ALVIN **TAN**

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OBJECTIVE

Eagerly searching for professional opportunities where I can fully utilize my problem-solving and analytical skills to implement efficient solutions and to expand my knowledge in the field.

Ever need a software engineer who is willing to learn more? That would be **me**!

EDUCATION

(BSc) Computer Science in Real-Time Interactive Simulation | DigiPen SG

SEP 2016 – CURRENT

- Dean 's Honor List – Fall 2018

Software development, real-time simulations and game development

(DipBM) Business Management | Nanyang Polytechnic

APR 2011 – MAY 2014

Specializes in Supply Chain Management

SKILLS

C/C++

- Created game engines from scratch with C/C++ in both 2D and 3D
- Implemented a Memory Manager and ADT such as Binary Tree, AVL Tree and Hash Table
- Knowledge in low-level optimization techniques. Implemented a simple square root program using assembly programming, utilizing spatial and temporal locality to speed up a program (cache-friendly code), improved performance of a program with optimization techniques such as loop unrolling, parallel accumulators and SSE SIMD programming
- Implemented multithreaded programs with the usage of mutex and knowledge to prevent data race conditions

Python

- Self-taught, able to implement cubic splines and linear regression using Python
- Coded connect4, 2D shooter and an interactive map of a school using own free time with the help of NumPy and Pygame

C++/CLI and C#

- Self-taught to help integrate C# as a scripting language in game engine
- Wrote a wrapper to call unmanaged C++ code from C#
- Implemented a Hotel Guest Management System (UWP C# app) in a day.

A.I. / Machine Learning

- Implemented path-finding algorithm such as Dijkstra's algorithm and A* search algorithm
- Implemented kNN Algorithm and Multivariable Linear Regression with Gradient Decent.

CUDA C/C++

- Optimizing code with CUDA programming with techniques with both hardware and algorithms
  - Shared memory (privatization), memory configuration (pinned, unified, texture)
  - Convolution techniques and parallel computation algorithms (reduction/scan)

Network Programming

- Socket Programming (Winsock)
- Implemented server/client application for communications such as file transfer and network game application with cheat prevention protocol such as Lockstep protocol and Bucket sync

Other APIs

- OpenGL for 2D and 3D graphics programming and techniques for real-time rendering
- ImGui/AntTweakBar for GUI based program

Misc.

- Operating System – Windows / Linux
- Environment – Cygwin / Visual Studio / Visual Studio Code
- Source Control – Git/SVN
- Familiar with Microsoft Office applications

PROJECTS

Scrap Mettle | Game Project Year 3

- Tools development and integration for game engine
  - Command System framework
  - Efficient and easy to use Performance Profiler
  - Logging System (able to collapse like Unity)
  - Integration of AngelScript and C# (Mono) as scripting language

Adventure Learn | SIT Project | Winner - Best Visual and Software Architect

- Prototype platform that tracks student's progression in relation to their learning traits
- Gamification of a survey application

Manawa | Game Project Year 2

- Revamped game engine architecture to reduce coupling within systems
- Created tools for designers (undo-redo, multi-select and other QoL tools)
- Optimized game engine by altering data structures to one that is more appropriate along with improving of certain algorithms to reduce latency

EXPERIENCE

Teaching Assistant | Digipen SG

SEP 2017 – CURRENT

Hold lab sessions for programming and game project modules and grading of assignments

Sea Freight Intern | DHL

SEP 2013 – OCT 2013

Assisted and shadowed in the daily operations of a Sea Freight senior employee such as handling invoices and processing them into the system