[DRAFT: Embargoed until delivery; Subject to change; Compare against delivery]

Launch of Stellenbosch University (SU) School for Data Science and Computational Thinking
STIAS, 18:00, Monday 29 July 2019
Remarks by SU Rector and Vice-Chancellor Prof Wim de Villiers

WHY THIS INITIATIVE?

Colleagues, friends, as you know, for the last year I have not let an opportunity pass to punt this initiative. I spoke about it at every occasion. There is a simple reason for the importance we have attached to it – and that's not only me, but colleagues throughout the University: The world is changing fast, and the School of Data Science and Computational Thinking is Stellenbosch University's stake in the unfolding future.

Data het 'n omwenteling in die wêreld te weeg gebring, en die Universiteit Stellenbosch is gereed om met ons nuwe Skool vir Datawetenskap en Rekenaardenke Suid-Afrika se mededingendheid in die vierde nywerheidsrevolusie te versterk.

BACKGROUND

My interest in data science and computational thinking was piqued by developments in my own field of medicine and health sciences. Take medical diagnostics, for instance. IBM's artificial intelligence (AI) platform, Watson Health, was tested at the Memorial Sloan Kettering Cancer Center in New York a few years ago.

Watson was found to be capable of predicting lung cancer with greater accuracy compared to highly trained and experienced radiologists under the same circumstances. The machine could rapidly analyse massive amounts of data – in this case two million pages of medical journals, one-and-a-half million patient records and six hundred thousand medical findings – and then apply its synthesis to patients' CT scans in order to reach its conclusions. This level of information absorption clearly surpasses human ability.

BIG DATA

The generation of data has exploded the past few years. Faster and cheaper computers and smartphones as well as the internet – and lately, the internet-of-things – have made the gathering, sharing and exploitation of data pervasive in almost all sectors, from finance and commerce to health, bio-sciences, engineering and many others.

But in this age of "big data", information becomes difficult to handle because of sheer quantity. One response, in the world of work, has been to set up multidisciplinary teams to tackle shared problems. This is particularly true of activities involving data and computing – and nowadays that is nearly everything, because data is being collected and analysed in almost all fields.

THE CHALLENGE FOR UNIVERSITIES

Now, higher-education institutions the world over are struggling with the challenges of new technology. Here in our country, the body representing our 26 public universities, Universities South Africa, has set up a task force focusing on the NEW WORLD OF WORK.

At many universities – including Stellenbosch – new courses have emerged and new degree programs have been introduced to meet the needs of the industry and business, and to equip students to thrive in an uncertain future where they are likely to work themselves. in occupations that do not even exist yet.

But is this good enough? Shouldn't universities change more fundamentally?

'n Groeiende interdissiplinêre benadering word dit reeds by 'n aantal toonaangewende universiteite internasionaal bespeur. Die Universiteit van Kalifornië, Berkley – wat meer graduandi aan Silikonvallei lewer as enige ander hoëronderwysinstelling – bied byvoorbeeld datawetenskap as keusevak in talle studierigtings.

Wat opvallend is, is dat tot die helfte van hul eerstejaars nou datawetenskap as hoofvak neem, in ongewone kombinasie met ’n wye verskeidenheid ander vakke.

Moet almal dan nou rekenaarwetenskap studeer ten koste van ander studierigtings? Glad nie. Eerstens is datawetenskap nié rekenaarwetenskap nie, maar ’n interdissiplinêre vakrigting. En tweedens duik data toenemend in allerlei rigtings op, en daarom maak dit sin vir studente om hulle toe te rus met die nodige vaardighede om data te hanteer. Boonop is hierdie vaardighede nie beperk tot wiskunde of rekenaarprogrammering nie. Daar is byvoorbeeld belangrike etiese vraagstukke betrokke by data-ontginning – soos die reg op privaatheid en die inbraak wat tegnologie daarop kan maak.

