




Tobias Schottdorf, PhD

IT Consultant & Software Engineer

Profile

An excellent **problem solver** with a penchant for tackling complex situations. Thinking laterally and writing clearly, I build **transparent**, **testable** and **maintainable** systems. Favorites include distributed systems, DevOps and the dive into the unknown.

- Highly versatile, with 5+ years of experience on a wide range of projects.
- Strong theoretical background in Computer Sciences and Mathematics; quick learner.
- Excellent communication and teaching skills with university-level teaching experience.
- Avid user of linux (10+ years) and active open source contributor.

 Available for in-person and remote projects beginning October 2014.

Skills

Languages

- Javascript
- Go
- Python
- Ruby
- JAVA
- C/C++/Rust
- Clojure

Technology

- {Postgre, My}SQL
- MongoDB
- Redis
- Docker
- Vagrant
- Chef & Puppet
- AWS & Heroku

Tools

- Git & Mercurial
- Tornado/Gevent
- Websockets
- Django & Celery
- nodeJS
- AngularJS
- scikit-learn

Education

2011–2013 **Ph.D.**, Universität Bonn.

Dr. rer. nat – Analysis of Nonlinear Wave Equations (Mathematical Physics), grade 0.7

2009–2011 **M.A.**, University of California, Berkeley, California.

Analysis of Nonlinear Wave Equations (Mathematical Physics), no grade

2006–2009 **Studies of Mathematics and Computer Sciences**, Universität Bonn.

Vordiplom in Computer Sciences (grade 1.2) and Mathematics (grade 1.0)

1997–2006 **Abitur**, Gymnasium zum Altenforst, Troisdorf (grade 1.4)

⚙️ Selected Experience

CockroachDB Core Contributor.

June 2014 ongoing CockroachDB is grassroots effort – run largely by a team of Ex-Googleers – to build from scratch a distributed key/value datastore which supports **ACID transactional semantics** and **versioned values** as first-class features, with structured data API and SQL layers on top. The primary design goal is **global consistency** and **survivability**. CockroachDB aims to tolerate disk, machine, rack, and even datacenter failures with **minimal latency disruption** and **no manual intervention**, all in one binary with **minimal configuration** and no required auxiliary services.

See <http://www.wired.com/2014/07/cockroachdb/>,  [cockroachdb/cockroach](https://github.com/cockroachdb/cockroach).

Tasks & Roles

- Actively participate in design discussions.
- Prototype and devise key features. Current focus on downtime-free, automatic redistribution of data within clusters. Previous work across the bank, notably in encoding and storage.
- Extensive participation in the code review process.

Core Tools & Concepts

- | | | |
|---------------------------|-----------|-----------|
| ➤ Go & CGO | ➤ Vagrant | ➤ Chef |
| ➤ C/C++ | ➤ Docker | ➤ RocksDB |
| ➤ Test-Driven Development | | |

Shippo, Inc. Technical Lead & DevOp, Scalable REST API for International Shipping.

2014 4 months Worked with the founding team during their tenure in San Francisco's renowned start-up accelerator **500 Startups** to restructure and greatly expand the existing restful web API into a **scalable, reliable** and **easily deployable** system. The project's reliance on a multitude of calls to external APIs in connection with the underlying Python/Django stack provided a number of interesting challenges.

Tasks & Roles

- Carried out central systems improvements to achieve scalability. Notably introduced a **distributed task queue** as well as proper SQL **connection pooling**, switched to asynchronous networking and removed reliance on polling.
- Handled **deployments, migrations** and other various DevOps duties, and provided **technical liaison** to customer key accounts.
- Instructed dev team on the next steps, reviewed their process and worked together with them on new features, improvements and bug fixes in an environment that required an extremely rapid pace.
- Helped secure \$1.5M in seed funding, offered permanent CTO position.

Shippo continues to thrive, see <http://500.co/growth-never-sleeps-shippo-after-accelerator>.

Core Tools & Concepts

- | | | |
|---------------------|-----------------------|-------------------------|
| ➤ Django/PostgreSQL | ➤ Celery (Task Queue) | ➤ Websockets & Webhooks |
| ➤ Redis | ➤ Vagrant | ➤ Load Testing |
| ➤ Tornado/Gevent | ➤ Heroku | |

cisha GmbH **Principal Investigator**, Fraud Detection In Online Chess.

2013
4 months Developed a **versatile, scalable** system for fraud detection in chess. Capabilities include thorough analyses based on mathematical models using chess engines and a **cost-effective, modularizable** system to flag potential cheaters for intensive inspection.

