

# walterschulze

programmer

## contact

Stellenbosch  
South Africa

awalterschulze at gmail  
awalterschulze.github.io  
linkedIn profile

## languages

bilingual in Afrikaans  
and English

## programming

Expert:  
Golang, Protocol  
Buffers

Proficient:  
Git, BNF, Latex

Learning:  
Haskell

Hackable:  
Javascript, Bash,  
Bootstrap, Docker,  
PEG, RelaxNG,  
JsonSchema

Past:  
Python, Java, Matlab,  
XSLT, PHP, SQL, C,  
Assembler, Delphi,  
Turbo Pascal

## employment

2011 ...

### Vastech

*Programmer*

Since 2011 I have been working at Vastech, a company that develops and sells hardware and software that is used for massive passive surveillance of communication networks. I have been part of a team that is developing a distributed database from scratch. This database was focused on fast writing of time series data. We developed this all in Go.

Amongst other things I have:

- Designed and developed the query language and matching algorithm.
- Refactored and redesigned the metadata serialization scheme.
- Initiated and developed the company's open source policy.
- Redesigned our schema and index configuration from a compile time to run time configurable dependency.
- Coordinated a design with the team and developed the update mechanism for metadata in the write fast distributed database.
- Developed and lead the intern program. This consisted of more than 20 unique interns over a period of 2 years and a maximum of 12 at one time.

Stellenbosch, South Africa

2010 – 2011

### Entersekt

*Junior Developer*

Developing a Java and J2ME code generator in Python while assisting on various other projects involving PHP, SQL, XML-RPC and Network Security.

Stellenbosch, South Africa

before 2010

### more

*Part Time Consultant, Teaching Assistant and Intern*

Please see my LinkedIn Profile

South Africa

## education

2014 ...

### PhD in Computer Science (part time)

Stellenbosch University

At present I am actively working on a validation language for tree structures. This is all being open sourced at <https://github.com/katydid>. I have also built a playground at <http://katydid.github.io/play> to help with getting quick feedback from potential users.

2007–2009

### MSc in Computer Science (cum laude)

Stellenbosch University

*A Formal Language Theory Approach to Music Generation*

We investigate the suitability of applying some of the probabilistic and automata theoretic ideas, that have been extremely successful in the areas of speech and natural language processing, to the area of musical style imitation. By using music written in a certain style as training data, parameters are calculated for (visible and hidden) Markov models (of mixed, higher or first order), in order to capture the musical style of the training data in terms of mathematical models. These models are then used to imitate two instrument music in the trained style.

2006	<b>BSc Honours</b> in Computer Science Year project (passed with distinction): A bridge type card game which is played on mobile phones against each other. This included the implementation of a J2ME Client, Java Server, Database and Artificial Intelligent Players. Included courses on: Advanced Algorithms and Data Structures, Pattern Recognition, Artificial Intelligence, Simulation, Applied Automata Theory, Embedded Systems Programming and Concurrent Programming.	Stellenbosch University
2003–2005	<b>Bachelor</b> of Computer Science Included courses on: Operating Systems, Low Level, Cryptography, Networks, Coding Theory, System Design, Algorithms and Data Structures, Databases and Formal Language Theory.	Stellenbosch University
2011 ...	<b>Various Online Certificates</b> Please see my CV repository	Coursera and Edx

## publications

2010	<b>Music Generation with Mixed and Higher Order Hidden Markov Models</b> <small>IEEE Multimedia</small> Walter Schulze and Prof Brink van der Merwe
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## awards

2013	<b>Developed and Lead Intern Program</b> We started with about 2 interns per year. I developed and lead the intern program up to the point where we now take up to 17 interns per year. I was given one of the three awards Vastech gives out every year.	Vastech
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## open source projects

2015	<b>Katydid</b> Validation Language for Trees	Go, Serialization Formats, PhD
2013	<b>gogoprotobuf</b> Protocol Buffers for Go with Gadgets	Go, Protocol Buffers, 200+ Stars
2015	<b>LetMeGRPC</b> Generates a web form GUI from a GRPC specification	Go, Javascript, Protocol Buffers, GRPC
2012	<b>GoGraphviz</b> Go Parser for Graphviz's Dot Format	Go, Graphviz, Parser Generator
2015	<b>git-anchor</b> Anchors the versions of your git dependencies	Git, Go, Bash

## interests

**professional:** Automata, Programming Language Design, Computational Neuroscience  
**personal:** Guitar, Music Production, Music Technology