Alex Renda

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Education

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

S.M. in Electrical Engineering and Computer Science.
MIT, 2020.
Thesis: *Comparing Rewinding and Fine-tuning in Neural Network Pruning*.
Worked with Michael Carbin on efficient neural networks.

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

Publications and Drafts

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

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

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

Tiramisu: A Polyhedral Compiler for Dense and Sparse Deep Learning
Riyadh Baghdadi, Fatima Zohra Benhamida, **Alex Renda**, Jonathan Frankle, Michael Carbin, Saman Amarasinghe.
MLSys: Workshop on Systems for ML at *NeurIPS* 2019.
https://arxiv.org/abs/2005.04091

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, 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, 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, Adrian Sampson.
SysML, 2018.
Extended abstract: `https://mlsys.org/Conferences/doc/2018/56.pdf`
Full pre-print: `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 2016, Fall 2015.

Honors and Awards

NSF GRFP Honorable Mention, 2020

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

MIT EECS Great Educators Fellowship, 2018-2019

Cornell University: Summa Cum Laude, with Honors

Academic Service

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–March 2020

Fast ML Reading Group Coordinator — Fall 2019–March 2020

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

Extracurricular Projects

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

Relevant Coursework

Fundamentals of Program Analyis, Prof. Armando Solar-Lezama, Fall 2019

Randomized Algorithms, Prof. David Karger, Spring 2019,

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

Distributed Algorithms, Prof. Nancy Lynch, Fall 2018

Category Theory, Prof. Ross Tate, Spring 2018

Advanced Machine Learning Systems, Prof. Chris de Sa, Fall 2017

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

Applications of Parallel Computers, Prof David Bindel, Fall 2017

Advanced Programming Languages, Prof. Adrian Sampson, Spring 2017

Introduction to Compilers, Prof. Andrew Myers, Spring 2016