Peter Goldsborough

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WORK EXPERIENCE

- **Bloomberg**, London, United Kingdom 11/2016 — 04/2017
  Software Engineering Intern
  - Currently deciding on team and project.

- **Google**, London, United Kingdom 08/2016 — 11/2016
  Software Engineering Intern, gTech Team
  - Will be working on visualization software for Google's advertisement technologies.

- **Technische Universität München**, Germany 04/2016 — Present
  Research Assistant, Chair for Database Systems
  - Investigating the efficiency of various interprocess communication techniques for low-latency transmission of database queries.
  - Implementing a software library that transparently replaces domain sockets by injecting a custom shared memory transmission channel.
  - This can speed up a variety of applications by an order of magnitude.
  - Currently more than 7000 lines of low level system programming in C, on Linux.

- **Institute of Networked and Embedded Systems**, Klagenfurt University, Austria 10/2014 — Present
  Research Intern
  - Applying machine-learning and data-science techniques to make NIALM algorithms unsupervised.
  - Invented custom $O(N \log N)$ clustering algorithm to replace existing $O(N^2)$ solution.
  - Wrote 8363 lines of C++ code so far (working 5-10 hours/week)

- **Institute of Networked and Embedded Systems**, Klagenfurt University, Austria 07/2014
  Summer Intern
  - Ported Non-Intrusive-Appliance-Monitoring (NIALM) algorithms from MATLAB to Python, C++ and SQL.
  - Visualized real-time appliance energy data in a Heroku cloud app using Python, Flask, PostgreSQL, HTML, CSS and Javascript; still live at nilm.herokuapp.com.

EDUCATION

- **BG | BRG St. Martin High School**, Villach, Austria 09/2011 — 06/2015
  - Graduated as valedictorian with straight A's across all subjects and my thesis.
  - 120-page diploma thesis on *Developing a Digital Synthesizer in C++*, investigating the mathematics, digital signal processing and software engineering behind digital music synthesizers.
  - School president 2013/2014; long-time involvement in student representation.
  - 3rd place in state rhetoric competition.
  - 4th place in state philosophy contest.
  - Participated in the Atlas Shrugged essay competition organized by the Ayn Rand Institute, writing on the topic of laissez-faire capitalism and objectivist philosophy.

- **Technical University of Munich (TUM)**, Germany 10/2015 — Present

  B.Sc. in Computer Science

  - Highlights:
    - ⋆ Admitted with a score of 100/100.
    - ⋆ Top 5% in every course in first semester.
    - ⋆ Leading a team of 12 fellow student developers in the *Computer Architecture* practicum (*Großpraktikum*). We are developing an architecture-independent assembly simulator. At most 20 out of almost 1000 students are selected for this practicum. Next to regular development tasks I am responsible for the (agile) coordination of the team's workflow and time schedule. Also, I support all teams with technical expertise in C++ and general software development.
  - First Semester:
    - ⋆ Discrete Mathematics; 95th percentile.
    - ⋆ Introduction to Database Systems; 99th percentile.
    - ⋆ Introduction to Computer Architecture; 97th percentile.
    - ⋆ Introduction to Computer Science; 98th percentile.
    - ⋆ Fundamentals of Programming: 99th percentile (291.5/292 points).
  - Second Semester:
    - ⋆ Introduction to Algorithms and Data Structures.
    - ⋆ Introduction to Computer Networks and Distributed Systems.
    - ⋆ Computer Architecture Practicum.
    - ⋆ Linear Algebra.
    - ⋆ Data-Mining Seminar (Topic: Deep Learning with TensorFlow).

- Online Education 07/2013 — Present

  - I have taken a number of online courses on Coursera, Udacity, MIT OpenCourseWare next to my regular education to further my horizon and dive deeper into topics that interest me.
  - Coursera:
    - ⋆ Algorithms I (Princeton University)
    - ⋆ Algorithms II (Princeton University)
    - ⋆ Machine Learning (Stanford University)
    - ⋆ Learning How To Learn (University of California, San Diego)
  - Udacity:
    - ⋆ Machine Learning nano-degree (organized by Google)
    - ⋆ Deep Learning (organized by Google)
  - MIT OpenCourseWare:
    - ⋆ Various lectures on efficient algorithms and data structures on undergraduate and graduate level.

