

KEVIN YANG
CURRICULUM VITAE
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EDUCATION

Ph.D. in Artificial Intelligence 2019-
UC Berkeley
Advisor: Prof. Dan Klein

M.Eng., Computer Science 2018-2019
MIT
Advisor: Prof. Regina Barzilay
Thesis: *Are Learned Molecular Representations Ready for Prime Time?*

B.S., Computer Science and Mathematics 2015-2019
MIT
Double major; GPA 5.0/5.0

AWARDS AND HONORS

NSF Graduate Fellowship 2019
Putnam Top 200 2016-2018
International Linguistics Olympiad Gold Medal (5th place) 2015
USA Math Olympiad Honorable Mention (14th place) 2013-2015

RESEARCH INTERESTS

I am broadly interested in AI in the context of language and game-playing, particularly in designing more modular and/or language-controllable agents. I am also interested in neural architectures for structured domains such as chemistry.

PUBLICATIONS

A Streaming Approach for Efficient Batched Beam Search

Kevin Yang, Violet Yao, John DeNero, Dan Klein
EMNLP 2020

We propose an efficient batching strategy for variable-length decoding on GPU architectures, demonstrating substantial speedups over existing fixed-width and variable-width beam searches.

Improving Molecular Design by Stochastic Iterative Target Augmentation

Kevin Yang, Wengong Jin, Kyle Swanson, Regina Barzilay, Tommi Jaakkola
ICML 2020

We use a simple and theoretically motivated self-training approach guided by an external property predictor to substantially improve over state-of-the-art approaches in molecular design.

Uncertainty Quantification Using Neural Networks For Molecular Property Prediction

Lior Hirschfeld, Kyle Swanson, Kevin Yang, Regina Barzilay, Tommi Jaakkola
JCIM 2020

We comprehensively evaluate and compare several approaches for uncertainty estimation in neural models on molecular property prediction tasks.

A Deep Learning Approach to Antibiotic Discovery

Jonathan Stokes, Kevin Yang, Kyle Swanson, Wengong Jin, et al.
Cell 2020

We use computational property prediction models to screen drug databases for potential antibiotic activity, and discover previously unknown antibiotics with novel mechanisms of action which are effective even against bacteria which are resistant to commonly used antibiotics.

Analyzing Learned Molecular Representations for Property Prediction

Kevin Yang, Kyle Swanson, Wengong Jin, Connor Coley et al.
JCIM 2019

We introduce a new variant of message-passing neural networks, demonstrating consistently strong performance that significantly improves over existing baselines on many datasets. We also carefully benchmark models on both public and proprietary industry datasets.

Learning Multimodal Graph-to-Graph Translation for Molecular Optimization

Wengong Jin, Kevin Yang, Regina Barzilay, Tommi Jaakkola
ICLR 2019

We introduce an encoder-decoder architecture for molecular optimization that operates directly on the molecular graph, substantially outperforming string-based baselines as well as pre-existing state of the art.

PROFESSIONAL ACTIVITIES

Teaching Assistant, MIT 2018
Course: Introduction to Inference

Research Intern, ASAPP 2018
12- week summer internship researching and productionizing natural language processing models on difficult real-world text datasets.

Equities Research Intern, DE Shaw 2017
11-week summer internship in equities research group. I developed a model predicting existence of hidden liquidity in equities exchanges, with strong results on real-world data.

Software Engineering Intern, Google 2016
12-week summer internship focusing on improving search ad efficiency and optimization.

LANGUAGES

Proficient in Python and Java; experienced in C, R, HTML, Javascript. Also proficient in PyTorch. Natively fluent in Mandarin Chinese, advanced Japanese (JLPT N3), advanced Spanish.

REFERENCES

Dan Klein, Professor
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Regina Barzilay, Professor
CSAIL, MIT
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