Raphaël J. L. Townshend

216 Rosse Lane, Apt 209, Stanford CA 94305 | r@tc.com | raphael.tc.com

EDUCATION

Stanford University   **09/2014 – Present**
Ph.D. in Computer Science (Artificial Intelligence)   GPA: 4.00/4.00

University of California, Berkeley   **09/2010 – 05/2014**
B.S. in Electrical Engineering and Computer Science (High Distinction)   GPA: 3.90/4.00

Coursework: Abstract Algebra, Algorithms, Artificial Intelligence, Combinatorial Algorithms, Compilers, Computational Biology in Four Dimensions, Computational Structural Biology, Computer Vision, Databases, Graphical Models, Linear Algebra, Machine Learning, Natural Language Processing, Operating Systems, Statistical Learning Methods for Genomics, Statistical Learning Theory, User Interfaces, Visual Object and Activity Recognition

AREAS OF INTEREST

Machine Learning, Structural Biology, Computer Vision, High Performance Computing

PUBLICATIONS

- R.J.L. Townshend, R. Bedi, P.A. Suriana, and R.O. Dror. **End-to-End Learning on 3D Protein Structure for Interface Prediction.** NeurIPS 2019. Vancouver, Canada, December 2019.
- N.R. Latorraca, J.K. Wang, B. Bauer, R.J.L. Townshend, S.A. Hollingsworth, J.E. Olivieri, H.E. Xu, M.E. Sommer, and R.O. Dror. **Molecular mechanism of GPCR-mediated arrestin activation.** Nature 557:452-456 (2018).
- E. Tzeng, A. Zhai, M. Clements, R. Townshend, and A. Zakhor, **"User-Driven Geolocation of Untagged Desert Imagery Using Digital Elevation Models,"** CVPR 2013 Workshop on Visual Analysis and Geo-Localization of Large-Scale Imagery. Portland, Oregon, June 2013.

HONORS AND AWARDS

- Department of Energy Science Fellowship, Oct 2019
- Best in Show and People's Choice Science Hack Day San Francisco, Sept 2015
- National Science Foundation Fellowship, Apr 2015
- Stanford School of Engineering Graduate Fellowship, Sept 2014
- Berkeley's ACM International Collegiate Programming Contest team, Oct 2013
- Best in Show at Science Hack Day San Francisco, Sept 2013
- EECS Honors Degree Program with concentration in Statistical Learning, Mar 2013
- Matrix Multiplication Optimization Competition runner-up, Dec 2012
- Elected to "Eta Kappa Nu" Undergraduate Honors Society, Dec 2011
- Maker Faire Young Inventor, May 2010

BIOGRAPHICAL

- Citizenship: *Canadian*, *U.S. Permanent Resident*
- Date of Birth: January 22, 1993
- Place of Birth: Montreal, Canada
- Languages Spoken: native English, native French

EMPLOYMENT AND EXPERIENCE

Stanford University: Stanford Artificial Intelligence Laboratory   **Stanford, CA**
National Science Foundation Fellow (PI: Professor Ron Dror)   *09/2014 – Present*
- Designing machine learning methods for application to atomic systems
- Leading and mentoring inter-disciplinary team of students
- Investigating new representations and applications for atomic data

DeepMind   **London, UK**
Research Intern   *06/2019 – 11/2019*
- AlphaFold team

Stanford University: Computer Science Department   **Stanford, CA**
Head Teaching Assistant (CS299: Machine Learning)   *09/2018 – 12/2018*
- One of the largest courses at Stanford, with over 750 enrolled students
- Coordinated team of 30 Teaching Assistants
- Designed and lectured new course material on ensembling methods and decision trees

Scaled Inference   **Palo Alto, CA**
Inference Intern   *06/2015 – 09/2015*
- Researched, designed, and implemented Bayesian models for core modeling pipeline

Google   **Mountain View, CA**
Software Engineering Intern   *06/2014 – 09/2014*
- Worked on the Knowledge: Search team, exploiting structured data on the web

University of California, Berkeley: Video and Image Processing Lab   **Berkeley, CA**
Undergraduate Research Assistant (PI: Professor Avideh Zakhor)   *05/2012 – 06/2014*
- Developed Computer Vision techniques for large scale geo-localization
- Designed and implemented a synthetic horizon matcher using digital elevation models

Open Computing Facility   **Berkeley, CA**
Root Staff Member / Director   *08/2011 – 06/2014*
- Volunteered as a high-level administrator for computing facility with over 7,000 student users
- As a director, partook in all major technical and administrative decisions concerning the OCF

University of California, Berkeley: Berkeley Carillon Guild   **Berkeley, CA**
Student Carillonist / Instructor   *05/2010 – 06/2014*
- Performed weekly recitals on the Sather Tower carillon
- Taught a course on playing the carillon to a dozen undergraduates

University of California, Berkeley: Computer Science Department   **Berkeley, CA**
Undergraduate Student Instructor (CS61C: Machine Structures)   *06/2012 – 08/2012*
- Taught section and lab of 30 undergraduates
- Redesigned and improved matrix multiplication optimization and parallelization project
- Guest lectured on MapReduce and large-scale computing to class of 100

Hewlett-Packard   **Sunnyvale, CA**
Graphics Intern   *05/2011 – 08/2011*
- Implemented performance improvements within the WebOS graphics engine
- Helped write cross-platform, multi-core capabilities for the engine