Ran Liu

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Education:

Doctor of Philosophy (Ph.D.) in Biomedical Engineering
The Johns Hopkins University, Baltimore MD. In progress, August 2017-present.
Computational Medicine Fellow. Advisor: Dr. Raimond L. Winslow.
Thesis: "A data-driven basis for clinical recommendations on sepsis and septic shock in the intensive care unit"

Bachelor of Science (B.S.) in Biomedical Engineering
The Johns Hopkins University, Baltimore MD. August 2012-May 2016.
3.94/4.0 GPA. BME Focus Area: Systems Biology. Minor in Computer Science.
Richard J. Johns Award for Outstanding Achievement in Biomedical Engineering.

Selected Publications:

Liu, R., Greenstein, J. L., Fackler, J. C., Bergmann, J. B., Bembea, M. M., Winslow, R. L. "Early prediction of impending septic shock in pediatric patients using age-adjusted Sepsis-3 criteria." *Manuscript under preparation* (2020).

Liu, R., Greenstein, J. L., Fackler, J. C., Bembea, M. M., Winslow, R. L. "Spectral Clustering of Risk Score Trajectories Stratifies Sepsis Patients by Clinical Outcome and Interventions Received." *eLife* (2020).

Liu, R., Greenstein, J. L., Sarma, S. V., Winslow, R. L. "Natural Language Processing of Clinical Notes for Improved Early Prediction of Septic Shock in the ICU." *41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)* (2019).

Liu, R., Greenstein, J. L., Granite, S. J., Fackler, J. C., Bembea, M. M., Winslow, R. L. & Sarma, S. V. "Data-driven discovery of a novel sepsis pre-shock state predicts impending septic shock in the ICU." *Scientific Reports* (2019).

A complete list can be found at https://scholar.google.com/citations?user=bshgBtkAAAAJ

Research Experience:

Research Assistant, Institute for Computational Medicine, Johns Hopkins University, May 2016-August 2017.
Under Dr. Raimond Winslow and Dr. Sridevi Sarma, modeled clinical state transition in sepsis patients for automated early prediction of sepsis and septic shock.

JAX Summer Student Fellowship, The Jackson Laboratory, June 2014-August 2014.
Advised by Dr. Zhengqing Ouyang, conducted statistical modeling of specificity and selectivity of lncRNA-chromatin binding site motifs using data from high-throughput sequencing methods.

Research Assistant, The Lectka Group, Johns Hopkins University, Fall 2013-2015.
Conducted research under Cody Ross Pitts and Dr. Thomas Lectka in organic synthesis and computational chemistry, particularly directed fluorinations. Developed novel methods for synthesis of organic compounds and used isodesmic computations to elucidate reaction mechanisms.

Research Intern, Biochemistry Division. Corning, Inc. June 2013-August 2014.
Worked under the guidance of Dr. Huayun Deng and Dr. Ye Fang. Conducted research into the development of smart vessels for cell culture.

Teaching Experience:

Teaching Assistant, Johns Hopkins University, Fall 2018-Spring 2019
EN.580.480/680, EN.580.481/681 Precision Care Medicine I/II

Course Assistant, Johns Hopkins University, Spring 2015
EN.600.120 Intermediate Programming

Technical Experience:

Cognitive Training Application
Spring 2016-Summer 2016.
Worked under the guidance of Dr. Yuri Agrawal. Developed a web application to assess and train cognitive visuospatial ability, and allow physician monitoring of patient progress.

CBID Design Team 4, Johns Hopkins University
Team Leader: Nick Gisolfi. Clinical Advisor: Dr. Ray Dorsey. Spring 2013.
Prototyping of a mobile application for assessment of the severity of Parkinson's disease symptoms through handwriting and tremor analysis.

Skills

Computer Programming
Experienced in C, C++, Java, Python, R, Matlab, Ruby, PHP, Javascript, Typescript. Proficient in Unix utilities (e.g. awk, sed, grep) and Bash scripting. Knowledgeable of database systems, various frameworks (Tensorflow, Angular, Flask, Hibernate, Rails, Spring Boot). Familiar with assembly languages including x86, ARM, MIPS, and 6502.

Languages
English – Native fluency. Chinese (Mandarin) – Native fluency. French – High proficiency.