

Colin White

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RESEARCH INTERESTS	My work spans machine learning and theoretical computer science. I am particularly interested in automated machine learning (AutoML) and neural architecture search (NAS), both in designing new methods and in steering the field to give reproducible, fair comparisons between methods.	
EXPERIENCE	Abacus.AI , San Francisco, CA <i>Head of Research</i> <i>Research Scientist</i>	Oct. 2020 – Present May 2019 – Oct. 2020
EDUCATION	Carnegie Mellon University , Pittsburgh, PA <i>Ph.D. in Computer Science</i> Advisor: Maria-Florina Balcan Thesis committee: Avrim Blum, Anupam Gupta, Yury Makarychev, and David Woodruff Amherst College , Amherst, MA <i>B.A. in Computer Science and Mathematics</i> GPA: 3.76/4.0	Sep. 2014 – Dec. 2018 Sep. 2010 – May 2014
HONORS AND AWARDS	Top 10% of reviewers and expert reviewer at ICML 2021 2 nd place at the CVPR NAS unseen data competition (77 submissions) Top 10% of reviewers at NeurIPS 2020 Top 50% of reviewers at NeurIPS 2019 National Defense Science & Engineering Fellowship NeurIPS Student Travel Grant Amherst Memorial Fellowship CMU Graduate Student Association/Provost Student Travel Grant Conference on Learning Theory (COLT) Student Travel Grant John Woodruff Simpson Fellowship Post-Baccalaureate Summer Research Fellowship, Amherst College Computer Science Prize, Amherst College <i>Summa Cum Laude</i> , Amherst College Henry F. Dunbar Award, Amherst College Swimming and Diving Team	July 2021 June 2021 Sep. 2020 Sep. 2019 Sep. 2014 – Dec. 2018 Dec. 2018 Sep. 2016 – Aug. 2017 Sep. 2016 – Aug. 2017 May 2017 Sep. 2014 – Aug. 2016 Sep. 2014 May 2014 May 2014 May 2014
JOURNAL PUBLICATIONS	“ <i>k</i> -center Clustering under Perturbation Resilience.” With Maria-Florina Balcan and Nika Haghtalab. Transactions on Algorithms Journal (TALG) 2020. “Small dynamical heights for quadratic polynomials and rational functions.” With Rob Benedetto, Ruqian Chen, Trevor Hyde, and Yordanka Kovacheva. Experimental Mathematics, 2014.	
CONFERENCE PUBLICATIONS	“Exploring the Loss Landscape in Neural Architecture Search” <u>Colin White</u> , Sam Nolen, Yash Savani. <i>Conference on Uncertainty in Artificial Intelligence (UAI)</i> , 2021. “BANANAS: Bayesian Optimization with Neural Architectures for Neural Architecture Search.” <u>Colin White</u> , Willie Neiswanger, Yash Savani. <i>AAAI Conference on Artificial Intelligence (AAAI)</i> , 2021.	

“A Study on Encodings for Neural Architecture Search.”
Colin White, Willie Neiswanger, Sam Nolen, Yash Savani.
Selected for spotlight presentation.
Neural Information Processing Systems (NeurIPS), 2020.

“Intra-Processing Methods for Debiasing Neural Networks.”
Yash Savani, Colin White, Naveen Govindarajulu.
Neural Information Processing Systems (NeurIPS), 2020.

“Robust Communication-Optimal Distributed Clustering Algorithms.”
With Pranjali Awasthi, Ainesh Bakshi, Maria-Florina Balcan, and David Woodruff.
International Colloquium on Automata, Languages, and Programming (ICALP) 2019.

“Data-Driven Clustering via Parameterized Lloyd’s Families.”
With Maria-Florina Balcan and Travis Dick.
Selected for spotlight presentation.
Advances in Neural Information Processing Systems (NeurIPS) 2018.

“Learning-Theoretic Foundations of Algorithm Configuration for Combinatorial Partitioning Problems.”
With Maria-Florina Balcan, Vaishnavh Nagarajan, and Ellen Vitercik.
Conference on Learning Theory (COLT) 2017.

“Data Driven Resource Allocation for Distributed Learning.”
With Travis Dick, Mu Li, Krishna Pillutla, Maria-Florina Balcan, and Alex Smola.
International Conference on Artificial Intelligence and Statistics (AISTATS) 2017.

