Sergei Shudler

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Profile

- 10+ years of software development experience with proven success in all aspects of the full software lifecycle including initial requirements, design, coding, testing, and maintenance.
- Extensive work experience in development of C++ applications in Windows and Linux.
- In-depth knowledge and experience in multithreading, parallel programming, and analysis of parallel programs.
- Experience in development of 3D graphics code and GPU programming (CUDA, OpenCL).
- Excellent interpersonal skills used to great effect in building rapport with clients and colleagues alike.
- Highly motivated, committed team player with an ability to work independently.
- Thrives in highly pressurized and challenging working environments.
- Looking for a suitably challenging position as an experienced software engineer, one which will make best use of existing skills, qualifications, and experience whilst enabling further personal and professional development.

Research Experience

Feb 2013 – Present **Doctoral Researcher**, *Technical University of Darmstadt and RWTH Aachen University*, Germany.

- Explored techniques for using empirical performance modeling in the analysis of parallel programs.
- Designed a framework for validating performance expectations of libraries. It allows users to uncover unexpected scalability bottlenecks and evaluate alternative library implementations.
- Devised a practical method for deriving isoefficiency functions of real-world task-based applications. It allows users to choose appropriate input sizes to maintain target efficiency as the core count increases.
- Designed and developed a replay engine for task dependency graphs that can be used to analyze the resource (e.g., memory, cache) contention overhead.
- Administered yearly seminars focused on various topics in parallel computing.
- Prepared MPI and multithreading exercises for graduate-level courses focused on parallel programming.
- Guided and mentored bachelor and masters students.
- Collaborated with fellow graduate students and researchers in Germany, Switzerland, and the US.

Oct 2016 – Mar 2017 **Visiting Researcher (Intern)**, *Lawrence Livermore National Laboratory*, CA, USA.

- Designed and developed a tool (*libtdg*) that creates task dependency graphs from OpenMP code.
- Extended LLVM OpenMP runtime to generate callbacks for loop chunks.
- Evaluated resource (e.g., memory, cache) contention overhead at a task and chunk level using *libtdg*.

Professional Experience

Nov 2011 – Jan 2013 **Software Developer II**, *Paradigm Geophysical Ltd.*, Israel.

- Paradigm Geophysical Ltd. specializes in solutions for the discovery and extraction of subsurface natural resources. Worked on a C++ and OpenGL-based 3D visualization system called 3D-Canvas.
- Improved the responsiveness of the system and user experience by introducing a multithreaded, progressive fetching mechanism for multi-resolution visual data.
- Implemented a capability to correlate two instances of 3D volumetric data.
- Developed a functionality to display semi-transparent, floating text annotations within an OpenGL 3D scene. Used Win32 to port this functionality to Windows.

Apr 2011 – Nov 2011 **Software Developer (part-time)**, *SagivTech Ltd.*, Israel.
- SagivTech specializes in development of GPGPU algorithms for image and signal processing applications.
- Optimized morphological operators for a de-noising algorithm using OpenCL.
- Helped to prepare a three day OpenCL course by converting CUDA code to OpenCL.

Nov 2009 – Oct 2011 **3D Graphics Developer**, *Tiltan Systems Engineering Ltd.*, Israel.
- Maintained the company's main 3D engine that was developed in C++ on top of DirectX. It was used as a rendering library for aerial and ground simulators, and designed to support vast terrains and large number of objects.
- Developed DirectX shaders in HLSL to render terrain-embedded geometric entities and 3D objects.
- Implemented the shadow-map algorithm to display shadows cast by 3D objects.
- Implemented a prototype for large-scale terrain rendering based on experimental work at Zuse Institute Berlin, Germany.
- Optimized the rendering speed of vegetation and trees by 50%.

Jan 2004 – Aug 2009 **C++ Programmer**, *Israeli Air Force (IAF)*, Israel.
- Worked on a distributed, Windows-based command & control system for operational units. It provided a situational awareness capability allowing multiple units to coordinate their actions in a joint mission.
- Ported the entire system's code-base from MS Visual Studio 6 to MS Visual Studio 2005, thereby enabling developers to use the .NET Framework.
- Developed a C++ wrapper module for a .NET-based 2D map (GIS) engine.
- Developed a multithreaded communication (TCP / UDP) module on top of WinSockets.
- Collaborated with other developers to implement and test application-level communication protocols.
- Mentored junior developers and counseled them on complex technical issues.

Education

Feb 2013 – Apr 2018 **Ph.D. in Computer Science**, *Technical University of Darmstadt (TU Darmstadt)*, Germany, (magna cum laude).
Advisor: Prof. Dr. Felix Wolf

Oct 2004 – Dec 2009 **M.Sc. in Computer Science**, *The Hebrew University of Jerusalem*, Israel, (Grade: 92/100).
Advisor: Prof. Amnon Barak

Oct 2000 – Aug 2003 **B.Sc. in Computer Science**, *The Hebrew University of Jerusalem*, Israel, (Grade: 95/100, magna cum laude).
Top 15% of graduating class; Dean's List in the 2nd year

Technical Skills & Languages

Programming	C/C++, Python, C#, Java, HLSL, R, Bash, SQL
Tools	Git, SVN, GDB, Totalview, MS Visual Studio, Matlab
APIs	MPI, OpenMP, STL, OpenCL, CUDA, OpenGL, DirectX
Languages	English (fluent), Hebrew (native), Russian (native), German (basic proficiency)