

# 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	<b>Abacus.AI</b> , San Francisco, CA	
	<i>Head of Research</i>	<b>Oct. 2020 – Present</b>
	<i>Research Scientist</i>	<b>May 2019 – Oct. 2020</b>
	<b>Toyota Technological Institute at Chicago (TTIC)</b> , Chicago, IL	
EDUCATION	<i>Academic Intern</i>	<b>May 2017 – Aug. 2017</b>
	Advisor: Yury Makarychev	
	<b>Carnegie Mellon University</b> , Pittsburgh, PA	
	<i>Ph.D. in Computer Science</i>	<b>Sep. 2014 – Dec. 2018</b>
HONORS AND AWARDS	Advisor: Maria-Florina Balcan	
	Thesis: New Aspects of Beyond Worst-Case Analysis	
	<b>Amherst College</b> , Amherst, MA	
	<i>B.A. in Computer Science and Mathematics</i>	<b>Sep. 2010 – May 2014</b>
HONORS AND AWARDS	Cumulative GPA: 3.76/4.0, Computer Science GPA: 3.96/4.0, Mathematics GPA: 3.95/4.0	
	Advisor: Lyle McGeoch	
	Thesis: Lower Bounds on the Runtime of Routing Algorithms for Graphs of Low Highway Dimension	
	Top 10% of reviewers at NeurIPS 2020	<b>Sep. 2020</b>
	Top 50% of reviewers at NeurIPS 2019	<b>Sep. 2019</b>
	NDSEG Fellowship	<b>Sep. 2014 – Dec. 2018</b>
	NeurIPS Student Travel Grant	<b>Dec. 2018</b>
	Amherst Memorial Fellowship	<b>Sep. 2016 – Aug. 2017</b>
	CMU Graduate Student Association/Provost Student Travel Grant	<b>Sep. 2016 – Aug. 2017</b>
	Conference on Learning Theory (COLT) Student Travel Grant	<b>May 2017</b>
	Heidelberg Laureate Forum, invited as a Young Researcher	<b>Sep. 2017</b>
	John Woodruff Simpson Fellowship	<b>Sep. 2014 – Aug. 2016</b>
	Post-Baccalaureate Summer Research Fellowship, Amherst College	<b>Sep. 2014</b>
	Computer Science Prize, Amherst College	<b>May 2014</b>
	<i>Summa Cum Laude</i> , Amherst College	<b>May 2014</b>
	Henry F. Dunbar Award, Amherst College Swimming and Diving Team	<b>May 2014</b>
PREPRINTS	“BANANAS: Bayesian Optimization with Neural Architectures for Neural Architecture Search.” C. White, W. Neiswanger, Y. Savani. In submission, 2020.	
	“Local Search is State of the Art for Neural Architecture Search Benchmarks.” C. White, S. Nolen, Y. Savani. In submission, 2020.	
JOURNAL PUBLICATIONS	“ <i>k</i> -center Clustering under Perturbation Resilience.” With M. Balcan and N. Haghtalab. Transactions on Algorithms Journal (TALG) 2020.	

“Small dynamical heights for quadratic polynomials and rational functions.”  
With R. Benedetto, R. Chen, T. Hyde, and Y. Kovacheva.  
Experimental Mathematics, 2014.

CONFERENCE  
PUBLICATIONS

“A Study on Encodings for Neural Architecture Search.”  
C. White, W. Neiswanger, S. Nolen, Y. Savani.  
**Selected for spotlight presentation.**  
*Neural Information Processing Systems (NeurIPS)*, 2020.

“Intra-Processing Methods for Debiasing Neural Networks.”  
Y. Savani, C. White, N. Govindarajulu.  
*Neural Information Processing Systems (NeurIPS)*, 2020.

“Robust Communication-Optimal Distributed Clustering Algorithms.”  
With P. Awasthi, A. Bakshi, M. Balcan, and D. Woodruff.  
International Colloquium on Automata, Languages, and Programming (ICALP) 2019.

“Data-Driven Clustering via Parameterized Lloyd’s Families.”  
With M. Balcan and T. Dick.  
**Selected for spotlight presentation.**  
Advances in Neural Information Processing Systems (NeurIPS) 2018.

“Learning-Theoretic Foundations of Algorithm Configuration for Combinatorial Partitioning Problems.”  
With M. Balcan, V. Nagarajan, and E. Vitercik.  
Conference on Learning Theory (COLT) 2017.

“Data Driven Resource Allocation for Distributed Learning.”  
With T. Dick, M. Li, V. Pillutla, M. Balcan, and A. Smola.  
International Conference on Artificial Intelligence and Statistics (AISTATS) 2017.

“Learning Combinatorial Functions from Pairwise Comparisons.”  
With M. Balcan and E. Vitercik.  
Conference on Learning Theory (COLT) 2016.

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

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

THESES

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

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

WORKSHOP  
PUBLICATIONS

“A Study on Encodings for Neural Architecture Search.”  
C. White, W. Neiswanger, S. Nolen, Y. Savani.  
*ICML Workshop on AutoML*, 2020.

“Local Search is State of the Art for Neural Architecture Search Benchmarks.”  
C. White, S. Nolen, Y. Savani.  
*ICML Workshop on AutoML*, 2020.

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

C. White, W. Neiswanger, Y. Savani.

*NeurIPS Workshop on Meta Learning*, 2019.

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

C. White, W. Neiswanger, Y. Savani.

*NeurIPS Workshop on Bayesian Deep Learning*, 2019.

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

N. Govindarajulu, C. White.

*NeurIPS Workshop on Robust AI in Financial Services*, 2019.

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

N. Govindarajulu, C. White.

*NeurIPS Workshop on Knowledge Representation to ML*, 2019.

“Data Driven Resource Allocation for Distributed Learning.”

With T. Dick, M. Li, V. Pillutla, M. Balcan, and A. Smola.

*AAAI Workshop on Distributed Machine Learning*, 2019.

“An Improved Parallel Iterative Algorithm for Stable Matching.”

C. White, E. 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

*Program Committee Member for ICML, UAI, AAAI*

**2016, 2019, 2020**

*Reviewer for JMLR, Algorithmica, TALG, TPAMI, NeurIPS, ICML, AISTATS,*

**2015 – 2020**

*AAAI, UAI, FOCS, STOC, ITCS*

*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**

#### LANGUAGES AND FRAMEWORKS

Python, PyTorch, TensorFlow, CUDA, AWS, GCP, OpenCV, Linux, Java, Julia,  
MATLAB, SQL, Jupyter, L<sup>A</sup>T<sub>E</sub>X

#### OTHER INTERESTS

Rock climbing, distance running