Jenhan Tao
http://jenhantao.github.io
Email : jenhantao@gmail.com
Mobile : (916)-588-6788

Education

- **University of California, San Diego** — San Diego, CA
  Ph.D. in Bioinformatics; Advisors: Christopher K. Glass, Christopher Benner — *2018*
  Thesis title: Machine learning approaches for identifying a genomic regulatory grammar
- **University of California, Berkeley** — Berkeley, CA
  B.S. in Bioengineering — *2012*

Experience

- **UC San Diego** — San Diego, CA
  Graduate Student Researcher. Laboratory of Prof. C. K. Glass — *Mar. 2014 - Present*
  - **Genomic Grammar project**: Designed and implemented a convolutional neural network with an attention mechanism that learns to identify regulatory sequences in the genome by learning relationships between 'words' recognized by transcription factors. Github repository
  - **AP-1 project**: Implemented a logistic regression model that uses a feature set, which is programmatically curated to reduce multiple collinearity, to identify combinations of sequence features targeted by transcription factors within the AP-1 transcription factor family. Github repository
  - **Genomics data processing pipelines**: Implemented software pipelines for processing high-throughput sequencing data on a distributed computing cluster.
- **Lattice Automation** — Boston, MA
  Software Engineer — *Jan. 2013 - Dec. 2013*
  - **RavenCAD**: A JavaScript and Java based web applications for automated design of genetic devices and DNA assembly plans.
- **UC Berkeley** — Berkeley, CA
  Research assistant, Laboratory of Prof. J. C. Anderson — *Aug. 2011 - Dec. 2012*
  - **BsaI engineering**: Planned and performed DNA cloning experiments to produce and characterize a novel extended specificity Type IIG restriction endonuclease in bacteria
- **Boston University** — Boston, MA
  Research assistant, Laboratory of Prof. D. Densmore — *Aug. 2011 - Aug. 2013*
  - **Clotho**: Clotho is a software platform for analyzing biological data built with Java, Javascript, MySQL. I redesigned user interface and improved the search algorithm capabilities and performance. Project wiki
- **UC Berkeley** — Berkeley, CA
  Research assistant, Laboratory of Prof. A. Arkin — *May 2010 - Apr. 2012*
  - **DNA assembly simulator**: Developed a Matlab web app and command line tool that simulated DNA assembly and predicted successful cloning reactions
  - **Microscopy image analysis**: Created an ImageJ plugin that automated animation and analysis of 7 channel Deltavision microscope images, reducing processing time fivefold

Programming Skills

- **Languages**: Python, R, Perl, Bash, Java, HTML, Javascript, SQL, Matlab
- **Technologies**: TensorFlow, scikit-learn, Keras, networkx, Cytoscape, git

Awards

- *Best Poster - Genetics Training Grant Retreat* — *2015*
- *Best Student Talk - San Diego Center for Systems Biology Retreat* — *2015*
- *1st place - Network of BioThings Hackathon* — *2014*
- *Gold Medal (as instructor) - International Genetically Engineered Machines Competition* — *2014*
- *Best Parts Collection (as instructor) - International Genetically Engineered Machines Competition* — *2013*
- *Gold Medal (as instructor) - International Genetically Engineered Machines Competition* — *2013*
- *Best Software Prize - International Genetically Engineered Machines Competition* — *2011*

- *Gold Medal - International Genetically Engineered Machines Competition* *2011*
- *Intel Academic Scholarship* *2009*

Publications

1. **Tao, J.***, Fonseca, G.J., Benner, C., Glass, C.K. Identifying composition rules for transcription factor circuits that control macrophage signal response with deep learning. International Workshop on Bio-design Automation proceedings. 2018 in press.
2. Schlachetzki, J.C.M.*, Prots, I.*, **Tao, J.***, Chun, H.B., Saijo, K., Gosselin, D., Winner, B., Glass, C.K., Winkler, J. A monocyte gene expression signature in the early clinical course of Parkinsons disease, Scientific Reports. 2018 in press.
3. Fonseca, G.J.*,**Tao, J.***, Westin, E., Duttke, S.H., Spann, N.J., Strid, T., Shen, Z., Stender, J.D., Link, V.M., Benner, C., Glass, C.K. Diverse motif ensembles specify non-redundant DNA binding activities of AP-1 family members in macrophages. BioRxiv. 2018.
4. Link, V.M., Duttke, S.H., Chun, H.B., Holtman, I.R., Westin, E., Hoeksema, M.A., Abe, Y., Skola, D., Romanoski, C.E., **Tao, J.**, et al. (2018). Analysis of Genetically Diverse Macrophages Reveals Local and Domain-wide Mechanisms that Control Transcription Factor Binding and Function. Cell 173, 17961809.e17.
5. Muse, E.D., Yu, S., Edillor, C.R., **Tao, J.**, Spann, N.J., Troutman, T.D., Seidman, J.S., Henke, A., Roland, J.T., Ozeki, K.A., et al. (2018). Cell-specific discrimination of desmosterol and desmosterol mimetics confers selective regulation of LXR and SREBP in macrophages. Proc. Natl. Acad. Sci. 201714518.
6. Oishi, Y., Spann, N.J., Link, V.M., Muse, E.D., Strid, T., Edillor, C., Kolar, M.J., Matsuzaka, T., Hayakawa, S., **Tao, J.**, et al. (2016). SREBP1 Contributes to Resolution of Pro-inflammatory TLR4 Signaling by Reprogramming Fatty Acid Metabolism. Cell Metab. 116.
7. Eichenfield, D.Z., Troutman, T.D., Link, V.M., Lam, M.T., Cho, H., Gosselin, D., Spann, N.J., Lesch, H.P., **Tao, J.**, Muto, J., et al. (2016). Tissue damage drives co-localization of NF-B, Smad3, and Nrf2 to direct Rev-erb sensitive wound repair in mouse macrophages. Elife 5, 130.
8. Appleton, E., **Tao, J.**, Wheatley, F.C., Desai, D.H., Lozanoski, T.M., Shah, P.D., Awtry, J.A., Jin, S.S., Haddock, T.L., and Densmore, D.M. (2014). Owl: Electronic datasheet generator. ACS Synth. Biol. 3, 966968.
9. Appleton, E., **Tao, J.**, Haddock, T., and Densmore, D. (2014). Interactive assembly algorithms for molecular cloning. Nat Methods 11, 657.

Teaching

- **Master's Thesis Mentor** - *UC San Diego* *Aug. 2017 - Jun. 2018*
  Supervised a Bioengineering Masters thesis on machine learning and genomics
- **iGEM Instructor** - *Canyon Crest Academy* *Aug. 2017 - Jun. 2018*
  Provided instruction to high school students and supervised summer project
- **UCSD Teaching Assistant** - *UC San Diego* *Aug. 2017 - Jun. 2018*
  graduate level course in algorithms in computational biology
- **iGEM Instructor** - *UC San Diego* *Aug. 2017 - Jun. 2018*
  Raised $20k for project, supervised 9 undergraduate student. Project wiki
- **iGEM Instructor** - *Boston University* *Aug. 2017 - Jun. 2018*
  Mentored 3 students in programming methodology. Project wiki
- **Study group leader** - *UC Berkeley* *Aug. 2017 - Jun. 2018*
  Led review sessions for undergraduate physics
- **Seminar Instructor** - *UC Berkeley* *Aug. 2017 - Jun. 2018*
  Instructed 20 engineering undergraduates in studying strategies