

# Edward Greg Huang

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Nationality: American

## Areas of interest

Algorithmic information theory • Biophysics • Deep learning

## Education

2019 B.A. Applied Mathematics, University of California at Berkeley  
2016 Study abroad, University of Hong Kong

## Academic positions

2018 - 2019 Student Advisor to the Regents, *University of California*  
2018 Artificial Intelligence Research Assistant, *Intelligent Robotics Group, NASA Ames*  
2018 REU Research Fellow, *Santa Fe Institute*  
Advisor: David H. Wolpert  
2017 - present Biophysics Research Assistant, *Department of Mathematics, UC Berkeley*  
Primary Investigator: Rainer K. Sachs  
2015 - 2017 Evolutionary Ecology Research Assistant, *Department of Environmental Science, UC Berkeley*  
Primary Investigators: Rosemary G. Gillespie and George Roderick

## Industry & nonprofit experience

2018 Senior Unit-level Manager, *Berkeley Student Cooperative*  
2017 - present Brand Ambassador, *Klättermusen*  
2016 - 2018 Acting President, Vice President, Treasurer *Cal Hiking and Outdoor Society*  
2016 Analyst Intern, *EQS Group*  
2015 - 2016 Architectural Intern, *Project M+*

## Publications

### PEER-REVIEWED JOURNAL ARTICLES

- 2020 Hada M, Wang SC, Zhao LY, **Huang EG**, Sachs RK. (2020) Synergy theory for chromosome aberrations after exposure to mixed fields. *Manuscript in preparation*.
- 2019 **Huang EG**. (2019) Algorithmic information and inference devices. *Manuscript in preparation*. [PDF](#)
- 2019 **Huang EG**, Yang RY, Chang PY, Zhang B, Ham DW, Lin Y, Blakely EA, & Sachs RK. (2019) Synergy modeling of murine tumor prevalence after exposure to two one-ion beams in rapid sequence. *Manuscript in preparation*.
- 2019 **Huang EG**, Lin Y, Ebert M, Ham DW, Zhang CY, & Sachs RK. (2019) Synergy theory for murine Harderian gland tumours after irradiation by mixtures of high-energy ionized atomic nuclei. *Radiation and Environmental Biophysics*. 58(2): 151-166. <https://doi.org/10.1007/s00411-018-00774-x>
- 2018 Krehenwinkel H, Fong M, Kennedy S, **Huang EG**, Suzuki N, Cayetano L, & Gillespie RG. (2018) The effect of DNA degradation bias in passive sampling devices on metabarcoding studies of arthropod communities and their associated microbiota. *PLoS ONE* 13(1): e0189188. <https://doi.org/10.1371/journal.pone.0189188>

### INVITED TALKS & PRESENTATIONS

\* indicates presenter

- 2019 Blakely EA\*, Bakke J, Grover A, Rosen C, Bjornstad KA, Mao JH, **Huang EG**, Ham DW, Sachs RK, & Chang PY. Murine Harderian gland tumorigenesis induced by dual, rapid-sequence particle beams. Talk given at the *International Congress of Radiation Research*; Aug 25 -29; Manchester, UK.
- 2019 **Huang EG\***, Ham DW, Lin Y, Wang S, Zhao L, Zhang Y, Blakely EA, Chang PY & Sachs RK. (2019) Synergy theory: murine Harderian gland tumors and *in vitro* chromosome aberrations induced by exposure to mixed beams with some high-LET components. Talk given at: *2019 NASA Human Research Program Investigators' Workshop*; Jan 22 - 25; Galveston, Texas, USA. [Abstract \[PDF\]](#) & [Slides \[PDF\]](#)
- 2018 **Huang EG\*** & Wolpert DH. (2018) Connections between Turing machines and a formalization of knowledge. Talk given at: *Santa Fe Institute REU Final Talks*; Aug 9; Santa Fe, New Mexico, USA. [Video](#)
- 2017 Ham DW, Gao J, Song BL, Yu J, Zhao LY, **Huang EG\***, Lin Y, & Sachs RK. (2017) Synergy theory in biology: Simulating radiation damage during interplanetary voyages as an example. Poster session presented at: *11th Annual Biology and Mathematics in the Bay Area Conference*; Nov 18; San Francisco, California, USA. [PDF](#)
- 2016 **Huang EG\*** & Rominger AJ. (2016) Managing large datasets from ecological fieldwork. Talk presented at the *Department of Environmental Science, Policy, and Management at UC Berkeley*; May 6; Berkeley, California, USA.