Tasks & Roles

- Investigate and evaluate various mathematical models and propose a best candidate, rating performance of the proposed techniques based on the analysis of games of suspected cheaters and honest players.
- Implement and tune the system as a **scalable node.JS based restful API**, carefully designed to handle up to **5000 games per minute**.

Core Tools & Concepts

- | | | |
|---------------------|-------------|-------------------------|
| ➤ node.JS & express | ➤ JAVA | ➤ Python & scikit-learn |
| ➤ couchDB | ➤ JSON/REST | ➤ git |

Tyx-Shells **CTO**

2004–2008 Built and ran the front- and backend IT stack for a company specializing in providing a variety of **on-demand services**, with tasks ranging from front-end development to low-level **server management**. At the heart of the company was a complex automated system I created in Python, synchronizing customer's ordered services and their **automated setup**, teardown as well as their distribution on the server fleet consisting of various UNIX based systems. Clients were able to remotely administer (change settings, stop, start) their services through a **web interface** connecting the front- and backend systems.

Tasks & Roles

- Develop the web frontend: public and customer-only, including administration of their services.
- Build the backend system, automatizing the preparation and allocation of services ordered by clients, as well as their termination.
- Setup and manage the server fleet, reacting quickly to possibly security issues.

Core Tools & Concepts

- | | | |
|---------|-------------------|----------|
| ➤ PHP | ➤ JS/AJAX/JSON | ➤ Python |
| ➤ MySQL | ➤ Linux, FreeBSD | ➤ SVN |
| ➤ HTML | ➤ Shell Scripting | |

Developer, Form Generator.

2008
2 months The client (4000+ employees, 50+ countries) needed to address a recurring need to flexibly create forms both for internal and external use while keeping all data in-house and deploying forms on different systems. I designed and implemented a tool that enabled end users to easily create forms with all the functionality required, completely branded, administrable and readily deployed anywhere on the client's systems.

Core Tools & Concepts

- | | |
|---------|------------|
| ➤ MySQL | ➤ PHP/HTML |
|---------|------------|

Developer, Internal Business Network.

2007
8 months A client with over 4000 employees in over 50 countries required an **internal professional network** to shorten communication channels, allowing every employee to effortlessly find their desired point of contact based on role, keywords, location or personal data, among others.

Tasks & Roles

- Consult with the client, compiling a list of key features and wishes (including **role based administration** and export functionalities).
- Create Mockups and review with the client.
- Build a working prototype, reviewing with the client in tight loops.
- Provide support for the migration of old processes to incorporate the new software.

Core Tools & Concepts

- MySQL
- PHP/HTML
- SOAP/JSON

Front-End Developer, Content Management Systems.

2007
2 months For a large hospital attached to a German university, the existing website was rebuilt with the goals that content be

- **accessible**, i.e. easily accessible by the visually impaired and screenreaders, and
- created and managed by users without a technical background.

Those goals were reached using a TYPO3 together with a **standards-compliant**, clean layout. The existing content was reorganized into the new frontend.

Core Tools & Concepts

- TYPO3
- XHTML/CSS

Developer (internship), Numerical Mathematics.

2006
2 weeks Efficiently implement algorithms dealing with the **numerical approximation** of solutions to second-order elliptical partial differential equations (at Universität Bonn).

Core Tools & Concepts

- C++
- Matlab
- Numerical Linear Algebra

Developer (internship), Task Queue.

2004
1 month Devised a PERL-based **task queue** server distributing computationally intensive jobs among a set of workers, returning the results to the callee via email.

Scholarships

- 2011–2013 **Studienstiftung des deutschen Volkes**, doctoral scholarship.
- 2011–2013 **Bonn International Graduate School**, doctoral scholarship.
- 2009–2011 **Studienstiftung des deutschen Volkes**, scholarship.
- 2009–2010 **Deutscher Akademischer Austauschdienst**, scholarship for study in US.
- 2004–2005 **Schüler an der Universität**, study of Computer Sciences at Universität Köln.

References

- GitHub  <http://github.com/tschottdorf>
- Martin Kremers, IT Freelancer & Consultant
☎ +49 1577 783 0942, ✉ info@martinkremers.de
- Christian Szameit, Key Account Manager, SIG Combibloc North America
☎ +1 267 283 8572, ✉ christian.szameit@sig.biz

Languages

German **Native Speaker**

English **Bilingual**

Spanish **Fluent**

Level B1

Arabic **Basic Knowledge**

Modern Standard Arabic

Turkish **Basic Knowledge**