From Image Analysis in Pathology to Robotics and Artificial Intelligence

To the Editors:

I have been profoundly saddened by the news that Professor Peter H. Bartels, co-founder and co-Editor-in-Chief of Analytical and Quantitative Cytopathology and Histopathology, has passed away. I had the great opportunity of getting to know him and to appreciate his many human and intellectual qualities from an early age, more than 20 years ago. At that time my parents were conducting research on image analysis applied to pathology in his laboratory, located at the Optical Sciences Center of the University of Arizona, Tucson. He used to spend some of his precious free time with my family (Figure 1), discussing the basic concepts of image analysis, machine vision, and artificial intelligence that, at the time, appeared to me almost impossible to understand. I vividly remember him saying that an accomplished and possibly successful future career and life could have been linked to what he was trying to teach me, applied to any of those fields that will be of fundamental importance in the next 20 to 30 years. It was as if he were foreseeing my role in a distant future. That distant future in my career is now, the present time, and I have to admit that he was 100% correct in his vision.

I received a Master's Degree in Mechanical Engineering (magna cum laude) from the Polytechnic University of the Marche Region, Ancona, Italy, in 2012, with a thesis on pattern recognition analysis and machine vision applied to autonomously positioning a robotic arm. Following a short period of time dedicated to quantization in pathology, I moved in 2013 to the University of California, Davis, to pursue a Ph.D. degree in Mechanical Engineering under the guidance of Professor Harry H. Cheng.

In this new, stimulating environment I have pursued my passion for robotics and autonomous systems researching the integration of sensor data for autonomous decision-making. While pursuing my research objectives, I often found myself going back to the precious pieces of advice received from Professor Bartels. Machine vision and feature extraction from live video streams are still a fundamental part of my work, where old concepts as originally applied by Professor Bartels mix with new devices and applications.

When young, it is hard to have a long-term vision of the future. However, this vision is of fundamental importance when trying to achieve goals that will have a positive impact on society. I will always be thankful to Professor Bartels for having encouraged me to adopt this frame of mind. This principle has always guided me to look beyond the most common techniques and applications and to think outside the box, looking for new problems to solve or new methods to solve old problems. It is with this idea in mind that I approach each new challenge in my research.

Autonomous robots, able to operate without human intervention, pose a formidable set of challenges but also have the potential to positively impact society. In a not-too-distant future, autonomous cars could make roads safer, and the task of driving less stressful, surgical robots could assist surgeons in highly delicate tasks, and social robots...
could provide assistance in domestic and hospital environments.7

I am deeply thankful for having had the opportunity of meeting Peter so early in my life. He certainly acted as the role model and inspirational figure more young people should meet on their journey.

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References


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