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## Three-dimensional Textures and Trace Transforms: a Tribute to Professor Maria Petrou

I consider myself lucky, as I had the privilege to meet, respect and admire Professor Maria Petrou, not just for her academic knowledge, rigour and achievements, but her affability and her very nice and warm personality. It took one of her lectures at the BMVC Summer School for me to realise what a superb teacher she was, and a conference to be influenced on the direction of my own doctoral research.

It was the summer of 2001 when I met Maria Petrou. I had started my PhD six months earlier and was still in the *read all you that can and try to understand something, anything* phase when I attended the BMVA Computer Vision Summer School at Surrey. Along with many other students from all the corners of the UK, I sat through several sessions that were closer to keynote speeches designed for peers, than to lectures for novices in the area: *this is my research, it is great, look at the fantastic results that I obtained*. Prof. Petrou's sessions were markedly different. She started explaining everything *from square one*, made sure that we were following her, step by step, and helped us learn about low level image processing, fuzzy logic and theory vs. ad-hoc solutions. She would answer our questions clearly and to the point and when we would be too quiet, she asked questions and if no one answered, she quickly prompted us to participate: *come on, wake up!* No one would drift away from her lectures after that.

A year later, I attended a conference organised by a Cost B11 European project in Norway, the topic was *Tissue texture in MRI*. To my surprise, when I landed at Bergen, I discovered that I had travelled in the same plane as Prof. Petrou who was also going to the conference. The organiser, Dr. Arvid Lundervold went to the airport to pick up Prof. Petrou and another participant and I was lucky enough to hitch a ride to the hotel and share the back seat, and a nice chat with her. The conversation was later continued at the conference dinner where she told us anecdotes of her grandmother defying Greek police during the military junta, of Cyprus and Archbishop Makarios, and stories about glaciers and polar bears during her trip to Spitzbergen. She was truly an outstanding storyteller. At that time I had started to analyse, in two dimensions, the frequency content of texture of tissues in MRI. The two invited lectures presented by Prof. Petrou dealt with texture in *three-dimensions*, and therefore helped me redirect my own doctoral research towards a volumetric analysis of texture. It was only natural then, that she would become my external examiner. Thus, I studied as much as I could from her work and added sections on my thesis on *Generalised Co-occurrence Matrices* and the *Trace Transform*.

Shortly before my *viva*, I met one of her PhD students at a *Medical Image Understanding and Analysis* conference and when she heard who was going to be my examiner she said something like "*be sure that if there is even the tiniest error, Maria will find it*". This "prophesy" was accurately fulfilled at the *viva*. Both some technical inaccuracies and grammatical mistakes, which accounted to minor corrections, were discovered and pointed out in my thesis. But the *viva* itself was

a pleasant experience, a short but intense learning experience through which she and Prof. Daniel Rueckert passed some of their vast knowledge. Out of that thesis, three publications arose [1][2][3]

I cannot claim that I knew Maria Petrou for many years, neither that I studied under her supervision or worked with her, as much as I would have loved to do so. However, I only needed these few occasions to grow a deep admiration towards an extraordinary academic and a very nice person. I will certainly miss her.

Figure Caption:



Participants of the COST B11 meeting at the Grand Hotel Terminus, Bergen, in May 2002. The author is sitting left of Prof. Maria Petrou.

- [1] C. C. Reyes Aldasoro and A. Bhalerao, "Volumetric texture segmentation by discriminant feature selection and multiresolution classification," *IEEE Trans. Med. Imaging*, vol. 26, no. 1, pp. 1–14, Jan. 2007.
- [2] C. C. Reyes-Aldasoro and A. Bhalerao, "The Bhattacharyya Space for Feature Selection and Its Application to Texture Segmentation," *Pattern Recogn*, vol. 39, no. 5, pp. 812–826, May 2006.
- [3] C. C. Reyes-Aldasoro and A. H. Bhalerao, "Volumetric Texture Analysis in Biomedical Imaging," in *Biomedical Diagnostics and Clinical Technologies: Applying High-Performance Cluster and Grid Computing*, M. Pereira and M. Freire, Eds. IGI Global, 2011, pp. 200–248.