PAYAL TALATI

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Professional Profile

Key Competencies:

✓ Software Design and Development

✓ Test Automation

✓ CI/CD Pipelines

✓ Agile Methodology

✓ Graphics Domain

A senior C/C++/Python lead engineer, with 16+ years of hands-on experience in software design and development. Has a significant history of designing software solutions for a global business working with remote teams across Europe and Asia. Proven ability to deliver solutions using Agile methods.

My key strengths are:

- In depth knowledge on object-oriented programming and design patterns
- Knowledge on developing OS agnostic software and tests
- Designing and implementation of CI/CD pipelines in Jenkins
- Knowledge of Graphics fixed and programmable pipeline architecture and Image processing algorithms.
- Good understanding of supervised and unsupervised Machine learning algorithms
- Strong problem solving and code debugging skills.
- Knowledge of writing Graphics HW operation tests
- Proven experience in creating test automation frameworks.
- Can pinpoint the technical/process pain point areas which could lead to possible issues in projects in the future.

Key Projects

- **Test and debug framework development for GPU in c++ -**
  I've designed and developed this test framework and debugging tools from scratch to use companywide for Graphics API for GPU DDK debugging with consideration of OS and platform agnostic code. Test framework provides users -
  - common plugins – context manager (support of egl, glx), window manager (X11, nulldrm, DRM, nullws), graphics draw utility, shader manager, exception handling with back-trace support, OS manager (thread, process), Image utility (various Image comparison algorithms, Image compression, YUV data management)
  - This framework can run multiple tests parallely and concatenate the logs of each test and can print a final summary at the end.
  - Framework can create API traces per test so can re-play/reproduce the same failing scenario in future.
  - Framework can have an automatic garbage collection routine after termination of each testcase.
    Skills used: C++, STL library, cmake, python, mongo db, OpenGL, OpenGLES, OpenCL, EGL, Image Processing, OOPs concepts, Perforce, JIRA

- **GPU DDK Tests and tools development -**
  - Implemented thousands of unit/API tests in C++ for Graphics APIs- OpenGLES, OpenGL, OpenCL (using TDK framework).
  - Written multi threaded,multi-process, multi-context tests for stress testing.
  - Worked Closely with GPU architecture team and SW team to support Test driven development.
  - Good understanding of DDK architecture and debugging/triaging DDK code for failure.
    Skills used: C++, OOPS concepts, STL, OpenGL, OpenGLES, OpenCL, EGL, Boost, Shaders, kernels, gcov c++ code coverage tool, Perforce, JIRA, API testing, stress testing.

- **NNA test and debug framework for NPU –**
  - This framework is purely designed and developed in Python and Pytest for unit testing. This is also a plugin-based system which tests NNA compiler, IMG NDK scripts, NPU HW operations and internal IMGDNN library.
  - Automation pipelines for heterogeneous systems like – FPGA, CPU, GPU only and NPU and verify results and accuracy.

Skills Used: Python, Pytest, Tensorflow, caffe, pytorch, Conda, OOPS, gtest, C++, NNA compiler, TVM, mamba db, git, perforce,

- **CI and Test pipelines using Jenkins –**
  - Setup full CI/CD pipelines using Jenkins so that each commit a developer makes will go through the standard process of software code verification and gets tested well enough before change gets committed.
  - Created build jobs for TDK and NNVM test-suits.
  - Implemented dashboard utility to compare Test results, review of history or performance results.
    Skills used: Python, Jenkin, Groovy scripts, Maven, Docker, Conda, VM, FPGA, git, perforce.

- **Test Automation setup –**
  - Design and build the automated test framework in python wrapper scripts to run test suites/apps for use in development and testing cycles.
  - To support automation framework Created sanity env/containers like- Python conda env, VMs and dockers to match testing needs.
  - Plugins to store results in mongo db and compare with history.
    Skills Used: Python, mongo db, Conda, pyenv, Hypervisor, Docker, REST APIs, git, Linux.

