

# Waylon Jepsen

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Primitive Bits inc.

jepsen@primitive.xyz

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## Education

Colorado State University  
*Computer Science Ph.D. Program*

Aug. 2022 - Present

Thesis Topic: Economic activity in distributed ledgers.

Colorado State University  
*Master of Science M.S*

Jan 2020 - May 2022

Thesis Topic: Tropical Algebraic Modeling of TCP Congestion.

Colorado State University  
*Bachelor of Science in General Mathematics & Philosophy*  
Thesis Topic: Elliptic Curve Cryptography

Aug. 2012 - May 2017

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## Industry Involvement

ETHGlobal: Ethereum San Francisco (ETHSF'22)

Crypto Economics Security Conference (CESC'22)

Zero-Knowledge Proof Workshop (affiliated with CESC22)

ACM Conference on Economics and Computation (EC'22)

NFT New York City(NFTNYC'22)

NFT Los Angeles (NFTLA'22)

Ethereum Denver (Speaker) (ETHDEN'22)

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## Research & Experience

1. W. Jepsen, *Replicating Portfolios: Constructing Permissionless Derivatives*, preprint, 2022. Available at arXiv: 2205.09890.
2. W. Jepsen *Cyclic Redundancy Checks and Error Detection*, preprint, 2022. Available arxiv: 2205.11344

*Research Engineer, Primitive Bits, April 2022 - Current.*

- Perform research and development of decentralized financial instruments.
- Wrote technical educational content.
- Primitive has recently closed a series A fundraising round for \$9M

*Researcher, Network Engineering, Colorado State University, May 2021 - May 2022.*

- Investigated the tropical algebraic semirings.
- Modeled TCP Congestion with tropical algebra.
- Built discrete event simulators to validate the model.

*Developer Relations, Hedera Hashgraph, July 2021 - April 2022.*

- Produced written and recorded content to educate software engineers on how to use our software development kits.
- Led workshops to teach software engineers how to write and deploy their smart contracts to the Hedera EVM.
- Worked on open cryptography problems concerning threshold cryptography and Shamir's Secret Sharing.

*Systems Administrator, Colorado State University Aug 2020 - Dec 2021.*

- Assisted the systems team with the administration of over 500 Linux workstations.
- Built automation scripts, recorded offline backups, and managed security upgrades.
- Performed database management using MariaDB, PostgreSQL, and MongoDB.

*Cyber Security Analyst, Academic Computing and Networking services Jan 2017 - 2018.*

- Performed research and development of distributed ledger technology to improve the security of our University networks.
- Presented on identity authentication and phishing attacks.
- Created voting security software using distributed ledger technology.

## Research Talks

*Introduction to Decentralized Finance.* Financial Technology Seminar at Colorado State University, Nov 2022

*Analysis of Statistical Arbitrage in Blockchains.* Database Security Group at Colorado State University, Oct 2022

*Analysis of Constant Function Market Makers.* DARPA Riser at Colorado State University, Sep 2022

*Constant Function Market Makers.* Database Security Group at Colorado State University, Aug 2022

*Tropical Algebraic Analysis of TCP.* Computer Science Seminar at Colorado State University, May 2022

*Cyclic Redundancy Checks and Error Detection.* Computer Science Seminar at Colorado State University, Aug 2021

*The Lazarus Group: North Korea's Cyber War.* Cyber Security Seminar at Colorado State University, May 2021

*Epistemic Temporal Logic and Information flow Security.* Cyber Security Seminar at Colorado State University, Jan 2021

*HTTPS What it is and why it's Important.* Cyber Security Seminar at Colorado State University, Aug 2019

*The Mathematics of Elliptic Curve Cryptography.* Cyber Security Seminar at Colorado State University, April 2019

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## Teaching and Awards

CS 364: Computer Security, *Supervised College Teaching*  
DARPA Riser *Research Award*

Spring 2022  
Fall 2022

## Masters Advisor

<b>Name</b>	Craig Partridge
<b>Department</b>	Colorado State Computer Science
<b>Position</b>	Department Chair
<b>Contact</b>	Craig.Partridge@colostate.edu

## Doctoral Advisor

<b>Name</b>	Amani Altarawneh
<b>Department</b>	Colorado State Computer Science
<b>Position</b>	Assistant Professor
<b>Contact</b>	Amani.Altarawneh@colostate.edu