Alan M Luu

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EDUCATION

Ph.D. Physics, University of Illinois, Urbana-Champaign — Aug 2016 - Present

- Advisor: Jun S. Song
- Specialization: Machine learning, statistics, computational biology, genomics

B.A. Physics, University of California, Berkeley — Aug. 2012 - May 2016

RESEARCH EXPERIENCE

UIUC Computational Biology Group (Advisor: Jun Song) — Jan 2017 - Present

- Developing novel adaptive MCMC method using Markov chain regeneration and normalizing flows to augment Hamiltonian Monte Carlo for Bayesian inference.
- Investigating relationship between T-cell receptor amino acid sequence and cutaneous T-cell lymphoma using convolutional neural networks (CNNs) and string similarity metrics.
- Performing differential expression analysis on scRNA-seq data from keratinocytes using limma and carrying out statistical analysis to implicate cell of origin and transcription factors associated with Basal and Squamous Cell Carcinomas. Publication in preparation.
- Exploring generative models of scRNA-seq data using generative adversarial networks (GANs).
- Analyzed MiSeq data using Bowtie2 and Tophat2 to quantify CRISPR-mediated base editing efficiency, exon skipping, and off-target effects using CRISPR cytidine and adenine base editors.
- Created web application to target exons for exon skipping using CRISPR base editors.

UIUC Quantitative Ecology and Evolution Lab (Advisor: Seppe Kuehn) — May 2017 - Jul. 2017

- Carried out statistical and network analysis on gene knockout data to investigate the relationship between phenotypic robustness and evolvability.

UIUC Computational Bio-Nano Group (Advisor: Aleksei Aksimentiev) — Sept - Dec 2016

- Ran large molecular dynamics simulations using high performance computing resources to investigate stability of 3D nano-engineered DNA structures in various ionic solutions.

Project IRENE at Lawrence Berkeley National Laboratory (Advisor: Carl Haber) — Jan - Oct 2014

- Implemented and benchmarked optical-flow-based algorithm to reconstruct audio signals from high resolution confocal microscope images of lacquer audio records.

INDUSTRY EXPERIENCE

Data Scientist at Seyvu Inc. — Apr 2018 - Present

- Analyzing large scale social media and survey data for health insurance, food manufacturing, and consumer technology businesses to derive market insights.
- Developed text analytics pipeline involving preprocessing, sentiment analysis, and time series analysis. Designed an interactive data dashboard to visualize results.
- Devised novel *aspect sentiment analysis* method using word2vec and statistical analysis.
- Implemented document clustering visualizations based on doc2vec.
- Created interactive word co-occurence network visualizations using Altair and Vega-Lite.

PUBLICATIONS

Jackson Winter, **Alan Luu**, Michael Gapinske, Wendy S. Woods, Jun S. Song, Pablo Perez-Pinera. Disruption of Splice Acceptors Using CRISPR-Cas9 Adenine Base Editors Induces Exon Skipping. Under submission to *Cell Discovery*.

Michael Gapinske*, **Alan Luu***, Jackson Winter, Wendy S. Woods, Kurt A. Kostan, Nikhil Shiva, Jun S. Song, Pablo Perez-Pinera. CRISPR-SKIP: programmable gene splicing with single base editors. *Genome Biology*, August 2018.

SKILLS

Machine Learning, Data Science, Deep Learning, Statistical Analysis, Quantitative Biology and Genomics, Sequence Analysis, Text Analytics, Natural Language Processing, Image Processing
Languages: Python, R, Java, C, Matlab, Mathematica
Data Science: Keras, TensorFlow, Jupyter, Altair, scikit-learn, pandas, Git
Computational Biology: VMD, NAMD, FastQC, cutadapt, Bowtie2, Tophat2, HTSeq, limma
Web Development: Flask, HTML, CSS, Javascript, MySQL, Vega-Lite

TEACHING

University of California at Berkeley

Course Assistant: PHYS7B (Intro to Electromagnetism and Thermodynamics)	June - Aug 2016
Grader: PHYS137B (Advanced Quantum Mechanics)	Jan - Aug 2016
Grader: PHYS139 (General Relativity)	Jan - Aug 2016
Course Lab Assistant: CS61A (Structure and Interpretation of Computer Programs)	Aug - Dec 2013

AWARDS

UIUC Center for the Physics of Living Cells Symposium Best Speaker Award	Apr 2018
UIUC Center for the Physics of Living Cells Fellowship	Aug 2016 - Aug 2018
UC Berkeley College of Letters and Science Dean's Honor List	Aug 2012 - May 2014
UC Berkeley Pomerantz Scholarship	Aug 2014 - Aug 2015

- Awarded for high academic standing and progress in the physics major

UC Berkeley Regents and Chancellor's Scholarship — Aug 2012 - May 2016

- Awarded to top 1% of applicants (top 5% of admitted students)

SERVICE

Lunch Coordinator and Volunteer for Society of Physics Students	Aug 2013 - May 2016
Campaign Organizer for California Public Interest Research Group	Aug 2012 - Dec 2012

*Equal Contribution