

# Kehang Han

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

<b>EDUCATION</b>	<b>Massachusetts Institute of Technology</b> , Cambridge, MA <i>PhD Candidate</i> <i>Advisor: William Green</i>	Aug 2012 - Dec 2017
	<ul style="list-style-type: none"><li>• Chemical Engineering and Computer Science</li><li>• Overall GPA: 4.9/5.0</li></ul>	
	<b>Tsinghua University</b> , Beijing, China <i>Bachelor of Science</i>	Sep 2008 - Jul 2012
	<ul style="list-style-type: none"><li>• Chemical and Biological Engineering</li><li>• Rank: 1/120</li></ul>	
<b>SOFTWARE EXPERIENCE</b>	<b>Reaction Mechanism Generator (RMG, <a href="http://rmg.mit.edu">rmg.mit.edu</a>)</b> <i>Lead Developer</i>	Jan 2013 - Present
	<ul style="list-style-type: none"><li>• Led a team with 10 people at MIT and Northeastern University</li><li>• Applied high performance computing (memory reduction, parallelism) to RMG</li><li>• Maintained cross-platform (Linux, OSX, Windows) compatibility</li><li>• Constructed Continuous Integration Test Platform (RMG-tests) for RMG</li></ul>	
	<b>PROtein Design Algorithm (PRODA)</b> <i>Developer</i>	Sep 2011 - Jul 2012
	<ul style="list-style-type: none"><li>• Development team member of PRODA, a software for designing protein using C</li><li>• Designed and implemented a heuristic optimization algorithm for MILP</li><li>• Achieved 20 times speed-up for large enzyme systems</li></ul>	
<b>DATA &amp; WEB EXPERIENCE</b>	<b>Amazon Product Review Summerizer (SRS, <a href="http://srs.mit.edu">srs.mit.edu</a>)</b> <i>Lead Developer</i>	Mar 2016 - Sep 2016
	<ul style="list-style-type: none"><li>• Led a team with 3 people at MIT</li><li>• Built an NLP web application in Python, Flask and MongoDB</li><li>• Designed and implemented four-step pipeline: review scraping, aspect classification, sentiment scoring and front-end interaction</li><li>• Particularly developed product-aspect classifiers using MaxEntropy and Word2Vec</li></ul>	
	<b>Molecule2Vec: Molecular ConvNets</b> <i>Lead Developer</i>	May 2016 - May 2017
	<ul style="list-style-type: none"><li>• Constructed graph convolutional neural networks for molecule/graph property prediction</li><li>• Boosted prediction accuracy by a factor of 25 compared with descriptor-based models</li><li>• Integrated data generation, nightly-build and user base for continuous learning</li></ul>	

**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