Alex Ledger

Resume

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Education

2012–Present **Bachelor of Arts in Math-Computer Science**, *Reed College* (in progress).

Undergraduate Thesis

Topic *Improving Methods for Secure Multiparty Computation (in progress)*

Field Cryptography

Advisor Professor Adam Groce

Description Explores current methods of secure multiparty computation, a cryptographic protocol for allowing two people who do not trust each other to work together. Thesis also gives proof-of-concept prototypes of new techniques which speed up the computation.

Experience

Research

2015–Present **Math-Computer Science Research Assistant**, *Reed College*, Portland.

- Worked with professor Adam Groce on Oblivious RAM (ORAM), a subfield of cryptography focused on obfuscating a client's access patterns to a server.
- Implemented old and new ORAM protocols in C++, wrote cryptographic proofs that the protocols were secure, and in the process of writing a paper.

2015–Present **Artificial Life Lab Research Assistant**, *Reed College*, Portland.

- Worked with professor Mark Bedau on examining whether culture and technology exhibits aspects of evolution, using U.S. patents as a proxy for "technology in culture".
- Employed many statistical and machine learning techniques to analyze the patents database including neural nets, natural language processing techniques, regression models, anomaly detection algorithms, and other network algorithms.

Industry

2014 **Software Engineering Intern**, *The Program PDX*, Portland.

Used C++, OpenFrameworks and video technologies such as the Microsoft Kinect and webcams to construct engaging applications for children's museums and retail stores

2014-2015 **Webmaster of Reed Student Body Website**, *Reed College*, Portland.

Administered a LAMP server and maintained and built Python-Django web applications for the Reed College student body website.

2014-2015 **Teaching Assistant**, *Reed College*, Portland.

Teaching Assistant for Math 121, Reed's introduction to computer science course.

Skills

Intermediate	R, Javascript, Haskell, Clojure, Mathematica
Experienced	Python, C, C++, Java, Latex, MongoDB
Technologies	Experience with Linux, Git version control.

Coursework

- Algorithms and Data Structures
- Crytography
- Computability and Complexity
- Linear Algebra
- 2 years of Physics
- Probability
- Real Analysis
- Abstract Algebra
- Multivariable Calculus
- 2 years of Economics

More Information

Github	github.com/aled1027
LinkedIn	linkedin.com/pub/alex-ledger/61/ab4/75a

Other Interests

- Machine Learning
- Climate Change
- Cryptography
- Artificial Intelligence
- Human-Computer Interaction
- Network and Graph Theory
- Dynamical Systems and Chaos Theory