Jordi Abante

The Johns Hopkins University
Whitaker Biomedical Engineering Institute (CIS)
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RESEARCH INTERESTS: Machine Learning, Genomics, Transcriptomics, Epigenetics.

LANGUAGES: Catalan (native), Spanish (native), English (proficient), French (basic).

SKILLS: julia, python, R, bash, perl, C++, Matlab, LaTeX.

EDUCATION & TRAINING

Stanford University 8/2021 - Present
Palo Alto, California, U.S.
- Postdoctoral research fellow at the Salzman lab
- Biomedical Data Science Department & Biochemistry Department
- Computational & experimental methods for spatial transcriptomics

The Johns Hopkins University
Baltimore, Maryland, U.S.
- Ph.D., Electrical and Computer Engineering 8/2016 - 8/2021[1]
- M.S.E., Applied Mathematics and Statistics 8/2016 - 12/2018
- Teaching Institute Certificate 6/2020 - 3/2021

Texas A&M University
College Station, TX, U.S.
- M.S., Electrical and Computer Engineering 8/2014 - 5/2016
- Business Management Certificate 5/2015 - 6/2015

Polytechnic University of Catalonia
Barcelona, Catalonia, Spain
- B.S., Industrial Engineering 9/2008 - 5/2014

[1] Successfully defended dissertation on May 10, 2021.

RESEARCH EXPERIENCE

Research Assistant 9/2016 - 6/2021
Whitaker Biomedical Engineering Institute (CIS)
The Johns Hopkins University, Baltimore MD, U.S.
- Computational biology
- Genomics & epigenetics data modeling & analysis
- Statistical inference & machine learning

Research Assistant 9/2014 - 1/2015, 6/2015 - 5/2016
Center for Bioinformatics and Genomic Systems Engineering
Texas A&M University, College Station, TX, U.S.
- Computational biology
- Genome & transcriptome data modeling & analysis
- Statistical inference & machine learning

Team Leader & Member 8/2012 - 8/2014
ETSEIB Motorsport Formula Student Team
Polytechnic University of Catalonia
Barcelona, Catalonia, Spain
- Power electronics R&D
- Electric vehicle R&D

PEER REVIEWED JOURNAL ARTICLES

M. Koldobskiy, G. Jenkinson, **J. Abante**, V.A. Rodriguez DiBlasi, W. Zhou, E. Pujadas, A. Idrizi, R. Tryggvadottir, C. Callahan, C. Bonifant, K. Rabin, P.A. Brown, H. Ji, J. Goutsias, and A.P. Feinberg.. "Converging genetic and epigenetic drivers of paediatric acute lymphoblastic leukaemia identified by an information-theoretic analysis". *Nature Biomedical Engineering* 5.4 (2021): 360-376.

J. Abante, Y. Fang, A.P. Feinberg, J. Goutsias. "Detection of haplotype-dependent allele-specific DNA methylation in WGBS data". *Nature Communications* 11, 5238 (2020). **Featured in Nature Communications Editors' Highlights**.

C. Qiu, H. Jin, I. Vvedenskaya, **J. Abante**, T. Zhao, I. Malik, S. Schwartz, P. Cui, P. Cabart, K. Hoo, R.P. Metz, C.D. Johnson, S. Sze, B.F. Pugh, B.E. Nickels, C.D. Kaplan. "Universal promoter scanning by Pol II during transcription initiation in Saccharomyces cerevisiae". *Genome Biology* (2020), 21:132.

M. Koldobskiy, **J. Abante**, G. Jenkinson, E. Pujadas, A. Tetens, F. Zhao, R. Tryggvadottir, A. Idrizi, A. Reinisch, R. Majeti, J. Goutsias, and A. P. Feinberg. "A Dysregulated DNA Methylation Landscape Linked to Gene Expression in MLL-Rearranged AML". *Epigenetics* (2020), 1-18.

M. P. Menden, D. Wang, M. J. Mason, B. Szalai, K. C. Bulusu, Y. Guan, J. Kang, M. Jeon, R. Wolfinger, T. Nguyen, M. Zaslavskiy, **J. Abante**, et al. "Community assessment to advance computational prediction of cancer drug combinations in a pharmacogenomic screen." *Nature Communications* 10, 2674 (2019).

G. Jenkinson, **J. Abante**, M. Koldobskiy, A. P. Feinberg, J. Goutsias. "Ranking genomic features using an information-theoretic measure of epigenetic discordance". *BMC Bioinformatics* (2019), 20:175.

G. Jenkinson, **J. Abante**, A. P. Feinberg, J. Goutsias. "An information-theoretic approach to the modeling and analysis of whole-genome bisulfite sequencing data". *BMC Bioinformatics* (2018), 19:87.

J. Abante, N. Ghaffari, C.D. Johnson, A. Datta. "HiMMe: using genetic patterns as a proxy for genome assembly reliability assessment." *BMC Genomics* (2017), 18:694.

PREPRINT PAPERS

J. Abante, S. Kambhampati, A.P. Feinberg, J. Goutsias. "Estimating DNA methylation potential energy landscapes from nanopore sequencing data". *bioRxiv* (2021), 431480.

J. Abante, J. Goutsias. "CpelTdm.jl: a Julia package for targeted differential DNA methylation analysis". *bioRxiv* (2020), 343020.

C. Qiu, H. Jin, I. Vvedenskaya, **J. Abante**, T. Zhao, I. Malik, A.M. Visbisky, S.L. Schwartz, P. Cui, P. Čabart, K.H. Han, W.K.M. Lai, R.P. Metz, C.D. Johnson, S.H. Sze, B.F. Pugh, B.E. Nickels, C.D. Kaplan. "Promoter scanning during transcription initiation in Saccharomyces cerevisiae: Pol II in the "shooting gallery"". *bioRxiv* (2019), 810127.

