George "Quint" Guvernator v

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EMPLOYMENT EXPERIENCE

January 2019 – (ongoing)

Senior Software & Language Engineer at Surfly in Amsterdam (NL)

Maintained a co-browsing proxy server that parses parses and re-writes webpage source code in real-time. Used meta-programming techniques to build an environment allowing users to change the way that webpage source code behaves. Built sandboxed re-implementations of browser APIs to preserve user privacy. Investigate and mitigate browser and webserver bugs in implementations of web APIs. Wrote a zero-copy WebSocket proxy server, the first of its kind. Proposed, and led an initiative to unify developer tooling across multiple platforms, virtualization types, and build workflows. Managed internationalization of all projects across 24 languages. Composed notification sounds and sound font for sonic branding.

May 2017 – November 2018

API Engineer at Snagajob in Richmond, VA (USA)

Built REST backend microservices for a work management and scheduling webapp. Worked in an Agile environment adding features according to user stories. Overhauled time zone and notification behavior across several projects. Reimplemented a software prototype from a local business for nationwide production scale.

Spring 2015 – Spring 2017

Freelance Web Developer in Williamsburg, VA (USA)

Designed, built, and maintained Ruby/Rails webapps and their databases. Evaluated and reviewed research papers for implementation feasibility. Provided technical consultation to local entrepreneurs.

Summer 2016

Researcher at the Software Engineering Maintenance and Evolution Research Unit at William & Mary (USA)

Instrumented Android virtual machines with custom research code. Evaluated research papers on Android software engineering. Built internal tooling for research use.

Summer 2013 & Summer 2015

Software & Computer Engineer at Valeo Service in Newport News, VA (USA)

Designed and built internal software for a warehouse environment. Deployed new software and systems. Maintained company servers. Provided technical support to employees.

Fall & Spring 2014

Software Development Intern at the Global Research Institute[1] at William & Mary

Contributed to data visualization webapps to track international aid funding patterns with AidData.org. Manipulated and interpreted technical papers using machine learning algorithms. Developed text mining processes. Designed and maintained internal software.

EDUCATION

Fall 2013 – Spring 2017

The College of William & Mary in Williamsburg, VA (USA)
Double-major[2] in Computer Science & Linguistics[3]
Research experience in computational linguistics and software engineering practices
Cumulative G.P.A. 3.7; *Magna cum laude*; Dean's List for 5 semesters (of 7 possible)

Fall 2015

Universiteit Leiden in Leiden (the Netherlands)
Semester abroad program with W&M
Courses in Meta-Science, Linguistics, and Social Sciences

2006—2013

Norfolk Academy in Norfolk, VA (USA)
Advanced courses in French, German, Mathematics, and Music Theory
Graduated with Honors

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[1] formerly: Institute for the Theory and Practice of International Relations (ITPIR), see this announcement

[2] At W&M, a double-major is a self-designed combined study which requires a student to concurrently complete requirements for two different bachelor's degree programs within their four-year undergraduate period.

[3] The W&M Linguistics program was nominally part of the English department until 2020. For this reason, my degree shows a Linguistics *concentration* within an *Interdisciplinary Studies* major. Today, the same study would appear as a *Linguistics major*.

RESEARCH EXPERIENCE

Summer 2016 **Software Engineering Maintenance and Evolution Research Unit (SEMERU)** at William & Mary

Researching several topics in Android Software Engineering and automated testing. Developing internal tools for scraping and analyzing Android source and instrumenting Android code with research tools, resulting in this paper.

Spring 2015 **Sensation and Perception through Augmented-Reality Audio** with the Small Hall Makerspace and the Physics department at William & Mary

Building and analyzing a system for sensory substitution or augmentation using electrical sensors as an artificial organ, augmented-reality audio as a human-machine interface, and a microprocessor development board for signal-processing.

Summer 2014 **Learning Patterns of Mobile Interface Design** with the Department of Engineering and Sciences at the University of Colorado, Colorado Springs. Part of the Advances in Natural Language Processing REU

Applying machine learning techniques to Android application layout source code to analyze design quality.

