

PACIFIC SYMPOSIUM ON BIOCOMPUTING 2019

2019 marks the 24th Pacific Symposium on Biocomputing (PSB). The world is in a tizzy about big data, data science and AI (especially deep learning). Machine learning is everywhere and many of the tools and approaches that have been discussed at PSB for the last 24 years are becoming mainstream. This is in some ways gratifying and other ways worrisome, as the hype of these technologies is staggering. The PSB community, however, continues to innovate in the application of these ideas to critical problems in biology and medicine. More importantly, through peer review the PSB community has maintained 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. The focus of PSB on emerging scientific questions and methodologies is a clear strength of the conference, and one that we must protect and preserve.

PSB depends on the community to define emerging areas in biomedical computation. Its sessions are usually 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, pattern recognition, while nurturing emerging interest in single cell analysis, privacy/ethics 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 1125 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 2019 is @PacSymBiocomp and the hashtag this year will be #psb19.

The efforts of a dedicated group of session organizers have produced an outstanding program. The sessions of PSB 2019 and their hard-working organizers are as follows:

Pattern recognition in biomedical data: challenges in putting big data to work

Shefali S. Verma, Dokyoon Kim, Anurag Verma, Christian Darabos

Precision medicine: improving health through high-resolution analysis of personal data

Steven Brenner, Martha Bulyk, Dana Crawford, Jill Mesirov, Alexander Morgan, Predrag Radivojac

Single cell analysis--what is in the future?

Lana Garmire, Guo-cheng Yuan, Rong Fan, Gene Yeo, John Quackenbush

When biology gets personal: hidden challenges of privacy and ethics in biological big data

Gamze Gursoy, Arif Harmanci, Haixu Tang, Erman Ayday, Steven E. Brenner

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:

Merging heterogeneous data to enable knowledge discovery

Martin G. Seneviratne, Tina Hernandez-Boussard, Michael Kahn

Reading between the genes: interpreting noncoding DNA in high throughput

Joanne Berghout, Yves A. Lussier, Francesca Vitali, Martha L. Bulyk, Maricel G. Kann, Jason H. Moore

Text mining and machine learning for precision medicine

Graciela Gonzalez, Hongfang Liu, Zhiyong Lu, Robert Leaman

Translational informatics of population health: how large biomolecular and clinical datasets unite

Yves A. Lussier, Atul Butte, Rong Chen, Haiquan Li, Jason H. Moore

The PSB 2019 keynote speakers are Russ Altman (Science keynote) and Lawrence Hunter (Ethical, Legal and Social Implications keynote).

Tiffany Murray has managed the peer review process and assembly of the proceedings since 2003, and also plays a key role in many aspects of the meeting. We are grateful for the support of the Cleveland Institute for Computational Biology, Second Genome, Icahn Institute for Data Science and Genomic Technology, CIPHEROME, and DNANexus for their support of PSB 2019. We also thank the National Institutes of Health¹ and the International Society for Computational Biology (ISCB) for travel grant support. The research parasite and symbiont awards benefit by support from: GigaScience, Lifebit, Communications Biology, and the Gordon and Betty Moore Foundation.

We are particularly grateful to the onsite PSB staff Al Conde, Paul Murray, Ryan Whaley, Mark Woon, BJ Morrison-McKay, Cynthia Paulazzo, Jackson Miller, Kasey Miller, Heather Sanchez, and Nicholas Murray for their assistance. We also acknowledge the many busy researchers who reviewed the submitted manuscripts on a very tight schedule. 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 13, 2018

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Thanks to the reviewers...

Finally, we wish to thank the scores of reviewers. PSB aims for every paper in this volume to be reviewed by three independent referees. Since there is a large volume of submitted papers, paper reviews require a great deal of work from many people. We are grateful to all of you listed below and to anyone whose name we may have accidentally omitted or who wished to remain anonymous.

Fadhil Alakwaa
Jessica Cooke Bailey
Anna Basile
Christopher Bauer
Brett Beaulieu-Jones
Asa Ben-Hur
Mary Regina Boland
Will Bush
Tiffany Callahan
Hannah Carter
Hao Chen
Ercument Cicek
James Costello
Dana Crawford
Christian Darabos
Devendra Dhami
Michel Dumontier
Eric Gamazon
Wendong Ge
Mario Giacobini
Dylan Glubb
Casey Greene
Rafael Guerrero
Gamze Gursoy
Jake Hall
Thomas Hampton
Arif Harmanci
Robert Hoehndorf
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Ting Hu
Mathias Humbert
Haky Im
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Xiaoqian Jiang
Yuxiang Jiang
Dokyoon Kim
Younghee Lee
Haiquan Li
Lang Li
Ruowang Li
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Shaoke Lou
Jose Lugo-Martinez
Subha Madhavan
Ahmed Methwally
Jason Miller
Tejaswini Mishra
Noman Mohammed
Jason Moore
Sara Nasser
Srirraam Natarajan
Randal Olson
Alena Orlenko
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