JONATHAN KING

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Education

Carnegie Mellon - University of Pittsburgh *Expected 2022*
Joint PhD Program in Computational Biology
Prof. David Koes, Advisor

University of California, Berkeley *May 2017*
B.A. Computer Science, B.S. Bioengineering
3.4 Cumulative GPA

Skills and Coursework

- Python, Pytorch, Tensorflow, Keras, Spark, C, Java, SQL, R, git, Docker
- Deep Learning, Scalable Machine Learning
- Algorithms for Computational Biology
- Discrete Math, Probability, Linear Algebra, Operating Systems, Databases, Networks
- Biophysical Chemistry, Molecular & Systems Biology

Research Experience

Graduate Student Researcher *Aug 2017 - Present*
Carnegie Mellon - University of Pittsburgh

- Developed novel machine learning methods for protein structure prediction based on sequence to sequence models.
- Performed drug discovery research to identify potential inhibitors of the CYP4F2 as a treatment for stroke victims.
- Sunseri, J., **King, J.E.**, Francoeur, P.G. et al. Journal of Computational Aided Molecular Design (2018). "Convolutional neural network scoring and minimization in the D3R 2017 community challenge".

Research Assistant, Hu Lab *Dec 2016 - Aug 2017*
UCSF Dept. of Physiological Nursing, San Francisco CA

- Expanded Xiao Hu et al.'s SuperAlarm project to combat alarm fatigue in hospital settings.
- Implemented Recurrent Neural Network methods for the prediction of "code blue" events from hospital alarm data.
- Ran Xiao, **Jonathan King**, Andrea Villaroman, Duc H. Do, Noel G. Boyle and Xiao Hu. IEEE EMBC (2018). "Predict In-Hospital Code Blue Events using Monitor Alarms through Deep Learning Approach".

Bioinformatics Intern *May 2015 - Dec 2016*
Plexxikon Inc., Berkeley CA *(contracted through Lab Support)*

- Developed novel algorithms to detect structural variants in patients with acute myeloid leukemia (AML). Publication pending.
- Improved specificity and reporting methods of algorithms to compete with existing software.
- Implemented application on Illumina's BaseSpace cloud computing platform for use with Amazon Web Services.
- Engineered scripts for parallel analysis of other biological experiments using Next Generation Sequencing data.

Research Assistant, Zilberman Lab *Apr 2014 - Sep 2014*
University of California, Berkeley

- Studied epigenetic role of DNA methylation in the *Arabidopsis thaliana* plant.
- Screened 200+ plants for genetic mutations through PCR / gel electrophoresis and computational analysis.

Other Projects

instaGAN: De Novo Food Blogging with Generative Models *Apr 2019*

- Combined Generative Adversarial Networks & Recurrent Neural Networks to generate & caption instagram-style food photos.

RNA Secondary Structure Prediction via Neural Machine Translation *Apr 2018*

- Created Recurrent Neural Network based method to predict RNA secondary structure (dot-bracket notation) from sequence.

An Agent-Based Approach to Modeling Ebola Outbreak *Dec 2017*

- Modeled viral outbreak of Ebola under spatial and temporal constraints using a self-developed lattice & agent method.

Mentorship

Summer Research & Ethics Group Mentor *May 2018 - Present*
University of Pittsburgh, TECBio Research Experience for Undergraduates

- Provided guidance for two students in completing graduate-level research projects in machine learning and drug discovery.
- Met daily with students to assist project planning and preparation for a cross-university forum on research ethics.

Tutor – Computer Science, Math, Chemistry, Physics *Dec 2014 - Present*
InstaEdu.com, Online Tutoring Service

- Coached over 40 high school and college students in STEM curriculum.
- Developed weekly lesson plans for video conferencing students.

Berkeley Biomedical Engineering Society *2013 - 2017*

- Planned monthly events for the Bioengineering community including a research fair, professor socials, and career events.

Awards and Presentations

Natl. Inst. of Biomed. Imaging and Bioeng. T32 Training Grant, stipend, tuition, and travel awards *Sep 2019*
Google Cloud Platform Research Credits, $1000 award *Aug 2019*

American Chemical Society National Conference, Computational Division *Aug 2019*
Canadian Chemistry Conference, Machine Learning Division *Jun 2019*
University of Pittsburgh Advanced Research in Computing Symposium *Mar 2019*
"Exploring sequence-to-sequence learning methods for end-to-end, complete protein structure prediction"

Best Talk, Northern California Computational Biology Student Symposium *Oct 2016*
"A Novel Algorithm for Detecting FLT3 Internal Tandem Duplications in Patients With Acute Myeloid Leukemia"