

Daniel Cartwright




Work Experience

2017–Present **Programmer**, *Layer 3 Communications*.




- I am currently working on a network SIEM using Haskell. It requires managing a distributed system that ingests network logs and enriches them to look for suspicious activity, with a set of rules that helps correlate multiple single-event logs into batched alerts.
- I wrote an application that detects anomalies in network traffic by doing Fourier Analysis on a stream of DNS packets.
- I performed the initial setup of and currently maintain a *Hydra server* for use as GitHub CI for Layer 3 Communications. The server is capable of distributing pre-built binaries to developers.

Open Source Programming




diet.

- First complete design and implementation of Discrete Interval Encoding Trees, a class of data structures for extremely memory efficient storage/lookup of enumerable data.
-  | Haskell |  3577 |  2815

refined.

- I maintain refined, a library that allows the encoding of simple refinement types inside of GHC Haskell.
-  | Haskell |  469 |  157

freq.

- Cryptanalytic frequency analysis tool, using a linguistic digram approach and training data. Used at Layer 3 Communications to score domain names by validity.
-  | Haskell |  358501 |  17161

chessai.

- As of right now I contribute to over 240 repositories on GitHub, over ninety percent of which are open source.

Activities

2010–2014 **Club**, *University Interscholastic League - STEM*, President.

Academic competitions organised by the University of Texas at Austin.

Participated in Mathematics, Computer Science,

Calculator Applications, Number Sense, Science, and Placed State in 2011, Regionals in 2012, 2013, and 2014.

Skills

Programming Haskell, Nix

Software Linux, NixOS, git, L^AT_EX