Die Wêreld Ekonomiese Forum en die Organisasie vir Ekonomiese Samewerking en Ontwikkeling het ’n lys noodsaaklike vaardighede vir die werkplek van die 21ste eeu opgestel. Dít sluit nie net digitale geletterdheid, probleemoplossing en entrepreneurskap in nie, maar ook kreatiwiteit en kritiese denke, empatie en etiese redenering, samewerking en verhoudingsbou.

Studente in al tien van die US se fakulteite word reeds hiermee toegerus, maar vanaand stel ons ’n enkele platform bekend waar alles byeenkom sodat ons met vertroue saam vorentoe kan gaan – die toekoms in, wat reeds aangebreek het.

The US academic and university manager Jeffrey Buller pointed out in 2015 that “the choice in higher education today isn’t whether we should change but how … change is already here. The issue is what we’re going to do about it”.

At Stellenbosch University we responded to this challenge by adopting new “Rules on academic entities within and alongside departments and faculties” last year. This has paved the way for the establishment of our new School for Data Science and Computational Thinking, which is being launched here tonight.

GAME CHANGER

The Stellenbosch University School for Data Science and Computational Thinking is a game changer in higher education, both in South Africa and beyond.

There are a number of reasons for this.

- The School will work across all ten of our faculties, with multi- and inter- and trans-disciplinary collaboration
- The School will span the entire academic project – from under- and postgraduate training to research and specialist consultation.
- It will also support the private and public sectors as a trusted and respected partner in and for Africa.
- And it will cater not only for full-time students but also offer online modules to professionals looking for new methods and best practices.

VISION & STRATEGIC FRAMEWORK

Our School for Data Science and Computational Thinking is a tangible expression of Stellenbosch University’s new Vision and Strategic Framework, which kicked in this year.

Our Vision 2040 is bold … to become Africa’s leading research-intensive university, globally recognised as excellent, inclusive and innovative, where we advance knowledge in service of society.

We strive to be relevant to the people of our country, continent and the rest of the world, making meaningful contributions of the highest quality that will take humanity forward.

In our Strategic Framework, we state unequivocally that we want to bring about profound and sustainable change and regeneration in all facets and functions of SU to be agile, adaptive and responsive.

Colleagues, friends … this is exactly what our new School will help us do. Together, we are making this old institution which turned a hundred last year, more agile, adaptive and responsive.

CONCLUSION

When President Cyril Ramaphosa established a Commission on the Fourth Industrial Revolution earlier this year, he said – and I quote – "Unless we adapt, unless we understand the nature of the profound change that is reshaping our world, and unless we readily embrace the opportunities it presents, the promise of our nation's birth will forever remain unfulfilled" – unquote.

I am confident that our new School for Data Science and Computational Thinking is Stellenbosch University's answer to this challenge. We are committed to going forward with all stakeholders – government, industry, other universities and civil society – to the mutual benefit of all.

I started out with telling you about Watson, a smart machine able to make accurate diagnoses because of its processing power and clever algorithms.

Watson can also make treatment recommendations, but – and this is important – the machine is neither infallible in its diagnoses, nor can it take ethical responsibility for the hard decisions that follow … such as whether to proceed with a biopsy, which is an invasive procedure and therefore not without risk. And then, whether to go ahead with surgery or radiation or chemotherapy, all of which could be more harmful than helpful.

For these complex and nuanced questions, HUMANS ARE INDISPENSABLE. No algorithm could replace human judgement. There is no app for human values. Humans make the world, not machines.

And what better way for a university to shape the future than by combining our strengths, through bringing together all our disciplines currently scattered across ten faculties. The School of Data Science and Computational Thinking provides a single platform for collaboratively advancing knowledge in service of society – in an interdisciplinary way.

Will there be challenges? Of course! But as Daniel Burnham, the American architect who took a leading role in the development of a number of cities, including Chicago and Washington DC, once said: "Make no little plans [for] they have no magic to stir men's blood …"

I hope our new School has stirred *your* blood.

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