

# Martin Thoma

## *Curriculum Vitae*

### Work Experience

Student research assistant

*developing neural nets for on-line handwriting recognition*

My bachelors thesis includes getting on-line data of handwritten mathematical symbols, preprocessing, extracting features and using neural nets to classify those symbols. The data was collected with [write-math.com](http://write-math.com). All results are available there, too.

Software Developer

*improving KIT lecture translator*

I've implemented and integrated an unsupervised acoustic model training framework into KIT lecture translator system for automatic model adaption.

Scientific lector

*L<sup>A</sup>T<sub>E</sub>X, German and computer science*

I've corrected a script for computer engineering.

Tutor for programming

*teaching students programming at university*

I taught people about 30 students how to program in Java. Coding conventions and basic OOP was part of the course. All of my German presentations are online. → presentations

Freelancer at KTC

*programming for a consulting company*

At KTC, I gained first experiences with business-logic and a big, but algorithmically not challenging project. To be honest, I only fixed some Java bugs.

Student research assistant at Institute of Toxicology and Genetics, KIT

*participating in a university research project*

In summer 2011 I worked for over a month for a research project at KIT. I have written bash scripts for file conversions, fixed some bugs and re-written a slow Mathematica script in a much faster Python version. But it quickly turned out that this project had a lot of C++ source which was rarely commented or documented. I realized, that I wouldn't have time for this project after beginning my studies at university.

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### Education

from 2014 **Master of Science**  
Computer Science  
*Karlsruhe Institute of Technology*

2011 – 2014 **Bachelor of Science**  
Computer Science  
*Karlsruhe Institute of Technology (KIT)*  
*Carnegie Mellon University (CMU)*  
Thesis about **On-line Recognition of Handwritten Mathematical Symbols** ([Link](#))

2004 – 2010 **Abitur**  
Intensive course physics and mathematics  
*Paul-Klee-Gymnasium Gersthofen*

### Awards

2010 **Winner**  
*Federal Competition for Computer Science*

2009 **2nd prize - regional competition**  
*Youth Research Competition*

2008 **1st prize**  
*data analysis competition at University of Augsburg*

2007 **Prize for science and research**  
*FOCUS pupils competition*

### Computer Skills

Basic Knowledge    JavaScript  
Linux, SQL, PHP

Intermediate Knowledge    L<sup>A</sup>T<sub>E</sub>X, Java, HTML

Good Knowledge    Python

### Language Skills

German    mother tongue

English    Cambridge Certificate – C1

French    DELF A2

## Work Experience

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### Freelance Work

*building an online service*

since 2011

I have started to work as a freelancer at the beginning of 2011. I have developed an online-service which helped schools to coordinate their dates. I have sold this online service to two schools in bavaria and three other schools were interested. Unfortunately, the ministry of education of Bavaria released an application with similar functionality in 2012. This was the reason why I decided to shut down my service.

### HackIts, Puzzles and Challenges

*ProjectEuler, bright-shadows.net and many more*

since 2006

I really love solving logical, algorithmical or math puzzles and participated in competitions. I started to solve puzzles in 2006 and I still like them. This was the reason why I participated in a practical course at KIT for preparation for ICPC. It was fun, but I found out that many people are much faster in producing C++ code that passed the tests than I am. However, as I've been very successful at the Federal Competition for Computer Science ("Bundeswettbewerb Informatik") it seems as if I'm better in problem solving if I get more time to think about it.

## Future plans and motivation

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The next step in my academic career is finishing the masters degree in computer science with a minor in mathematics.

Besides my studies, I have built a machine learning students group called *Machine Learning Karlsruhe* (ml-ka.de). In this group we organize regular „Paper Discussion Groups“ in which we, talk about papers about convolutional networks. We want have regular talks about machine learning in general as well as practical sessions where we try to apply the algorithms.

## Projects

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|-----------|---|
| Currently | <b>A Survey of Semantic Segmentation</b><br><i>writing a review paper about the work in the area</i>  |
| 01/2016   | <b>Art in Machine Learning</b><br><i>a little project to help people understand my fascination about the topic</i>  |
| 05/2015   | <b>Semantic Segmentation with CNNs</b><br><i>classifying street for self-driving cars</i>   |
| 11/2013   | <b>Book about Geometry and Topology</b><br><i>writing an introduction to geometry and topology</i> → read more  |
| 06/2013   | <b>Interpolation</b><br><i>creating an interactive HTML5/JS-example for interpolation</i> → read more   |
| 06/2012   | <b>Matrix multiplication</b><br><i>examining algorithms and libraries for matrix multiplication</i> → read more   |
| 09/2011   | <b>Blogging on martin-thoma.com</b><br><i>about Algorithms, the Web, University, ...</i>  |
| 06/2011   | <b>Community Chess</b><br><i>This is a platform for programmers. They can use the API to create A.I.s that play chess against each other.</i> → read more |

## Online Courses

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|---------|--|----------|
| 09/2013 | <b>Artificial Intelligence for Robotics</b><br><i>finished 10/2013</i>             | Udacity  |
| 06/2013 | <b>Introduction to Artificial Intelligence</b><br><i>finished 08/2013</i>          | Udacity  |
| 05/2012 | <b>Algorithms I</b><br><i>finished 07/2012</i>                                     | Stanford |
| 06/2010 | <b>Introduction to Computer Science and Programming</b><br><i>finished 09/2010</i> | MIT      |

## Profiles

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|---------------|---------------------------------|
| StackExchange | careers.stackoverflow.com/thoma |
| arXiv         | arxiv.org/a/thoma_m_1           |
| LinkedIn      | linkedin.com/in/themoosemind    |