Improving the quality of life with Voice Technology

A new master’s at Campus Fryslân is, according to Dr. Matt Coler, associate professor and programme manager, ‘a great encapsulation’ of the research and scientific mandate at CF. The master’s in Voice Technology draws students from both linguistics and computational sciences/Artificial Intelligence and has them working together on scientific developments with practical applications for society.

BY TORI KELLY

Interdisciplinary programme
The combination of language and technology is not something you come across very often,’ admits Coler. ‘Part of the vision of Campus Fryslân is to think differently about how we structure relations between scientific and applied disciplines. We really can claim interdisciplinarity in our faculty and this master’s programme is an excellent example. It affects everything we do, from recruitment to teaching. From classroom design to programme content.’ Dr Jelske Dijkstra, programme developer and senior researcher, continues. ‘With our students coming from such different domains, we have to quickly get them to understand each other’s languages and way of thinking in order to progress. We do this by getting them to work together in structured exercises which draw on the others’ expertise. The course on programming will have the linguists drawing on the expertise of the computer scientists while the speech sounds course will mean the expertise flows in the other direction. They’ll help each other and develop an understanding of each other’s perspectives and approaches.’

Quality of life
One of the obvious advantages of an interdisciplinary programme is that these different perspectives of a research question can lead to more innovative and creative solutions. Matt Coler: ‘The use of the word ‘technology’ in the name of the master’s already hints at the fact that we’re not looking just at theoretical applications of language modelling, but also on its implementation in software running on devices. As an academic, and in particular as a social scientist, I believe those devices should have a positive social impact. As a university, we’re liberated from only developing products driven by commercial interests. In fact, as a university, it is our role to develop products that improve the quality of life.’

Jelske Dijkstra elaborates: ‘The application of voice technology in the field of health provides some clear examples. Voice synthesis, the creation of a voice electronically, can allow someone who has lost their voice to continue to communicate, but not just with a ‘default’ artificial voice like the kind on your smart phone. The voice should be the person’s own and should sound natural and familiar. Your voice is, after all, part of your identity. The way you talk, your intonation, your choice of language, it’s all part of who you are.’ Matt Coler: ‘In fact, these characteristics are exactly what makes it difficult for someone relying on voice recognition to hear, such as is the case with cochlear implant users. People relying on an electric hearing often have enormous difficulties understanding speech in different kinds of noisy environments, or perceiving melodies or sung speech.’

Day-to-day life
This commitment to improving the quality of life goes beyond only the health sector. Take, for instance, the quality of synthetic voices used on many consumer products: ‘Just try having Siri or Alexa read a long text out loud – the monotony of the voice is insufferable. Or consider the accuracy of speech dictation on your smart phone or computer – it’s not great. Imagine being able to just connect a pair of headphones and have all your emails or news headlines comfortably read to you. Or dictating a message casually and let the recognition algorithm automatically correct your speech when you mispronounce words or even increase the formality of the text.’ ‘Or only being able to whisper and having a device that turns your whisper into realistic speech,’ adds Jelske Dijkstra. ‘Having speaker recognition actually recognise who is talking.’ Such innovations are the tipping point of the iceberg, and the MSc Voice Technology intends to play a part in those breakthroughs by training the next generation of speech scientists.

Tangible results
Jelske Dijkstra: ‘Speech scientists can definitely help improve quality of life. Collaboration with other fields such as AI or robotics present clear opportunities, and we work with industry so that we can explore more possibilities – and so that our students can see just how diverse the opportunities are. Guest speakers come in to talk during the programme, and the master’s cumulates with a thesis and what we call a demonstrator, a practical application.’ Matt Coler: ‘The demonstrator shows the public what your research does – and grads can share it with potential employers. A thesis is great for science, but while recruiters or HR managers are unlikely to read it, they’ll check out the demo. And the demo will show them that the graduate can not only talk and work with people from other fields but can produce tangible results.’

The MSc Voice Technology is the only programme in continental Europe dedicated exclusively to speech synthesis and speech recognition. Classes begin in September 2021.

‘Universities are in a position to spearhead developments that improve the quality of life’
Regional Center of Expertise is an opportunity for sustainability education

Campus Fryslân and Circular Friesland: SPARK the Movement have teamed up to launch the Regional Center of Expertise (RCE) of Education for Sustainable Development Fryslân, the first RCE in the Netherlands that is part of the international UN network. The goal is to embed sustainability in all levels of education. Enthusiastic students have joined to have a say in the future of the planet.

By GERARD DE JONG

The light-green light creates a January atmosphere over the University of Groningen, where students from all over the world have gathered in the province, and part of the campus was approved by the United Nations University in Tokyo. Helen Swart of Circ- ular Friesland welcomed the students at the front of the institute. ‘That’s the way to build a sustainable society.’ That’s the key question. ‘Sustainable living is the way forward. Sustainability Campus Fryslân is the perfect platform for that.’

Chielin Vrijhof, education policy officer at Campus Fryslân, also told the other driving forces behind the initiative. ‘We will be part of an international framework that has various identities and in conferences and knowledge sharing, and also one that brings more expertise to reflect on our academic and pedagogical development.’

A working group will be set up to explore the most effective ways of incorporating sustainability into education. Swart adds: ‘It’s transformative learning. The education system of the future was dominated by the problem of growth. Now, we are coming face to face with the problem of shrinkage. We are all aware of a global and regional level. With the help of companies, governmental agencies and educational institutions, we are much closer to achieving that and now, together, we are building bridges with the new generation of students and the field of sustainable development. That will help us to change the way we think and shape our own vision of the world, as well as that of society.’

Mieke Eberard, second-year Global Responsibility & Leadership student of the UCF’s second-semester RCE’s youth coordinators. ‘For a research student such as myself, the RCE is a great opportunity to look at a project on the “public garden approach.”

