PACIFIC SYMPOSIUM ON BIOCOMPUTING 2020

2020 marks the 25th Pacific Symposium on Biocomputing (PSB), and this year's meeting is again full of outstanding new results in cutting edge research areas. Our conference remains vibrant after a quarter century because we depend on the research community to identify emerging areas in biomedical computation. Topics span the full range of biomedicine, from genomics through proteins to clinical care. The PSB community continues to innovate in the application of AI, machine learning and pattern recognition to critical problems in biology and medicine. Just as importantly, the PSB peer review community insists on a realistic understanding of the capabilities of emerging technologies. It is our duty to continue applying appropriate pressure on ourselves to test the real-world utility of these techniques, figure out how to optimize their use for problems in biology and medicine, and ensure that we contribute to a scholarly literature that realistically portrays the power and the limitations of emerging technologies. Our focus on emerging scientific questions and methodologies is a clear strength of the conference, and one that ensures the meeting remains relevant as the technology we have long explored expands throughout biomedical research and clinical care.

The origins of PSB go back more than 27 years when Larry Hunter ran a very popular Biotechnology session as part of the Hawaii International Conference on System Science (HICSS). HICSS continues to be a success and is now in its 53rd year. Larry ran such a diverse session, that people from computer science to biology, gathered to discuss methods and applications. (Sound familiar?) It was here that Larry presented a machine learning method that Teri Klein realized could be applied to her research on the molecular basis of disease, specifically the collagen disorder, *Osteogenesis Imperfecta*. They became collaborators as well as friends. Following the second year of the Biotechnology track at HICSS, Larry and Teri realized that if they wanted to continue to have a symposium that brought people from diverse backgrounds together that they would have to create a new conference from scratch. While blowing bubbles on a foldout couch at Teri's home with her then, five and seven year old children (Jackson and Kasey), Larry and Teri (with the help of Teri's husband Dennis), came up with the type of symposium they wanted: NO parallel sessions, located in the Pacific, and with ample time for scientists to sit around and discuss science and life. Now for the name and it also had to have a catchy acronym. All kinds of acronyms were tried, with many thrown out (e.g., PBS – somehow that was already taken), so PSB was chosen, and the Pacific Symposium on Biocomputing was created. The plan initially was to have the conference move around the Hawaiian Islands (which was the case for many years) and then maybe to Singapore or Mexico – all connected by the Pacific Ocean. However, there's no place like home and the Fairmont Orchid on the Big Island of Hawaii has become the beloved home of PSB.

To Larry's credit, and Teri's negotiation skills, PSB has ALWAYS made the PSB proceedings available online for free. Doesn't necessarily seem novel in 2020, but in 1996, this was unheard of. Teri and Larry managed to put together the first year of PSB in less than nine months including securing a NIH NLM conference grant for travel awards for minorities, women, students, and post-docs. This grant continues to support PSB paper authors for travel to the symposium. In the second year of PSB, Teri recruited Keith Dunker to manage the grant and Russ Altman to handle the paper submission and review process. About five years ago, Marylyn Ritchie was recruited to help with fundraising for PSB.

Building on the HICSS model, PSB sessions are often conceived at the previous PSB meeting as people discuss trends and opportunities for new science. The typical program includes sessions that evolve over two to three years as well as entirely new sessions. This year, we revisit topics such as precision medicine and pattern recognition, while nurturing emerging interest in mutational signatures, disordered proteins and other topics.

In addition to being published by World Scientific and indexed in PubMED, the proceedings from all PSB meetings are available online at http://psb.stanford.edu/psb-online/. PSB has 1166 papers listed in PubMED (as of today). These papers are routinely cited in archival journal articles and often represent important early contributions in new subfields—many times before there is an established literature in more traditional journals; for this reason, many papers have garnered hundreds of citations.

The Twitter handle PSB 2020 is @PacSymBiocomp and the hashtag this year will be #psb20.

The efforts of a dedicated group of session organizers have produced an outstanding program. The sessions of PSB 2020 and their hard-working organizers are as follows:

Artificial Intelligence for Enhancing Clinical Medicine
Organizers: Roxana Daneshjou, Olga Afanasiev, Lukasz Kidziński, Jonathon Chen

Intrinsically Disordered Proteins (IDPs) and Their Functions
Organizers: A. Keith Dunker, Lukasz Kurgan, Predrag Radivojac, Joel L. Sussman

Mutational Signatures
Organizers: Max Leiserson, Teresa Przytycka, Roded Sharan

Pattern Recognition in Biomedical Data: Challenges in Putting Big Data to Work
Organizers: Brett Beaulieu-Jones, Christian Darabos, Dokyoon Kim, Shilpa Kobren, Anurag Verma

Precision Medicine: Addressing the Challenges of Sharing, Analysis, and Privacy at Scale
Organizers: Steven Brenner, Martha Bulyk, Dana Crawford, Alexander Morgan, Predrag Radivojac, Nicholas Tatonetti

We are also pleased to present four workshops in which investigators with a common interest come together to exchange results and new ideas in a format that is more informal than the peer-reviewed sessions. For this year, the workshops and their organizers are:

AI Ethics and Values in Biomedicine – Technical Challenges and Solutions
Organizers: D. Petkovic, L. Kobzik, R. Ghanadan

Can the Circle Be Squared? Navigating Ethical Quandaries with the Privacy Dilemma of Biomedical Datasets
Organizers: Gamze Gursoy, Megan Doerr, Steven E. Brenner, Haixu Tang

Packaging Biocomputing Software to Maximize Distribution and Reuse
Organizers: William S. Bush, Nicholas Wheeler, Brett Beaulieu-Jones, Christian Darabos

Translational Bioinformatics Workshop: Biobanks in the Precision Medicine Era
Organizers: Jason Moore, Ju Han Kim, Marylyn Ritchie

The PSB 2020 keynote speakers are Carole Goble (Science keynote) and Ifeoma Ajunwa (Ethical, Legal and Social Implications keynote).

The partial list following this preface does not include many who wished to remain anonymous, and of course we apologize to any who may have been left out by mistake.

We look forward to a great meeting once again. Aloha!

Pacific Symposium on Biocomputing Co-Chairs,
October 9, 2019

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Thanks to the reviewers…