Youssef Moawad

Computing Science PhD Candidate and Software Engineer
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PERSONAL STATEMENT

With over 17 years of experience in multiple programming languages and platforms, I bring a diverse skill set and extensive experience in App and Web Development, DevOps, Hardware-Software Co-design, and Embedded Programming. I am a highly motivated individual who thrives on learning and adapting quickly. My background as a self-taught learner enables me to acquire new skills efficiently, making me a versatile asset to any team. My involvement in student societies, community development, and my role as a teaching assistant have refined my communication abilities and strengthened my teamwork skills. I enjoy the challenge of solving complex problems, expressing my creativity through building innovative solutions, and I believe in the potential of Computer Science to make a tangible difference in the world in many ways. For these reasons, since I was young, I have always been passionate about using technology and CS to help people around the world.

ACADEMIA

PhD in Computing Science, FPGA Acceleration of Quantum Computing Circuits (2019-Present)

Currently waiting to sit my viva for a *PhD in Computing Science* at the *University of Glasgow*. My research is focused on the acceleration of quantum computing simulators using FPGAs.

The primary goal of my research work is to develop quantum circuit simulation architectures for FPGAs, leveraging their low-energy nature, particularly to solve the high energy demand that such simulators exhibit when they are deployed on traditional HPC systems.

First Class BSc (Hons) Computing Science and Physics, University of Glasgow (2015-2019)

Received the **Joint Honours Class Prize** in my final year. Dissertation: *Accelerating Quantum Computing Simulators*, which reached the **Hall of Fame** for final year projects, with a grade of A2.

PUBLICATIONS

Investigating hardware acceleration for simulation of CFD quantum circuits - *Youssef Moawad, Wim Vanderbauwhede, René Steijl* **-** *Frontiers in Mech Engineering* ***Vol. 8***, DOI: 10.3389/fmech.2022.925637 **–** Oct 2022

Quantum Circuit-Width Reduction through Parameterisation and Specialisation - *Youssef Moawad, Wim Vanderbauwhede, René Steijl - MDPI Algorithms 2023, 16(5),* DOI: 10.3390/a16050241 – May 2023

TECHNICAL SKILLS

- **Programming:**
  - Experienced: C/C++, Swift, Objective-C, JavaScript/HTML5/CSS, SQL, Java, Python, OpenCL.
  - Intermediate: VHDL, Verilog, Haskell, Rust, C#, PHP, BlueSpec SystemVerilog.
  - Beginner: OCaml, Coq, Go.
- **Technologies**:
  - Experienced: Xilinx Vitis, Intel FPGA SDK, Xcode, SwiftUI, React Native, Node.js, Express.js, Svelte, Sapper, Redux, Git, Numpy, MySQL, macOS, iOS, Linux.
  - Intermediate: Docker, Django, SASS, React.
  - Beginner: Wordpress, Stripe, Apache, Jenkins, Unity, MongoDB.

WORK EXPERIENCE

General Teaching Assistant - University of Glasgow (Sep-Dec 2018, Sep 2022-*Mar 2023, Sep 2023-Mar 2024*)

- Tutored Honours and Masters students in Programming (Java, Python, and C), Systems, Networks and OS courses during my PhD.
- Tutored first year undergrad Python students in the Department of Computing Science in the last year of my undergrad.

Web Developer - University of Glasgow (November 2019-January 2021)

- Worked on a funded learning and teaching project in the engineering department at the university.
- Developed better customisable learning experiences for lab students in the department.
- Charged with developing the web app and infrastructure for the project.

FPGA Prototyping Intern - The MathWorks Ltd. (June-September 2019)

- Developed a system that allows testers to access SoC boards over a network as part of a project in the SoC Prototyping team.
- Contributed to the team by developing internal developer tools, making it easier to run tests, access devices, etc.

Software Developer - Channel Shift Solutions Ltd. (June 2018-May 2019)

- Contributed to Channel Shift Solutions' development team, enhancing software development operations and supporting the company's expansion into new markets.
- Led the development of a major React Native project, successfully transforming a series of websites into seamless cross-platform applications.

Game Developer/User Interface Design Intern - Synaptic Hub Ltd. (July-September 2017)

- Developed an alpha proof-of-concept of *DYsLexiMeter*, an iPad game that is used for the diagnosis of dyslexia in children.
- Gained experience working in a professional software development environment and in software development paradigms such as Scrum and the Agile methodology.
- Played a key role in the initial design, requirements capture, and early implementation phases of the game.

EXTRACURRICULAR ACTIVITIES

- **Released over 20 apps and games to the Apple App Store**, the most notable of which is Matrix Master 2, which lets users perform various matrix calculations, including eigenvectors/eigenvalues and matrix powers, for matrices of flexible sizes. You can find links to these projects at devdude.me/projects.
- **Built the website:** devdude.me where anyone can read about the projects I worked on and the ones I am currently working on. It also has an integrated blog (devdude.me/blog).
- Co-Founder and Committee Member at ducksauce.games, where I help organise and run our yearly Game Jam.
- Became President of the board of Glasgow University Tech Society in 2018/19 and organised *Do You Have The GUTS 2018*, a brand new event called *StartUp Factory*, and many more. I carried on being president the following year.
- Joined the committee of Glasgow University Tech Society in 2017/18 and helped organise *Hacker Olympics*, *Do You Have The GUTS 2017*, *CDX 2018* and other events hosted by the society.
- Attended *Cyber Defense Exercise Hackathon 2017* hosted by Glasgow University Tech Society (*GUTS*) and achieved second place with my team.
- Attended *CERN Spring Campus 2017* hosted by the CS department at Glasgow University.