N. Ghaffari, **J. Abante**, R. Singh, P. D. Blood, L. Pipes, C. Mason, C. D. Johnson. "What are the most influencing factors in reconstructing a reliable transcriptome assembly?". *bioRxiv* (2017), 220269.

PEER REVIEWED CONFERENCE PROCEEDINGS

P. Blood, N. Ghaffari, A. S. Seetharam, L. Pipes, R. Singh, **J. Abante**, A. Severin, C. D. Johnson, C. Mason. "Fast, flexible, and free: enabling large-scale genome assembly and analysis with the Bridges supercomputer". *In Plant and Animal Genome XXVI Conference*, San Diego, CA, U.S., 2018.

N. Ghaffari, **J. Abante**, R. Singh, P. D. Blood, C. D. Johnson. "Computational considerations in transcriptome assemblies and their evaluation, using high quality human RNA-Seq data". *XSEDE16: Extreme Science and Engineering Discovery Environment 2016 Conference*, Miami, FL, U.S., 2016.

INVITED TALKS

On the estimation of epigenetic energy landscapes from nanopore sequencing data @ Machine Learning in Computational and Systems Biology, Intelligent Systems for Molecular Biology and European Conference on Computational Biology 2021, 7/2021.

An information-theoretic approach to allele-specific DNA methylation analysis
@ Salzman Lab, Stanford University, 11/2020
@ Yosef Lab, Berkeley University, 11/2020
@ Gerstein Lab, Yale University, 11/2020
@ Knowles Lab, Columbia University, 10/2020
@ Marks Lab, Harvard University, 10/2020

Statistical modeling and analysis of allele-specific DNA methylation at the haplotype level @ Electrical & Computer Engineering Departmental Seminars, The Johns Hopkins University, 10/2019.

POSTER SESSIONS

J. Abante, S. Kambhampati, A.F. Feinberg, J. Goutsias. "On the estimation of epigenetic energy landscapes from nanopore sequencing data". *Machine Learning in Computational and Systems Biology, Intelligent Systems for Molecular Biology and European Conference on Computational Biology 2021*, 2021.

J. Abante, N. Ghaffari, C.D. Johnson, A. Datta. "Using hidden Markov models to analyze next-generation sequencing data". *ENG-LIFE 2016: At the Interface of Engineering and Life Sciences*, College Station, TX, U.S., 2016.

TEACHING & MENTORING

Undergraduate Student Mentor Fall 2020 - Spring 2021
Whiting School of Engineering
The Johns Hopkins University, Baltimore, MD, U.S.
- Mentored Sandeep Kambhampati, senior in Biomedical Engineering
- Johns Hopkins University PURA grant awarded to Sandeep

Course Assistant & Guest Lecturer Fall 2018, 2019, 2020
EN.520.622. Principles of Complex Networked Systems
Whiting School of Engineering
The Johns Hopkins University, Baltimore, MD, U.S.
- Guest lecturer (Fall 2020)
- Graded assignments and exams
- Provided students with one-on-one tutoring and out of class assistance

Teaching Assistant & Guest Lecturer Spring 2015
ENGR-112 Foundations of Engineering II
Dwight Look College of Engineering
Texas A&M University, College Station, TX, U.S.
- Guest lecturer
- Responsible of grading by managing a team of grading assistants
- Provided students with one-on-one tutoring and out of class assistance

FELLOWSHIPS

"la Caixa" Fellowship 8/2016 - 8/2017
"la Caixa" Foundation, Barcelona, Catalonia, Spain
- One of 50 students selected across Spain for competitive merit scholarship
- Covered tuition fees plus monthly allowance for a 2-year period
- Total monetary value of fellowship was $250,000

INDUSTRY EXPERIENCE

R&D Engineer 5/2016 - 8/2016
Sensory Value
Sant Cugat del Vallès, Catalonia, Spain
- Machine learning applied to market research

R&D Engineer 3/2013 - 5/2014
Cinergia, Control Intel·ligent de l'Energia
Barcelona, Catalonia, Spain
- Power electronics R&D for EV applications

AWARDS & HONORS

Best Thesis Award 5/2015
Polytechnic University of Catalonia Barcelona, Catalonia, Spain

Golden Key Honor Society 5/2016
Texas A&M University, College Station, Texas, U.S.

Phi Kappa Phi 4/2016
Texas A&M University, College Station, Texas, U.S.

IEEE-Eta Kappa Nu Honor Society 1/2016
Texas A&M University, College Station, Texas, U.S.

UNIVERSITY SERVICE

ECE Department Head Search Spring 2021
Johns Hopkins University
Baltimore, Maryland, U.S.
• Collaborated in the hiring process of 8 candidates

COMMUNITY SERVICE

Voluntariat per la llengua Fall 2020, Spring 2021
Baltimore, Maryland, U.S.
• Language partner for people interested in learning Catalan

Our Daily Bread Volunteer 2020
Baltimore, Maryland, U.S.
• Cooked food for families in need during COVID 19 pandemic

Barclay Hopkins STEM Partnership 2017
The Johns Hopkins University, Baltimore, Maryland, U.S.
• Worked with elementary school students to engage them in STEM

The Big Event 2015-2016
Texas A&M University, College Station, Texas, U.S.
• Provided yard work and window washing for elderly residents

Grup de voluntariat ANTAR 2006-2008
Àgora International School, Sant Cugat del Vallès, Catalonia, Spain
• Organized fundraising activities and food drives for people in need

REFERENCES

Available upon request.