SPL 25ᵗʰ Anniversary Remarks
April 9ᵗʰ 2016

- Delighted to have a chance to offer some remarks on the incredible growth of SPL as a force in medical computing
- By way of background, I started working with Ron in somewhere around 1991 (as best I can remember), so basically since the start of the SPL, and over the years a large number of my students were active participants in the SPL
  - Doctoral (14): **Sandy Wells**, Steve White, Gil Ettinger, **Tina Kapur**, Liana Lorigo, Mike Leventon, Polina Golland, Dave Gering, Samson Timoner, Kilian Pohl, Eric Cosman, Lilla Zollei, **Lauren O'Donnell**, Mahnaz Maddah
  - Masters (5): Neil Weisenfeld, Delphine Nain, Sara Larsen, Tiferet Gazit, Andy Eow
- So have had a great opportunity to watch the SPL grow – both through my own interactions, through those of my students, and watching the growth of influence of the SPL in the international community
- To me, the SPL's impact on the field is huge
  - Really the "key lab" in fostering the tight connection between computer vision and medical problems, especially actual application of computer vision and machine learning methods to practical medical problems
  - Prior to SPL, there was a weak connection between computer vision and medicine
    - Mostly cell sorting, simple 2D pattern recognition measures
    - A bit of work on 3D analysis, but was not well connected to practical applications
    - In particular, very little of the work at the time was carefully evaluated on real cases – was mostly just demonstration of running an algorithm on some imagery
  - The SPL community really changed this
    - Among the first practical methods for image guided surgery –in neurosurgery, later in prostate and other specialties

- Among the first 3D shape based approaches to understanding population variation (e.g. in schizophrenia, in other neural disorders)
- Among the first to apply methods on real cases – whether in surgical planning or in other domains – this really led to an explosion in the field of computer vision as others began to recognize the opportunity to have an impact on tough challenges
- So what contributed to this? In my mind, it was the building of a community – first locally, then globally
  - Locally – really important to get computer science students to interact directly with medical practitioners.
  - Ron's insistence that MIT students spend at least half their time here in the SPL was brilliant; as was his insistence that SPL be located in the heart of the working hospital.
    - This meant that students had a chance to very directly interact with surgeons – that they had a chance to observe directly where they could have an impact and that they were immersed in an environment that naturally supported discussion of real world problems
  - Globally – the leadership in creating open source tools, especially Slicer3D
    - Created a very broad community that could share methods, encouraged a cross-pollination of ideas
    - Amplified by the NAMIC community building opportunities – really increased the spread of a research style that said one didn't just apply a vision algorithm to a few sample images, one looked to assess the impact of the method on larger sized populations and especially in helping address specific medical questions
- That community building happened in another way, and one in which SPL was central – the creation of a global research community.
  - In 1991, traditional computer vision conferences published almost no articles on medical image analysis or medical image computing

- There were only a few scattered conferences focused on the topic – notably IPMI (which was very small and by invitation only) VBC and portions of ICASSP. Around this time, two new conferences were created – CVRMED and MRCAS.
- But the real impact was the merger of CVRMED, MRCAS and VBC into MICCAI – today the premier conference for this field.
  - While many people important in creating MICCAI, SPL was a central part of this – co-hosting the first MICCAI in Cambridge, for example; but also focusing its publishing attention on MICCAI, rather than other scattered venues, as a way of building quality in conference.
- And, of course, the number of people who have flowed through SPL – whether as collaborators, as students or as post-docs – is phenomenal. They have taken the attitude and the style of the SPL, and spread it around the world. They show up at MICCAI and other venues, pursuing a style of research that merges engineering and computation with practical medical challenges, and in doing so enhance the importance of an SPL-style approach even more broadly.