SKILLS

- Very Good: C++, Python, Java, C
- Good: Qt, LaTeX[1], HTML, CSS/SASS, SQL
- Intermediate: Arduino, AVR C, Git, Assembly
- Prior Experience: JavaScript, Flask, Heroku, VHDL
- (Operating) Systems: **OS X, Linux**, Windows, Arduino, ATMEL μ-controllers

PROJECTS

- Various projects found at github.com/goldsborough; snippets and scripts at gist.github.com/goldsborough
- Personal blog & website, old at thecodeinn.blogspot.com, new at goldsborough.me.
- In-progress open-source C++ & Qt-based music synthesizer *Anthem* (26,575 lines of code so far) alongside 120-page high-school diploma thesis on the math, digital signal processing and engineering behind it.

[1] See CV. *Beware*: recursion.

- From February 5th to 6th 2015 I head organized a two-day session of the European Youth Parliament (EYP) in Villach, Austria. I managed a team of five organizers, together with whom I raised over 1300 € in public and private funding, negotiated deals with McDonalds and Subway to supply us with food and beverages for our coffee and lunch breaks – in exchange for various forms of advertisement – and raised enough interest to get our session on national television and into various regional newspapers.
- I worked on a four-part freelance tutorial project *Building a Text Editor with PyQt* published on Binpress, currently with almost 70 stars on GitHub. It was mentioned in PythonWeekly (issue 155) and PyCoder's Weekly (issues 131 and 132) newsletters.
- I'm leading a team to develop an architecture-independent assembly simulator in C++14 and Qt5 for educational and scientific purposes. We are primarily focusing on RISC-V as an open-source Instruction Set Architecture (ISA), while keeping all technical doors open to support other architectures such as x86 or ARMv7. Next to development, I am responsible for coordination and management of the team.
- Mavrchester is a C library implementing the Manchester Encoding protocol for embedded AVR microcontrollers. Manchester Encoding is a physical-layer communication protocol used for Ethernet and wireless radio frequency transmission. I used this library to build a small wireless weather station on an Atmel microcontroller.
- latexpp is a first-of-its kind C++ library for generating LaTeX equations via C++. It supports conversion of LaTeX equations like `\frac{1}{2}` to HTML as well as JPG, PNG and SVG images. I made it using Google's V8 JavaScript engine to write JavaScript from C++.

ORGANIZATIONS

- European Youth Parliament 07/2013 — Present
  - The European Youth Parliament (EYP), is politically-motivated, non-governmental organization attempting to spread political awareness among youths.
  - There are regular meetings all over Europe concerning current EU-related political topics, such as environmental sustainability, regional development or fiscal policy.
  - These topics are discussed and debated in a simulation of European Parliament.
  - I have participated in more than ten such sessions as delegate, chairperson and head organizer.
  - For two years I held the position of Regional Coordinator for the Austrian state of Carinthia.
- Model United Nations 07/2013 — Present
  - Model United Nations is an international association dedicated to simulating the United Nations and allowing youths to directly participate in topics of diplomacy and international relations.
  - In May of 2016, I represented Spain as part of the NATO committee in Maastricht, The Netherlands, discussing subjects such as cyber-warfare and the militarization of the Arctic.
- TU Investment Club 10/2015 — Present

  Algorithmic Trading Team
  - The TU Investment Club is a non-profit student organization at Technical University of Munich dedicated to the education of students with a distinct interest in financial markets.
  - I am part of the algorithmic trading team, bringing together computer science and financial knowledge to explore what impact we can have on the financial market.
  - I have been a member of the interviewing committee for applicants with a technical background.

PUBLICATIONS

- *Non-Intrusive Load Monitoring: A Review and Outlook* (2016) with Christoph Klemenjak. To be published in the proceedings of annual conference of the *Gesellschaft für Informatik*. I will be presenting at *SKILL Studierendenkonferenz* in Klagenfurt, Austria on September 30th 2016.
- *A Tour of TensorFlow* (2016), published as part of the Data Mining Seminar at TUM.

LANGUAGES

- German: Native
- English: Native
- French: Limited working proficiency

CERTIFICATIONS

- Cisco CCNA Discovery: Networking for Home and Small Businesses
- Cisco CCNA Discovery: Working at a Small-to-Medium Business or ISP
- Certificate in Advanced English (CAE)
- Diplôme d'études en langue française (DELF)

INTERESTS

- International politics and diplomacy
- Philosophy and differing schools of thought
- Entrepreneurship and startup culture
- 20th century British and US literature
- Self development and learning something new every day
- Leadership and inspiring people to maximize their potential
- Artificial intelligence and machine, especially deep, learning
- Beautiful, expressive, well formatted and human readable code

Congratulations, and especially thank you, for making it all the way to the end of my CV. I hope you enjoyed the journey. I'm confident this document will grow and mature with time. I consider myself on a mission to leave not a small, but large and meaningful impact on society. This will be reflected here, in one or many ways, soon.

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