

# Irfan Sharif

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## SKILLS

### PROGRAMMING

C++ • C • Ruby • Go • Python  
Java • C# • BASH • MATLAB  
Lua • R • Haskell

### TOOLS

Git • vim • AWS EC2 • Redis  
ElasticSearch • Rails • Chef • UNIX  
Docker • Memcached • NGINX

## EDUCATION

### UNIVERSITY OF WATERLOO

CANDIDATE FOR BACHELOR OF  
APPLIED SCIENCE IN HONOURS

#### COMPUTER ENGINEERING

Expected April 2019 | GPA: 3.92  
Concentration in Software Engineering

#### Coursework

Operating Systems  
Embedded Microprocessor Systems  
Algorithms & Data Structures  
Digital Computers  
Discrete Mathematics

#### Online Coursework

Machine Learning	(Stanford)
Programming Abstractions	(Stanford)
Introduction to Algorithms	(MIT)
Artificial Intelligence	(MIT)
SICP	(MIT)

## AWARDS

Shopify Hackdays Winner	(3rd Place)
Presidential Scholarship	(98th percentile)
Oxford Intelligentsia	(1st Place)
Dean's Merit List Awardee	(95th percentile)

## ACTIVITIES/INTERESTS

Piano, Football, Skating & Chess  
Participated in various software  
mentorship programs for incoming  
first-years, developed strong  
interpersonal skills & leadership qualities

## EXPERIENCE

### SHOPIFY | SOFTWARE ENGINEERING INTERN

Production Engineering | Jan 2016 – April 2016

- Designed a robust build system with agents running on AWS Spot Instances
- Engineered termination-resilient agents with dynamic workload re-distribution
- Implemented auto-scaling & optimal bidding strategies for Spot Instance agents
- Heavily optimized test orchestration system handling **10,000** builds per day across multiple nodes with cost savings of **60,000 USD** per month

### SOLINK | SOFTWARE ENGINEERING INTERN

Cloud Migration Team | May 2015 – Sep 2015

- Decomposed monolith platform into independent & resilient microservices
- Migrated SQL datastore to load-balanced & distributed ElasticSearch cluster
- Set up CI build pipeline & built integration test suite for the platform

## RESEARCH

### UWATERLOO COMPUTER AIDED REASONING LAB | RESEARCHER

Sep 2015 – Jan 2016 | Waterloo, ON

Worked with Prof. Vijay Ganesh on boolean SAT solvers optimizing search strategies. Independently discovered parallelization algorithm by clustering SAT clauses.

## PROJECTS

### DIT | Go

Private Project

- Distributed version control system for directories synced with Dropbox
- Command-line interface with local caching & emphasis on data integrity
- Replicated git workflow including cheap branching model, commits, log, multiple remotes, clones, merge strategies & garbage collection

### CHAOS-MONKEYS | RUBY

Shopify Hackdays Winner

- DSL for defining infrastructure as a connected graph & inducing multi-level failure scenarios to test/tune resiliency algorithms
- Chaos-monkeys run 'monkey scripts' that introduce network lag, fill disk space, shut down nodes, fail databases & throttle load-balancers
- Enlists relationships between components generating a 'resiliency matrix' to identify implicit dependencies & single points of failure

### QUEUE | C

git.io/vr3ZK

- Lightweight wrapper built around POSIX priority message queues
- Thread-safe asynchronous callbacks allowing 'subscription' to queues
- Benchmarked to **425,000 RPS** across multiple producers/consumers

### CEREBRUM | RUBY

git.io/vwRxP

- Implementation of artificial neural networks using the back-propagation algorithm, benchmarked to **0.052%** training error & correctness of **93%**
- Batched input support, multiple hidden layers & persistent model state

### RLISP | LISP, RUBY

git.io/vr3Zi

- LISP interpreter with procedures, variables, conditionals, nested scoping, first-order functions & lambda-expressions
- Tokenizer, Parser, AST generator & evaluation bundled for REPL session