of astronauts in 1963, having served as a test pilot in the US Navy.

He twice ventured into space, originally in 1969 on the Apollo 12 moon landing mission, and later as commander of the second crew to fly to the first US space station Skylab in 1973.

His second foray outside of Earth's atmosphere saw Bean log a record-breaking 59-day, 39.3 million km flight.

He retired from NASA in 1981 to embark on a third career as an artist, creating Apollo-themed paintings textured with lunar boot prints or using acrylics infused with small bits of his mission patches sprinkled with moon dust.

Fellow astronaut Harrison Schmitt called Bean "one of the great renaissance men of his generation — engineer, fighter pilot, astronaut and artist".

Born March 15, 1932 in Wheeler, Texas, the future moonwalker earned a degree in aeronautical engineering from the University of Texas in 1955.

He is survived by his wife, sister and two



Bean (right) with Mission Commander Charles 'Pete' Conrad Jr (left) and Command Module Pilot Richard F. Gordon before their Apollo 12 mission in November 1969. — Picture by AFP

children from a prior marriage.

Walt Cunningham, who flew on Apollo 7 and called Bean his best friend of 55 years, said "we are accustomed to losing friends in our business but this is a tough one.

"Alan and I never missed a month where

we did not have a cheeseburger."

In 1994, Bean told *The New York Times* the otherworldly perspectives he got in space inspired him to devote the latter half of his life to art, to the surprise of many of his colleagues.

"Every artist has the Earth or their imaginations to inspire their paintings," he said.

"I've got the Earth and my imagination and I'm the first to have the moon too."
— AFP

Angkasawan Bulan 1969, pelukis meninggal dunia

WASHINGTON 27 Mei - Angkasawan Amerika Syarikat (AS), Alan Bean yang merupakan individu keempat berjaya berjalan di atas permukaan Bulan meninggal du-



ALAN BEAN

nia pada usia 86 tahun di Houston semalam.

Bean yang menghabiskan usianya sebagai pelukis meninggal dunia selepas mengalami masalah kesihatan selama beberapa minggu, lapor Agensi Pentadbiran Angkasa Lepas dan Aeronautik (NASA).

Beliau yang bertugas sebagai juruterbang pelatih dalam Tentera Laut AS merupakan antara individu dalam kumpulan elit NASA dan kumpulan ketiga angkasawan pada 1963.

Bean berada di angkasa lepas sebanyak dua kali iaitu pada 1969 mengikuti misi pendaratan Apollo 12 di Bulan dan kemudian sebagai komander kru kedua ke stesen angkasa Skylab milik AS pada 1973.

Beliau memegang rekod berada di luar atmosfera Bumi selama 59 hari

dengan jarak sejauh 39.3 juta kilometer semasa misi kedua.

Angkasawan itu yang bersara dari NASA pada 1981 memilih karier sebagai pelukis dan pernah menghasilkan lukisan bertema Apollo menggunakan cetakan but lunar atau menggunakan cat akrilik.

Rakannya yang juga seorang angkasawan, Harrison Schmitt menggelar Bean sebagai 'salah seorang lelaki paling hebat dalam generasinya - jurutera, juruterbang penggempur, angkasawan dan pelukis'.

Beliau dilahirkan pada 15 Mac 1932 di Wheeler, Texas dan memiliki ijazah dalam bidang kejuruteraan aeronautik dari Universiti Texas pada 1955.

Bean meninggalkan seorang isteri dan dua anak daripada perkahwinan terdahulu.

Walt Cunningham yang bersama Bean menyertai misi Apollo 7 menyifatkan Bean sebagai rakan baiknya selama 55 tahun.

"Kami sudah biasa kehilangan kawan dalam usia sebegini tetapi kehilangan Bean adalah yang amat sukar diterima," katanya. - AFP

LAMPIRAN 12
THE STAR (SCIENCE) : MUKA SURAT 6
TARIKH : 28 MEI 2018 (ISNIN)

By AMINA KHAN

A SPACECRAFT wouldn't know evidence of a Galilean lunar geyser if that geyser hit it in the face. Luckily, the scientists on the ground did. Researchers using 21-year-old data from Nasa's Galileo spacecraft have found evidence of a plume of material coming from the surface of Jupiter's icy moon Europa. The discovery offers a new line of evidence for an ocean beneath its frozen crust and a promising path forward in the search for extraterrestrial life.