“Learning Combinatorial Functions from Pairwise Comparisons.”
With Maria-Florina Balcan and Ellen Vitercik.
Conference on Learning Theory (COLT) 2016.

“ k -center Clustering under Perturbation Resilience.”
With Maria-Florina Balcan and Nika Haghtalab.
International Colloquium on Automata, Languages, and Programming (ICALP) 2016.

“Lower Bounds in the Preprocessing and Query Phases of Routing Algorithms.”
Colin White.
European Symposium on Algorithms (ESA) 2015.

THESES

“New Aspects of Beyond Worst-Case Analysis.”
Colin White.
Ph.D. Thesis, Carnegie Mellon University, 2018.

“Lower Bounds in the Preprocessing and Query Phases of Routing Algorithms.”
Colin White.
Undergraduate Thesis, Amherst College, 2014.

WORKSHOP PUBLICATIONS

“NAS-Bench-x11 and the Power of Learning Curves”
Shen Yan*, Colin White*, Yash Savani, Frank Hutter
CVPR Workshop on Neural Architecture Search, 2021.

“How Powerful are Performance Predictors in Neural Architecture Search?”
Colin White, Arber Zela, Binxin Ru, Yang Liu, Frank Hutter.
Selected as a contributed talk.
ICLR Workshop on Neural Architecture Search, 2021.

“A Study on Encodings for Neural Architecture Search.”
Colin White, Willie Neiswanger, Sam Nolen, Yash Savani.
ICML Workshop on AutoML, 2020.

“Local Search is State of the Art for Neural Architecture Search Benchmarks.”

Colin White, Sam Nolen, Yash Savani.

ICML Workshop on AutoML, 2020.

“Neural Architecture Search via Bayesian Optimization with a Neural Network Prior.”

Colin White, Willie Neiswanger, Yash Savani.

NeurIPS Workshop on Meta Learning, 2019.

“Deep Uncertainty Estimation for Model-based Neural Architecture Search.”

Colin White, Willie Neiswanger, Yash Savani.

NeurIPS Workshop on Bayesian Deep Learning, 2019.

“DECO: Debiasing through Compositional Optimization of Machine Learning Models.”

Naveen Govindarajulu, Colin White.

NeurIPS Workshop on Robust AI in Financial Services, 2019.

“Differentiable Functions for Combining First-order Constraints with Deep Learning via Weighted Proof Tracing.”

Naveen Govindarajulu, Colin White.

NeurIPS Workshop on Knowledge Representation to ML, 2019.

“Data Driven Resource Allocation for Distributed Learning.”

With Travis Dick, Mu Li, Krishna Pillutla, Maria-Florina Balcan, and Alex Smola.

AAAI Workshop on Distributed Machine Learning, 2019.

“An Improved Parallel Iterative Algorithm for Stable Matching.”

Colin White, Enyue Lu.

SuperComputing Student Poster Session, 2013.

TALKS

Bananas, Encodings, and Local Search: Insights into Neural Architecture Search.

AutoML Seminar, ELLIS Berlin and Freiburg, Germany (virtual).

Nov. 2020

An Introduction to Neural Architecture Search.

Abacus.AI webinar.

Oct. 2020

Abacus.AI workshop.

Dec. 2019

AICamp webinar.

Jul. 2019

Data-Driven Clustering via Parameterized Lloyd’s Families.

Automated Algorithms Seminar at CMU.

May 2018

Robust Communication-Optimal Distributed Clustering Algorithms.

Theory Lunch Seminar at CMU.

Apr. 2017

k-center Clustering under Perturbation Resilience.

Simons Institute BWCA Workshop.

Nov. 2016

Theory Lunch Seminar at CMU.

Sep. 2016

Dagstuhl Workshop on Learning Theory.

Aug. 2015

Machine Learning Dept. Journal Club Class at CMU.

Sep. 2016

SERVICE

Organizer for the AutoML Workshop at ICML 2021

2021

Journal reviewer for JMLR, TPAMI, Algorithmica, TALG

2015 – 2020

Conference reviewer for NeurIPS, ICML, ICLR, AISTATS, AAAI, UAI, FOCS, STOC, SODA, ITCS

2015 – 2020

Doctoral Review Committee Member, CMU

2015 – 2018

A panel of graduate students and faculty who oversee the Ph.D. program

FreeCSD, a social organization for the Ph.D. department at CMU

2015 – 2018

Theory Lunch Organizer, CMU

2016

Ph.D. Admitted Students Open House Organizer, CMU

2016