



## Interpreting Chatter

ANDREA DeMARCO writes about the best decision of his life

**IN 2008**, I ventured into the area of speech technology during the final year of my B.Sc. I.T. (Hons)(Melit.). I did not know what I was getting into. Through my four-year course, I studied Artificial Intelligence. However, I ventured into speech technology (as well as human language technology) because there seemed to be a renewed interest, and an increased reliance of speech

and language technology on statistical modelling techniques. The particular area I studied was *speaker identification*, which is when you identify a person from a voice sample.

A little over a year later I enrolled for a Master of Science by research in Computer Science at the University of Malta in the same topic. The reasons were two-fold. Firstly, I liked the idea

## Preventing Sudden Death

PROF. CONNIE BEZZINA writes about her work tracking down genetic risk factors that lead to sudden cardiac death

**MY PASSION** for human genetics started during my Bachelor of Pharmacy at the University of Malta. In 1992 for my undergraduate research project I conducted studies to identify the genetic defect causing blood coagulation disease in a Maltese family. This project was too ambitious for an undergraduate level and I did not manage to resolve the case by the time I graduated.

Thanks to my mentor, Professor Alex Felice (University of Malta), I could continue my research on this family during my Ph.D. studies. During my Ph.D., which I obtained from the UoM in 1998, we managed to uncover the genetic defect located in a gene encoding a blood coagulation factor. We also found out how the mutated coagulation factor works. For this research I went for a short spell

to Hammersmith Hospital in London in the laboratory of Professor Edward Tuddenham, a pioneer in blood coagulation. The taste of research abroad made me crave for more and in 1997 I moved to Amsterdam.

In Amsterdam I started working as a post-doctoral scientist at the *Academic Medical Center* of the University of Amsterdam. There I joined the group of Professor Arthur Wilde who

of research but was unsure about the long-term commitment required for a Ph.D. Secondly, my undergraduate research project spawned many ideas that I had no time to implement. However, this M.Sc. gave me time to do so. I was inspired by cognitive scientists on how language and phonetics could be processed in humans. I then loosely applied these ideas to algorithmic equivalents for speaker identification.

In this project I discovered salient fractions of phrases which are important for algorithms to identify speakers. I cut down the amount of data required for proper identification making it more efficient. A few months before completing my M.Sc. I started contact-

ing a number of research labs in the UK. By that time I had realised that I loved solving research problems. That was when I felt ready for a longer-term commitment to research, and started a Ph.D. at the University of East Anglia, in the field of native accent and speaker identification.

During my Ph.D. I developed a state-of-the-art classifier for accent identification from speech. The classifier does not require any speech transcription, which is how accent identification usually works. I collaborated with researchers from the University of Birmingham to adapt baseline speech recognition to work better for regional accents. I am now exploring the combination of ac-

cent identification with speaker identification systems.

I am currently in the final year of my Ph.D. studies at the University of East Anglia, and employed as a senior researcher in algorithms that can identify emotions. We are developing a mobile app that tracks and keeps a diary of your mood using your voice. This project is funded by a Technology Strategy Board grant. Taking the leap from artificial intelligence into speech technology might have been the best decision of my life. ●

*Andrea DeMarco was awarded a STEPS scholarship for his Masters studies, and a UEA Vice-Chancellor's scholarship for his Ph.D. studies.*

was establishing a research theme centred on the identification of genetic risk factors for cardiac rhythm disorders, which are linked with a high risk of sudden death. My work since moving to Amsterdam has focused entirely on this topic.

In 2005 I was awarded an Established Investigator Fellowship by the Netherlands Heart Foundation. This provided a major impetus in building my own research group, which is key for a young researcher in order to succeed. In 2012 I was appointed Professor of Molecular Cardiogenetics at the University of Amsterdam. My current team is made up of 15 young talented post-doctoral fellows, Ph.D. students, and research analysts. Our

research aims at discovering genetic risk factors for sudden cardiac death that enable genetic testing for the pre-symptomatic identification (that is, diagnosis before the occurrence of potentially lethal heart problems) and treatment of individuals that are at risk for sudden death.

Last summer I was awarded the Outstanding Achievement Award from the European Society of Cardiology Council on Basic Cardiovascular Science. It recognises basic science researchers with outstanding accomplishments in the early stage of their careers. I am very glad in the way my mentorship at the UoM prepared me for my career in scientific research that led to my current achievements. ●

