MICHAEL NEUDER

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michaelneuder.github.io

EDUCATION

Harvard University 2020 - 2021
Master of Science, Computational Science and Engineering *Cambridge, MA*

University of Colorado 2015 - 2020
Bachelor of Arts, Computer Science & Bachelor of Arts, Mathematics *Boulder, CO*

University of Oxford 2018
Visiting Student *Oxford, UK*

INDUSTRY EXPERIENCE

Google August 2021-Present
Software Engineer III *Cambridge, MA*

- Control-plane engineer for a cloud storage SaaS backup and disaster recovery product.
- Promoted from Software Engineer II (L3) to Software Engineer III (L4) October 2022.

Google
Software Engineering Intern

- *Summer 2020; Madison, WI (remote due to COVID-19); Network Infrastructure*
  - Increased throughput of the multi-cloud high-performance networking stack by 2x.
- *Summer 2019; Cambridge, MA; Google Flights*
  - Deployed an internal data retrieval service that reduced end-to-end latency by 3x.
- *Fall 2018; Sunnyvale, CA; Google Workspace*
  - Leveraged an NLP model to recommend managed applications for corporate devices.

Lockheed Martin & LASP[1] Feb 2017 - Oct 2017
Software Engineering Intern *Boulder, CO*

- *User interfaces.* Created and tested graphical interfaces using the Qt framework in Python and C++.

RESEARCH EXPERIENCE

EconCS Group, Harvard University August 2019 - August 2021
Research Assistant under supervision of Dr. David C. Parkes *Cambridge, MA*

- *Distributed consensus.* Studied Proof-of-Stake consensus of two major blockchains, Ethereum and Tezos.

Santa Fe Institute June 2018 - August 2018
Undergraduate Research Fellow: Summer 2018 REU *Santa Fe, NM*

- *Computer vision.* Applied object detection algorithms to drone footage of migrating caribou herds.

Bradley Lab, University of Colorado April 2017 - Present
Research Assistant under supervision of Dr. Elizabeth Bradley *Boulder, CO*

- *Information theory.* Presented a novel algorithm to detect local noise in time-series data.

Mozer Lab, University of Colorado March 2017 - May 2019
Research Assistant under supervision of Dr. Michael Mozer *Boulder, CO*

- *Machine learning.* Encoded image quality evaluation metrics into deep convolutional neural networks.

[1] Laboratory of Atmospheric and Space Physics https://lasp.colorado.edu/home/

PUBLICATIONS

- **M. Neuder**, D. J. Moroz, R. Rao, D. C. Parkes, "Defending Against Malicious Reorgs in Tezos Proof-of-Stake," *ACM Conference on Advances in Financial Technologies (AFT) 2020.* https://doi.org/10.1145/3419614.3423265.
- **M. Neuder**, D. J. Moroz, R. Rao, D. C. Parkes, "Selfish Behavior in the Tezos Proof-of-Stake Protocol," *Cryptoeconomic Systems (CES) Conference 2020.* https://arxiv.org/pdf/1912.02954.pdf.
- **M. Neuder**, D. J. Moroz, R. Rao, D. C. Parkes, "Strategic Liquidity Provision in Uniswap v3," https://arxiv.org/pdf/2106.12033.pdf.
- **M. Neuder**, E. Bradley, E. Dlugokencky, J. W. C. White, J. Garland, "Detection of Local Mixing in Time Series using Permutation Entropy," *Physical Review E 103, 022217.* https://doi.org/10.1103/PhysRevE.103.022217.
- **M. Neuder**, D. J. Moroz, R. Rao, D. C. Parkes, "Low-cost attacks on Ethereum 2.0 by sub-1/3 stakeholders," *Workshop on Game Theory in Blockchain at the 16th Conference on Web and Internet Economics (WINE).* https://econcs.pku.edu.cn/wine2020/wine2020/Workshop/GTiB20_paper_8.pdf.
- J. Garland, T. Jones, **M. Neuder**, J. W. C. White, E. Bradley, "An information-theoretic approach to extracting climate signals from deep polar ice cores," *Chaos: An Interdisciplinary Journal of Nonlinear Science* 29:101105 (2019). https://doi.org/10.1063/1.5127211.
- J. Garland, T. Jones, **M. Neuder**, V. Morris, J. W. C. White, E. Bradley, "Anomaly Detection in Paleoclimate Records using Information Theory," *Entropy* 20(12):931 (2018). https://doi.org/10.3390/e20120931.
- **M. Neuder**, M. Mozer, "Image Evaluation Using Deep Learning," *Colorado Journal of Applied Mathematics* Fall 2018 Edition:43-54 (2018). github.com/michaelneuder/image_quality_analysis/blob/master/final.pdf

TALKS

- **Detection of Local Mixing in Time Series using Permutation Entropy** - 2021 European Geosciences Union General Assembly.
- **Low-cost attacks on Ethereum 2.0 by sub-1/3 stakeholders** - Workshop on Game Theory in Blockchain at the 16th Conference on Web and Internet Economics 2020. video.
- **Defending Against Malicious Reorgs in Tezos** - ACM Advances in Financial Technology 2020. video.
- **Selfish Behavior in the Tezos PoS Protocol** - Crytptoeconomic Systems Conference 2020. video.
- **Animal Tracking using Deep Learning** - Santa Fe Institute 2018. video.

AWARDS

- **2020**. *Computer Science Discovery Learning Award.* Recognizes graduating seniors from the University of Colorado who excelled in academic research.
- **2019-2020**. *Sieglinde Talbott Haller Scholarship in Mathematics.* Given to high performing Math majors at the University of Colorado.
- **2019**. *Honorable Mention: Computing Research Association Outstanding Undergraduate Researcher Award.* Nominated by Dr. Liz Bradley.
- **2017**. *Phi Beta Kappa.* Elected junior year for completing 100 credit hours with a GPA greater than 3.7.
- **2015-2020**. *President Joseph A. Sewall Esteemed Scholar Award.* Merit-based scholarship given to Colorado residents to attend the University of Colorado.
- **2015-2020**. *Dean's List.* Earned for achieving a GPA of 3.75 or greater as a full-time student.

TECHNICAL STRENGTHS

Languages	C++, Go, Python. Learning Rust and Solidity.
Tools	git, TensorFlow, Keras, gRPC, protocol buffers, Linux, Jupyter, LaTeX