‘This will help us to change our own view of the world, as well as that of our pupils and students.’

And you’re never too young to start doing that. ‘That’s what we’re all learning, that education is now being given in the post-primary school. That’s where change begins. Instead of just talking about it, we want to focus on getting young people to work together.’

If you do not yet know what I am talking about, it is simple. Everyone has a regional network of expertise in their area that they do not know. We are tackling the challenges here with the help of companies, governments and educational institutions, and that is what we call regional. Campus Fryslân plays a key role in this by facilitating, connecting and stimulating discussions.

In February 2022, the European RCE meeting was held in Fre- island. ‘We want to help young people participate in an equal footing. For example by giving workshops and holding panel discussions.’

Eberard cannot wait to get started: ‘I want to be the link between the RCE and young people. So that young people are ade- quately involved in decision-making processes about the future. All too often, decision-makers talk about us, rather than to us. This is a huge opportunity to change that.

It’s really just a miniature garden in a pot, but this kind of teach- ing method gets primary school children to engage with nature in a very hands-on way. This view of learning is sorely needed.’

Aujloa Zjimaru, a first-year student following the same degree programme, will also be a youth co-ordinator. ‘Primary pupils are engaged in society. Sustainability isn’t just a subject for the classroom. It can also be explored in the wider world. The RCE created the opportunity to think about what the world should be like.

| Column |

Hannah Helder - Student assessor and student Global Responsibility & Leadership

Uncertainty about the future has become a new reality for us as students

As our society struggles with the COVID-19 pandemic, responses often focus on children or the elderly. But one group of people is often neglected: their engagement often wavers. A wide generation of students has had to adapt to the pandemic and shift their education online. Uncertainty about the future has become a new reality for us as students, and our resilience is tested daily.

When looking at the impact of the pandemic on students, there is more that meets the eye. Most of us are living in an environment with increased pressure due to becoming 140 square meters or completing our studies at home during the lockdowns. Even in those who have remained at home, parents’ boundaries are often overstepped. Students need to work on their resilience and shift their education online. Uncertainty about the future has become a new reality for us as students, and our resilience is tested daily.

‘Uncertainty about the future has become a new reality for us as students. Where do you feel at home? What do you need to feel like you belong, in a world where we value our own cultures while increasingly becoming part of a bigger society? These and other questions were the focus of Jesse van Amelsfoort’s research. He analysed the works of six leading authors on the topic of minority cultures – and he took to the task like a duck to water.’

By EELCO SALVIER

Jesse van Amelsfoort:
At home in the world of research

Where do you feel at home? What do you need to feel like you belong, in a world where we value our own cultures while increasingly becoming part of a bigger society? These and other questions were the focus of Jesse van Amelsfoort’s research. He analysed the works of six leading authors on the topic of minority cultures – and he took to the task like a duck to water.

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The number of students that are enrolled in a bachelor degree or master degree programme in Leeuwarden is about 23,000. Find out what they like about Leeuwarden and what their favourite places are!

Favourite spot(s) in Leeuwarden

De Froskepôlle

Dani Pattinasarany, MSc Sustainable Entrepreneurship
Leeuwarden is a lovely city. Besides the city centre where I can find food and shops, I have a favourite place to refresh my mind. It is called de Froskepôlle, by an old windmill in the southeast of Leeuwarden. Within 20 minutes biking distance of the campus building, I can find a beautiful, calm, and peaceful place. To reach the windmill, I must walk through a small shady forest for around ten minutes. It is a lovely place to recharge my energy in the middle of my study. Sometimes I jogged in this place to maintain my physics and mental health.

Het Westerpark

Gabija Savickyte, BSc Global Responsibility & Leadership
One of my all-time favourite spots in Leeuwarden is the Westerpark, or like me and my friends often call it “the ducky pond”. It is such a hidden gem right next to the city centre! Usually less crowded, with a beautiful pond, and even a small fountain it becomes a perfect oasis for walks, having picnics with friends, or even following lectures and studying. Every season truly transforms the park – snow and ice on the pond makes the park look like a magical winter postcard, while spring and summer bring wonderful flower and tree blooms. However, for me, the ducky pond is the most beautiful during autumn – changing leaves, chestnuts and sparkling spider webs early in the morning look truly magical.

Algorithms and Law Enforcement in the Netherlands

In the last decades, algorithmic decision making has seen an unprecedented increase as more data has become available whilst simultaneously technological innovations, such as artificial intelligence, make the processing of these data possible. Algorithmic decision making refers to decision making processes that are entirely or partially automated and used to process large amounts of data and use it to answer a question or solve a problem. Such data driven decisions have become increasingly used by law enforcement agencies within the context of detecting and preventing criminality and have the potential to bring great benefits. Algorithms and automated processing of big data can aid law enforcement agencies by helping them with the prediction of crimes and data analysis, recognizing patterns, increasing efficiency, and increasing capacity for information processing.

In the context of criminality and law enforcement, the Dutch government uses algorithms for purposes such as predicting when and where petty criminality will occur in order to allocate police resources, predicting the likelihood of recidivism for making decisions related to probation, and detecting and predicting serious crimes and terrorism in order to make surveillance decisions. Despite the potential benefits and the widespread use of algorithmic decision making, there are risks to using such technologies which can lead to conflicts with human rights. The use of such decision making processes can often lack transparency, lead to discrimination and bias, and lead to issues related to data protection and privacy.

In practice, it is evident that the technology is currently developing faster than the law can keep up with, which makes it difficult to regulate these technologies effectively. As such, I believe that in the coming years research is needed to understand how human rights are currently regulated the development, design and use of these technologies and how we can regulate them in the future in order to maximize their benefits while minimizing their risks.