The results show that old data from long-gone spacecraft "hold a lot of secrets we haven't yet uncovered," said Lori Glaze, acting director of Nasa's Planetary Science Division.

If humans are to look for life on other worlds, one of the first places scientists say they want to probe is cold, distant Europa. One of the four large moons circling our solar system's biggest planet, Europa's frigid shell is thought to hide a global ocean that may hold twice as much water as Earth.

That ocean is kept "warm" (relative to local standards) and liquid thanks to energy from enormous tidal forces, as the moon is squeezed and stretched largely by Jupiter's gravitational pull. With enough heat and life-friendly chemicals, such an ocean could potentially host the kinds of microbes that are found in the depths of Earth's oceans.

Saturn's much-smaller moon Enceladus is also thought to have a sizable, potentially habitable ocean – an idea bolstered by the plumes of water vapor and ice that Nasa's Cassini spacecraft spotted shooting out from the surface in 2005.

Europa seemed quiet by comparison until 2012, when Nasa's Hubble Space Telescope spotted chemical hints of water molecules near the southern pole. If confirmed, these icy geysers would provide a sample of the subsurface ocean. But researchers debated whether the data truly revealed the presence of such plumes.

A breakthrough came thanks to a presentation that Melissa McGrath of the Seti Institute gave about the locations of potential plumes from Hubble images.

As he listened to her talk, lead author Xianzhe Jia, a space physicist at the University of Michigan in Ann Arbor, came to a realisation: One of those possible plume spots lay near a region visited by Nasa's Galileo spacecraft, which explored the Jovian system from 1995 to 2003. Perhaps additional evidence

of a plume was hidden in the dead satellite's decades-old data.

"That is the moment that really, I think, led us to realise that we had to go back to look at Galileo data," Jia said.

The researchers looked at Galileo data from a December 1997 flyby, when the spacecraft swooped to just 124 miles above Europa's surface.

Having already studied Enceladus, scientists knew that these kinds of plumes in space could affect the magnetic field and

plasma environment, Jia said. So he ran simulations taking into account the apparent plume dimensions from Hubble as well as the magnetometer and plasma wave data from Galileo.

The team found that as the spacecraft made its close approach to Europa's surface, the magnetic field went wild and the plasma density shot up – an indication that the spacecraft was actually passing through a plume.

"These results provide strong independent evidence of the pres-

ence of plumes at Europa," the study authors wrote.

This discovery could inform plans for Nasa's Europa Clipper mission once it reaches the Jovian satellite, said Elizabeth Turtle, a research scientist at Johns Hopkins Applied Physics Laboratory in Laurel, Md., who was not involved in the study.

Turtle leads the imaging system for Clipper, planned for launch as early as 2022. The spacecraft's instruments are tailored to sample the ice and dust particles coming

from such plumes in order to determine whether the moon really could be friendly to microbial life.

While the new plume findings in all likelihood won't affect the instrument design, they might influence the path the spacecraft takes and the plumes it targets, the researchers said.

"The habitability of Europa is one of the big questions that we want to understand," Turtle said. – Los Angeles Times/Tribune News Service

Reaching for a moon

Strange readings from a dead spacecraft reveal new evidence of water on Europa.



New data from the Galileo spacecraft's 1997 flyby of Europa strengthen the case that Jupiter's moon Europa has an ocean trapped beneath an icy surface that spews material into space, like Saturn's moon Enceladus. — Nasa/JPL-Caltech/SETI Institute/Tribune News Service

Ageism scarier than robot apocalypse

Our willingness to banter about whether we will be replaced by robots is yet another sign that we just do not want to confront the issues surrounding the growing numbers of the elderly in the workplace.

ROBOTS are coming for jobs of as many as 800 million worldwide – so we were warned last year.

But does the real-world experience so far back up the fears?

Japan and the United States are two of the countries most advanced in robot deployment, and yet both are very close to full employment.

To be sure, introducing more software and more robots into the workplace also introduces very real problems of training and retraining, but there will always be more work to be done. Scary as the rise of robots apparently is, perhaps it is a fixation because it is actually less scary than the real social issues ahead.

