

PROFESSOR CLIVE FRASER



Professor Clive Fraser is currently a Program Science Director in the Cooperative Research Centre for Spatial Information, and a Professorial Fellow in the Department of Infrastructure Engineering at the University of Melbourne, where prior to retirement in 2010 he had served as a professor.

Clive's particular areas of research interest lie in digital close-range photogrammetry, including 3D forensic analysis and traffic accident reconstruction and industrial measurement systems; and in the metric exploitation of high-resolution satellite imagery.

He is a Fellow of both the Australian Academy of Technological Sciences and Engineering, and the American Society for Photogrammetry and Remote Sensing (ASPRS), and he is an Honorary Member of The Remote Sensing and Photogrammetry Society of the UK. In recognition of his academic and professional work, which includes authorship of more than 380 scientific publications, he has earned a number of international awards.

Clive also has varied industry experience, having been, from 1983 till 1993, Vice President of Geodetic Services, Inc. in Florida, a world-leading company in industrial photogrammetry systems and services. From 2003 to early 2007 he was a founding director of Photometrix P/L, a software development company specializing in systems for close-range photogrammetry and vision metrology, and from 1998 to 2001 he served as Technical Director of Geomatic Technologies P/L, a spatial information technology services company based in Melbourne.

Clive has long been an active member of ASPRS, having joined the society as a graduate student in 1977. He became a Certified Photogrammetrist in 1985 and served as Associate Editor of Photogrammetric Engineering and Remote Sensing (PE&RS) from 1987 through to 1992. As an active researcher throughout his career, he has supported ASPRS publications as an author and reviewer, having published 27 papers in PE&RS, presented and published 23 papers in ASPRS conference proceedings and contributed 8 book chapters to ASPRS Manuals. These and his other publications have attracted more than 5900 citations. He has also been fortunate enough to be awarded a number of ASPRS honours over the years having received the Bausch and Lomb Award in 1977, the Wild Heerbrugg (now Leica) Award in 1978, the Fairchild Photogrammetric Award in 1987, the APSRS Outstanding Technical Achievement Award in 2013, along with the Talbert Abrams Award (5 times) and the President's, then John I. Davidson Award for Practical Papers (3 times).

What are your thoughts on the Award?

I was both surprised and honored to be selected as one of the two 2016-17 Honorary Life-Time Achievement Awardees. While proud to receive this recognition from ASPRS, I am at the same time humbled when I consider the very significant contributions to the Society and to the professions of photogrammetry and remote sensing of the 23 colleagues who comprise the balance of the current ASPRS Living Honorary Membership. The Life-Time Achievement Award is perhaps indicative of an approaching professional destination, made more fulfilling by those whom I've met along the way.

How did you become associated with ASPRS?

As a graduate student at the University of New South Wales in Sydney, I was a keen reader of *Photogrammetric Engineering* (now *PE&RS*) and once I arrived at the University of Washington in Seattle in 1977 to undertake PhD studies, I joined ASPRS primarily to ensure regular and early access to *PE&RS*. Then in early 1978 I was fortunate to win the Bausch and Lomb Student Award which funded attendance at that year's ASPRS Annual Convention, in Washington DC. It was here that I met for the first time many ASPRS members who were to have a direct and positive influence on my professional career over the next 40 years. Since then there have been many other colleagues from the ASPRS 'family' with whom I have been privileged to study, work and build lasting friendships.

What has been your most fulfilling accomplishment as a scientist/engineer? Why?

I am in the fortunate position of having had a very satisfying career, the fulfilling accomplishments of which have been both tangible and intangible. The intangibles center upon my teaching and graduate student supervision, where I can vicariously share the success of my students, especially the many PhD students I've supervised. Recognition by peers and the establishment of career-long professional associations and friendships, especially in the international arena, have also been fulfilling accomplishments. On the tangible side, as an academic one should always aim for research relevance; research outcomes should be useful to someone, somewhere. In my own case, I have had the satisfying experience of transitioning research accomplishments into industry adopted processes and procedures, and into commercial products and services. This has been very satisfying. Finally, most academics are well aware of the all-too-true adage 'publish or perish'. It is all very well to publish a lot of research papers, but it's more satisfying to see that someone else is actually reading your articles. Thus, the fact that at this point my publications have been cited in nearly 6000 other published works is quite a fulfilling accomplishment, at least to me.

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What would you consider to be the most important advice you could offer a younger, upcoming scientist / engineer?

In the mid 1970s, I embarked on a career path in photogrammetry without having a clear notion of where that road might lead. So far, I have 'travelled' through the sectors of academic teaching and research, commercial industry and research management, and I have yet to reach the journey's end. Looking back, I would say that prerequisites for success in my professional life have been the provision of a solid education in the fundamentals of the science of technology of what is now encapsulated by the term geomatics, along with the pursuit of a specialisation, in my case, broadly, the analytics of photogrammetry, from close-range to satellite imaging. Whereas I would like to imagine that I have kept abreast of the developments in our evolving discipline, I am ready to concede that these days this is more at the technology overview level. So, my advice to young scientists and engineers is to pursue excellence in the fundamentals of your chosen discipline while at the same time reaching out to and improving your knowledge of associated disciplines in which developments having a direct bearing on photogrammetric technology are rapidly emerging.

What significant changes have you seen in your field during your career?

The evolution in photogrammetry during my career has been dramatic, especially the transitions from analog to analytical to digital photogrammetry. This has not only impacted in the area of professional topographic photogrammetry, it has also led to the emergence of a host of new application domains and even nowadays to the consumerisation of photogrammetry where, for example, hobbyists are conducting automatic, image-based 3D measurement and modelling from off-the-shelf cameras and inexpensive drones. In my own case, I have been privileged to witness and actively participate in the birth, development and maturation of a new application area of photogrammetry, namely that of large-scale vision metrology, especially in the aerospace and aircraft manufacturing sectors.

How do you see the future of our profession?

As an essential 3D mapping and modelling technology underpinning a great many of the burgeoning applications of modern spatial information services and products, photogrammetry has a very bright future. This should augur well for future photogrammetric scientists, engineers and technologists. Unfortunately, however, from the perspective of ASPRS and like professional societies internationally, we are not seeing a corresponding growth in the profession, at least as indicated by membership numbers. Part of this trend is no doubt attributable to technological change, exemplified by the growth in process automation, but it is also due in part to the growth in integration of photogrammetric technology into closely linked spatial science disciplines such as computer science and GIS. Indicative of this overlap is the R&D area termed photogrammetric computer vision. What we as photogrammetrists are witnessing is growing participation in our discipline of those from related disciplines. This is undoubtedly very positive for photogrammetric technology development, but is not necessarily beneficial for the likes of ASPRS, since these same professionals have their 'natural homes' in other professional societies, and there's only so many technical conferences and trade shows that one can attend each year.