

# Alex Renda

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## Education

Ph.D. student in EECS.  
MIT CSAIL, 2018-present.  
Working on learning-based systems and efficient neural networks, advised by Michael Carbin.

S.M. in Electrical Engineering and Computer Science.  
MIT, 2020.  
Worked on efficient neural networks, advised by Michael Carbin.

B.S. (Summa Cum Laude) in Computer Science with Honors, with a minor in Linguistics.  
Cornell University, 2018.  
Worked on programming abstractions for natural language and intelligent systems as an undergraduate member of the Capra group, advised by Adrian Sampson.

## Publications

*Programming with Neural Surrogates of Programs.*  
**Alex Renda**, Yi Ding, and Michael Carbin.  
*Onward!*, 2021.  
<https://alexrenda.com/onward-2021>

*DiffTune: Optimizing CPU Simulator Parameters with Learned Differentiable Surrogates.*  
**Alex Renda**, Yishen Chen, Charith Mendis, and Michael Carbin.  
*MICRO*, 2020.  
<https://arxiv.org/abs/2010.04017>

*TIRAMISU: A Polyhedral Compiler for Dense and Sparse Deep Learning.*  
Riyadh Baghdadi, Abdelkader Nadir Debbagh, Kamel Abdous, Fatima Zohra Benhamida, **Alex Renda**, Jonathan Elliott Frankle, Michael Carbin, and Saman Amarasinghe.  
*Workshop on Systems for ML, NeurIPS*, 2019.  
<https://arxiv.org/abs/2005.04091>

*Comparing Rewinding and Fine-tuning in Neural Network Pruning.*  
**Alex Renda**, Jonathan Frankle, and Michael Carbin.  
*ICLR*, 2020.  
Oral presentation (<2% of submitted papers).  
<https://arxiv.org/abs/2003.02389>

*BHive: A Benchmark Suite and Measurement Framework for Validating x86-64 Basic Block Performance Models.*  
Yishen Chen, Ajay Brahmakshatriya, Charith Mendis, **Alex Renda**, Eric Atkinson, Ondřej Sýkora, Saman Amarasinghe, and Michael Carbin.  
*IISWC*, 2019.  
<https://groups.csail.mit.edu/commit/papers/19/ithemal-measurement.pdf>

*Ithemal: Accurate, Portable and Fast Basic Block Throughput Estimation using Deep Neural Networks.*  
Charith Mendis, **Alex Renda**, Saman Amarasinghe, and Michael Carbin.  
ICML, 2019.

Best Paper award at the ML for Systems workshop at ISCA 2019.

<https://arxiv.org/abs/1808.07412>

*Programming Language Support for Natural Language Interaction.*

**Alex Renda**, Harrison Goldstein, Sarah Bird, Chris Quirk, and Adrian Sampson.

SysML, 2018.

<http://mlsys.org/Conferences/doc/2018/56.pdf>

Extended draft: <https://arxiv.org/abs/1709.04991>

## Teaching

CS 4120 - Introduction to Compilers.

Teaching Assistant. Cornell University, Spring 2018.

CS 2112 - Object Oriented Programming and Data Structures - Honors.

Consultant. Cornell University, Fall 2015, Fall 2016.

## Honors and Awards

NSF GRFP Honorable Mention, 2020

Best Paper award for Ithemal at the ML for Systems workshop at ISCA 2019

MIT Great Educators Fellowship, 2018-2019

Cornell University: Summa Cum Laude with Honors, 2018

## Academic Service

OOPSLA 2022 – Artifact Evaluator / External Review Committee

ECOOP 2022 – Artifact Evaluator / External Review Committee

ICLR 2022 – Reviewer

POPL 2022 – Artifact Evaluator

OOPSLA 2021 – Artifact Evaluator

NeurIPS 2021 – Reviewer

ICML 2021 – Reviewer

ASPLOS 2021 – Artifact Evaluator

ICLR 2021 – Reviewer (Outstanding Reviewer)

AAAI 2021 – Emergency Reviewer

NeurIPS 2020 – Reviewer

ICML 2020 – Reviewer (Top 33% Reviewer)

## Institutional Service

PLSE Seminar Co-Coordinator – Spring 2021 - present

PLSE Coffee Chat Co-Coordinator – Fall 2020 - present

PLSE Lunch Co-Coordinator – Fall 2019 - Spring 2020, Fall 2021 - present

EECS GAAP Mentor – Fall 2020, Fall 2021

Fast ML Reading Group Coordinator – Fall 2019 - Spring 2020

## Extracurricular Projects

CUAUV: Software Team member 2014-2018, Computer Vision group lead 2017-2018.

## Industry Experience

Summer 2020: MLSys Research Intern at OctoML

Summer 2018: Software Engineering Intern at Two Sigma

Summer 2017: Software Engineering Intern at Two Sigma

Summer 2016: Software Engineering Intern at Facebook

Summer 2014: System Validation Intern at Tesla

## Relevant Coursework

Fundamentals of Program Analysis, Armando Solar-Lezama, MIT, Fall 2019.

Randomized Algorithms, David Karger, MIT, Spring 2019.

Machine Learning, Devarat Shah, David Sontag, and Suvrit Sra, MIT, Fall 2018.

Distributed Algorithms, Nancy Lynch, MIT, Fall 2018.

Category Theory, Ross Tate, Cornell University, Spring 2018.

Advanced Machine Learning Systems, Chris de Sa, Cornell University, Fall 2017.

Certified Software Systems, Andrew Myers, and Greg Morrisett, Cornell University, Fall 2017.

Applications of Parallel Computers, David Bindel, Cornell University, Fall 2017.

Advanced Programming Languages, Adrian Sampson, Cornell University, Spring 2017.

Introduction to Compilers, Andrew Myers, Cornell University, Spring 2016.