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 Computation (in progress)*

Field   Cryptography

Advisor   Professor Adam Groce

Description   Explores methods of secure computation, a cryptographic protocol for allowing two people who do not trust each other to work together. I implement new, faster methods of secure computation in C and achieve an order of magnitude speed up over prior work.

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.

2016–Present   **Computational Biology Research Assistant**, *Reed College*, Portland.
- Worked with professor Anna Ritz on genomic analysis.
- Statistically analyzed genome mapping algorithms and developed methods for detecting and characterizing structual variants.

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

Experienced	Python, C, C++, Java, Latex, R, Bash, MongoDB, NoSQL
Experienced	Linux, Git version control, Subversion, HTML, Haskell
Intermediate	Scala, SQL, Ruby, Javascript, Clojure, Mathematica, Matlab

Coursework

- Computer Systems
- Algorithms and Data Structures
- Computability and Complexity
- Real Analaysis
- Multivariable Calculus
- 2 years of Economics
- Cryptography
- Probability
- Abstract Algebra
- Linear Algebra
- 2 years of Physics

More Information

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

Other Interests

- Cryptography
- Machine Learning
- Climate Change
- Artificial Intelligence
- Network and Graph Theory
- Dynamical Systems and Chaos Theory
- Internet of Things