One of those is how to integrate growing numbers of elderly into the workplace. More elderly workers will force many people to confront their biases, fears and prejudices, probably leading to a bigger cultural clash than with the machines. No matter how much they may disavow explicit age discrimination, many companies try to portray themselves as cool places to work for young people.

And, indeed, these companies are especially interested in hiring younger people: The median age at the hot technology companies ranges from 27 to 31. It is 38 at IBM and 39 at Hewlett-Packard, still young by most standards but in the tech industry, those are viewed as much stodgier places to work.

Overall, the median age of American workers is a little over

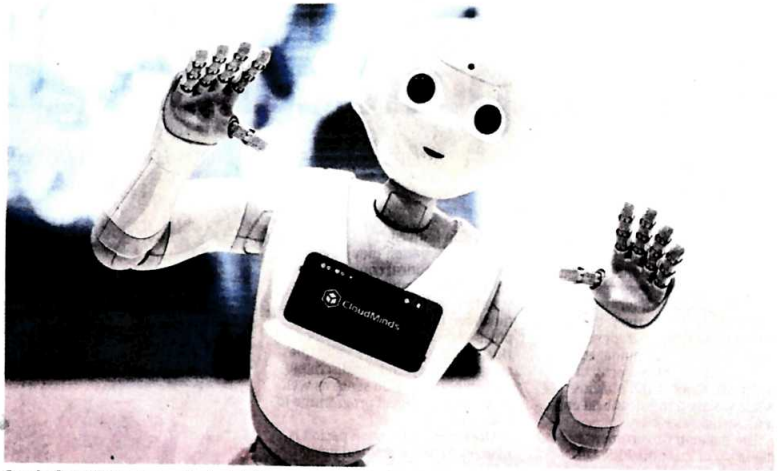
42. It is not a surprise that tech firms should have so many younger workers, because younger people probably are on average more in touch with the latest developments in rapidly changing fields, such as programming and software.

The populations of the US and many other developed nations are ageing, and the big surprise has been that older people want to work more than in previous generations.

Younger people also seem more interested in putting in the sometimes crazy hours behind many start-ups, because they have a higher career return from doing so. Of course, American business is becoming more like the tech sector as more firms are incorporating tech innovations. This development may not favour elderly workers.

Squeamishness about the elderly manifests itself in advertising too. Retirement products and Viagra are exceptions, but so many ads use young actors because companies are image-conscious. Collectively, it amounts to a harmful form of age discrimination. These biases towards youth may be a greater problem in America, which typically has prided itself on being a young, dynamic culture, always riding the next wave of change.

There is also a practice, hard to avoid even in efficient workplaces, to reward workers to some extent on the basis of seniority alone. In



Age before AI: The issue of robots taking over our workplace is not as urgent as the problem of integrating the elderly into the workplace.

the long run, this makes elderly workers a potential target for cost-cutting, even if they are doing a good job.

Of course, the age structure of America's workforce is moving in the opposite direction of these trends. The populations of the United States and many other developed nations are ageing, and the big surprise has been that older people want to work more than in previous generations.

Against many prior expectations, the labour force participation rate of older Americans started rising in the 1980s and 1990s. For instance, the rate for men aged 65 to 69 was 25% in 1985 but 37% in 2016. By 2020, over one-quarter of the workforce will be over 55.

It has been suggested that the

ability and willingness to spot, mobilise and deploy older workers is the next biggest source of competitive advantage in the US. The sober reality is that many companies should retool their methods to fit better with the experience and sound judgment found so often in older workers. This will also involve a retooling of the glamour notion to valorise the young less and the idea of maturity more.

Human resource departments may have to work harder to help older workers keep up with new technologies—a prospect that does not make for exciting headlines as a robot takeover does. But most of the story of economic success involves such small changes.

And do you know which group of workers often understands that

best? The older ones.

Of course, some sectors have welcomed elderly workers with open arms. In academia, the practice of mandatory retirement at age 70 has been replaced by permanent tenure, because of changes in the law. This has happened without incident, though it may bring long-run fiscal problems if more people work through their 80s and beyond.

On the bright side, this development might induce a beneficial modification of the tenure system, and a move towards greater contract flexibility. Our willingness to banter about the robot apocalypse is yet another sign that, too often, we just do not want to confront the issues surrounding the elderly. — Bloomberg