- **Support for 3rd party apps/Customer tickets –**
  - Port Khronos conformance API tests and few 3rd party tests to QNX, UitRon, WinCE6, Linux, Android, Integrity OS, and different processors.
  - Support customer engineers to debug customer issues by writing new simple code or apps.
  - Adding game streams and customer use cases to the regression test suite.
    Skills Used: C++, Khronos Conformance, 3rd party benchmarks, Functional test, Stress test, record and play game streams, Mongo db.

Professional Experience

Principal Software Engineer   **October 2021 – To Present**
Imagination Technology- Kings Langley (U.K)

- Work with multiple cross functional teams (Software DDK team, QA team, Customer engineering team) providing technical direction, engineering support, coverage gaps and software quality inputs.

- Documented and implemented few solutions to shorten HW and SW release cycles.
- Having meetings/discussions with the Graphics and NPU Driver development team regarding new IMGDNN (Imagination's internal Neural network APIs) API features and plans to write new tests.
- Working closely with PMO for project deadlines and timelines.
- Create and maintain test coverage and test architecture documents.
- Working 40% on planning and 60%(Hands-on) on Test Development and Imagination's internal Test Framework enhancement.
- Experience in Agile software development, task management and tracking tools such as JIRA, actively maintaining backlog refinement and Standup/Planning meetings for my team.
- Develop POCs where needed.
- Ensuring code reviews happen regularly as part of the development process.
- Maintaining CI pipelines and debug/triage results and automation framework.
- Ensure compliance with Khronos graphics API specifications.
- Mentoring offshore teams/junior staff for Graphics and Maths concepts.
- New recruitments and headcount planning for the engineering team.

Senior Software Engineer   **January 2010 – 2021**
Imagination Technology- Kings Langley (U.K)

- Continuous in touch with the Graphics Driver development team regarding new driver features and plans to test new features.
- Working 30% on planning and 70%(Handson) on test Development, porting 3rd party tests on different OS and maintaining and enhancing Imagination's internal test framework (TDK and NNA test) and automation frameworks and pipelines.
- Releasing Test packages 2 times in a year for internal testing with release documentation.

- Developing new features and bug fixes to internal test frameworks in C++ and Python (TDK and NNATest).
- Making test design/test code reviews happen regularly as part of the development process.
- Automated system design, enhancement, and platform/tstchips setup support.
- Automated release deployments and automation system triage including platforms.
- Continuously running Code coverage tools and writing API tests for coverage gaps.
- Strong understanding of Khronos graphics API specifications.
- Mentor junior or senior test engineers for domain knowledge.
- Help Test execution team (QA) and Customer engineer team for test engineering support.

Graduate Test Design Engineer   **April 2007 – 2010**
Imagination Technology - Kings Langley (U.K)

- Working on test and Imagination's internal test framework Development, porting 3rd party tests on different OS and maintaining TDK framework, maintaining automation, and debugging or triaging issues and results.
- Developed TDK (Test development framework) from scratch, so can be used companywide as a common platform to write new tests.
- Writing a new plugin library and common tools, Image comparison algorithms for Test framework (TDK).
- Help Test execution team (QA) for test debugging support.
- Follow already written/approved test specs to write tests in C++.

Graduate Software Engineer   **Jan 2006 – November 2006**
Picus Tech software (India).

- Implementation of Lyric parser
- Optimising on-chip memory

Qualifications & Education

2005	Bachelor of Engineering in Computers (India)
2023	Machine learning Specialisation by Stanford university (Coursera)

Technical Experience

Software, Packages, Tools, and Languages

Programming Languages	Python, C, C++, C#(basic),golang(basic)
Graphics Languages	OpenGL, OpenGLES, OpenCL
Scripting languages	Python, shell scripts, Groovy scripts, PHP(basic)
Operating Systems	Linux, Android, QNX, WinCE6, uITRON, Integrity, Windows
Processor	ARM, X86, MIPs
Version control	GIT, perforce
Continuous integration	Jenkins
Compilers	LLVM, gcc, SPIR
Make files	GNUMakefiles, cmake
Test management tool	JIRA, bugtracker
Containers	Docker
Hypervisor	virtualbox
Machine learning framework	Tensorflow

References

Available on Request