

# Kehang Han

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[www.kehanghan.com](http://www.kehanghan.com)  
[www.github.com/kehang](https://www.github.com/kehang)

- EDUCATION**     **Massachusetts Institute of Technology**, Cambridge, MA  
*PhD Candidate*     Aug 2012 - Dec 2017  
*Advisor: William Green*
- Chemical Engineering and Computer Science
  - Overall GPA: 4.9/5.0
- Tsinghua University**, Beijing, China  
*Bachelor of Science*     Sep 2008 - Jul 2012
- Chemical and Biological Engineering
  - Rank: 1/120
- SOFTWARE DEVELOPMENT**     **Reaction Mechanism Generator (RMG, [rmg.mit.edu](http://rmg.mit.edu))**  
*Lead Developer*     Jan 2013 - Present
- Led a team with 10 people at MIT and Northeastern University
  - Applied high performance computing (memory reduction, parallelism) to RMG
  - Maintained cross-platform (Linux, OSX, Windows) compatibility
  - Constructed Continuous Integration Test Platform (RMG-tests) for RMG
- PROtein Design Algorithm (PRODA)**  
*Developer*     Sep 2011 - Jul 2012
- Development team member of PRODA, a software for designing protein using C
  - Designed and implemented a heuristic optimization algorithm for MILP
  - Achieved 20 times speed-up for large enzyme systems
- DATA & WEB EXPERIENCE**     **Amazon Product Review Summarizer (SRS, [srs.mit.edu](http://srs.mit.edu))**  
*Lead Developer*     Mar 2016 - Sep 2016
- Led a team with 3 people at MIT
  - Built an NLP web application in Python, Flask and MongoDB
  - Designed and implemented four-step pipeline:  
review scraping, aspect classification, sentiment scoring and front-end interaction
  - Particularly developed product-aspect classifiers using MaxEntropy and Word2Vec
- Molecule2Vec: Molecular ConvNets**  
*Lead Developer*     May 2016 - May 2017
- Constructed graph convolutional neural networks for molecule/graph property prediction
  - Reduced prediction error by a factor of 25 compared with descriptor-based models
  - Integrated data generation, nightly-build and user base for continuous learning

**Supply Chain Planner in Shell Oil**, Hamburg, Germany  
*Data Science Intern*  
*Supervisor: Marc Thomas*

Jun 2015 - Sep 2015

- Participated in building supply chain optimization tool
- Created analysis and visualization tools using R for scenario study

**MIT Sidney-Pacific Website ([s-p.mit.edu](http://s-p.mit.edu))**

*Web Chair*

Apr 2016 - Present

Sidney-Pacific website is an MIT dorm website that has integrated many residential services, which include automatic campus shuttle tracking, smart laundry reminder, inventory management and analysis system, real-time package notifications, house repairing and dorm events publicizing, etc.

- Major developer for the website written in PHP and SQL
- Developed resident package management system
- Automated inventory check-in-out, usage analysis and reporting system

**ENGINEERING CONSULTING** **SGE Energia**, Houston, TX  
*Engineering Consultant Lead*

Jan 2014 - Mar 2014

- Led a team with 3 MIT engineering consultants
- Designed and constructed lab-scale Fischer-Tropsch (FT) reactor
- Developed methodology for pressure drop estimation at various operation conditions
- Studied heat transfer in FT reactor and applied it to guiding reactor start-up

**AWARDS  
HONORS**

**Energy Analytics**

- MIT Energy Initiative (MITEI) Fellowship in 2016
- 3rd Prize (3/30 teams) of MIT Energy Hackathon in 2015
- 3rd/300+ in Mitsui Chemicals Cup Process Design Contest in 2011

**Mathematics**

- 2nd Prize in American Mathematical Contest in Modeling in 2011
- 1st Prize in Chinese National Mathematical Contest in Modeling in 2010

**Physics & Chemistry**

- 1st Prize in Beijing Physics Contest in 2009
- 1st Prize in Chinese National Olympic Chemistry Competition in 2007

**SELECTED  
PUBLICATIONS**

- **K. Han**, W.H. Green, and R.H. West, *On-the-fly pruning for rate-based reaction mechanism generation*, Computers & Chemical Engineering
- X. Huang, **K. Han**, and Y. Zhu, *Systematic optimization model and algorithm for binding sequence selection in computational enzyme design*, Protein Science
- Y. Zhang, **K. Han**, D. Lu, and Z. Liu, *Reversible encapsulation of lysozyme within mPEG-b-PMAA: experimental observation and molecular dynamics simulation*, Soft Matter

**SKILLS**

**Languages:** Python, C/C++, Java, R, Matlab, PHP  
**Database:** SQL, mongoDB  
**Design:** Illustrator, Lightroom, Photoshop  
**Others:** AWS, server admin