## BOOK CHAPTERS

- 2015 Adhikari A, Ghosh DJ, **Huang EG**, et al. (2015) Theory Meets Data: A Data Scientist's Handbook to Statistics. *UC Berkeley Dept. of Statistics*. [PDF](#)

## AUTHORED SOFTWARE

- 2019 **Huang EG**, Ham DW, Lin Y, Wang S, Ebert M, Zhang CY, & Sachs RK. (2019) synergy: A R-package of tools and data to model mixed radiation fields for radiobiologists. *In preparation for CRAN*. [GitHub](#)
- 2017 **Huang EG**, Rominger AJ. (2017) kokua: R-package of tools and data for Hawaiian ecology. [GitHub](#)
- 2016 Rominger AJ, **Huang EG**. (2017) hdimDB: Tools for biocollections database management in R. [GitHub](#)

## LETTERPRESS BOOKS

- 2019 Ferriss L, **Huang EG**, et al. (2019) Ina Coolbrith: Poet Laureate of California; Introduction by Charles Faulhaber. *Berkeley: The Bancroft Library Press*.

## Selected programming projects

- 2018 synergy: R CRAN package of novel prediction methods for space radiation induced cancer risk.
- 2019 guavabots: Dynamic graph search algorithms based on incomplete and unreliable data in Python.
- 2019 numAnalysis: Algorithms for numerical approximation methods in MATLAB.
- 2018 deepFlood: Deep learning framework written for NASA to track floods using satellite imagery.
- 2018 abyss: Rogue-like platform video game in Java.
- 2018 BearMaps: Web mapping service for the city of Berkeley in Java.
- 2018 deque: Data structure implementation in Java.
- 2017 simpleNeuralNet: General feedforward neural network API in Python.
- 2017 multiAgentSearch: Implementation of search algorithms in Python.
- 2017 housingEstimate: Machine learning model for predicting housing prices in scipy.
- 2017 hdimGeo: Interactive map of biocollections data from the NSF Hawaii Dimensions project in R.
- 2017 kokua: Open-source R-package of tools and data for Hawaiian ecology.
- 2017 hdimShiny: Web application for ecological data wrangling.
- 2016 hdimDB: Open-source package of tools for biocollections database management in R.
- 2016 schemeInterpreter: Direct executor for Scheme programs in Python.
- 2016 ants: Object-oriented tower defense game in Python.
- 2016 yelpMaps: Interactive map of Yelp data in Bay Area in Python.
- 2016 hog: Turn based dice rolling game with an AI opponent in Python.

## Grants, honors & awards

2019	Nominee, Kenneth Priestley Award
2019	Nominee, Outstanding Student Leadership Award, UC Berkeley
2018	REU Research Fellowship, National Science Foundation Grant No. 1757923
2017	Dean's List, UC Berkeley
2016	Freeman Foundation Scholarship
2016	ASUC Student Opportunity Fund Grant, UC Berkeley
2016	ASUC Academic Opportunity Fund Grant, UC Berkeley

## Skills

PROGRAMMING: Python, R, Java, SQL, MATLAB, Scheme (Lisp), Bash.

LIBRARIES, APIS, AND TECHNOLOGIES: TensorFlow, Keras, Spark, Jupyter, scipy, numpy, pandas, matplotlib, Seaborn, stats, devtools, ggplot2, shiny, plyr, testthat, Git,  $\LaTeX$ , Markdown, AutoCAD.

LANGUAGES: English (native), Cantonese (native), Mandarin (basic), Spanish (basic).

## Memberships & affiliations

Regents of the University of California

- Public Engagement and Development Committee
- Finance and Capital Strategies Committee
- Investments Committee

Berkeley Student Cooperative

Cal Hiking and Outdoor Society (abbr. CHAOS, formerly the UC Hiking Club)

Cal Entomology Club

Cal Boxing

## Miscellaneous

COLLABORATIVE DISTANCE

Erdős number: 4

Einstein number: 3