COMPUTER SCIENCE RESEARCH INTERESTS

- Type theory and its consequences for programming language and compiler toolchain design
- Novel syntactic constructions (e.g. Rust lifetimes) their consequences on language design and optimizing compilers
- New compiler tools (e.g. the Rust borrow checker)
- Theorem provers; adding proof features to other general-purpose languages
- Programming language development, especially concerning memory safety, thread safety, functional programming, and strong typing
- Computational linguistics research and development, especially related to cognitive science or computational cognitive modelling
- Design patterns within concurrent and functional programming
- Interfaces for mixing programming languages inline (e.g. inline asm in C, unsafe Rust in Rust, Cython, wasm-bindgen)
- Developing powerful, flexible tools for computer power users and researchers outside the software development community

LINGUISTICS RESEARCH INTERESTS

- Computational linguistics research and development, especially related to cognitive science or computational cognitive modelling
- Theoretical work with perceptual biases and heuristics as manifest in ideolect
- Language documentation, analysis, and preservation with an emphasis on community empowerment

ACADEMIC REFERENCES

Daniel Parker
Associate Professor of Linguistics
The Ohio State University[4]
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Robert Michael Lewis
Associate Professor[5] of Computer Science
College of William & Mary
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Jack Martin
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[4] formerly: the College of William & Mary
[5] formerly: Director

TECHNICAL SKILLS AND EXPERIENCE

- Proficient in Python (since 2008), C (since 2013), Javascript (since 2013), Go (since 2014), C♯ (since 2017), and Z80 assembly (since 2019). Comfortable with Rust, Haskell, Ruby, and Shell scripting. Some experience with C++, Lua, Scala, Java, and other assembly dialects.
- Experienced working on both large and small teams, collaborating with a distributed git workflow.
- Comfortable reading/writing language grammars (EBNF/YACC).
- Proficient Web developer. Experience creating RESTful backends using Flask, Django, Rails, Node, and Rocket. Experience with PostgreSQL, MySQL, MariaDB, and MongoDB databases. Some frontend experience with Angular and Vue. Familiar with GraphQL.
- Proficient Linux systems programmer. Specific experience with systemd, early boot, and evdi.
- Active in the open-source software community; see `quint.guvernator.net` for projects.
- Deeply familiar with the internal workings of web APIs such as WebSockets, Web Workers, Canvas, and HTML5 audio.
- Experienced building, configuring, and maintaining GNU/Linux machines, both professionally and for fun, using various distributions. Experience with Docker/Podman, LXC/LXD/Incus, and systemd-nspawn.
- (2015, 2019–) Participant at *RevSpace*, a hackerspace in Den Haag (the Netherlands).
- Amateur Extra Class[6] licensed in the United States.
- Designed test-cases and adapted project specifications for *Data Structures* course at William & Mary.
- Copy edited for *The Flat Hat*, the William & Mary student newspaper.
- Hosted a show at and maintained the website of the *WCWM* student FM and internet radio station.
- Volunteered at and maintained the website of *The Meridian* student coffeehouse.
- Designed sound for short films, theatrical productions, and music side-projects in Ableton Live.
- Composed 8-bit music on the Nintendo Gameboy using homebrew software synthesizers mGB & LSDj.
- Executed a technical review of van Baarsen's *GitLab Cookbook* (Pact Publishing, Dec. 2014).
- Comfortable with LaTeX.

COLLABORATIVE PROJECTS

- Built and programmed the electronic name badge for the 2018 RVAsec security conference using a PIC32MX MCU on a custom circuitboard. Implemented a two-channel wavetable audio synthesizer on the badge and a composition companion app for Linux, both in C. Helped coordinate the twenty-person project over nine months.
- Manufactured made-to-order custom mechanical keyboards for work colleagues using a laser cutter, 3D printer, and reverse-engineered bluetooth chips. Managed the ten-person project over two months.

ADMINISTRATIVE EXPERIENCE

- Board of Directors and Co-treasurer (2020–2021) at *Technologica Incognita*, a hackerspace in Amsterdam (the Netherlands).
- Board of Directors (2017–2018) at HackRVA, a makerspace in Richmond, VA (USA).
- Board Member and User, Small Hall Makerspace in the William & Mary Physics department.

[6] Amateur Extra Class is the most permissive amateur license for radio and grants all available non-commercial privileges on all US amateur bands.