ZHAO XIFENG RESUME

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Education Background

- Majored in Mathematics in NWPU of China from 1999 to 2003
- Deepened computer graphics technology in daily work
- Deepened computer image process in daily work
- Deepened architecture, design pattern, data structure and algorithm analysis in daily work
- Researched artificial neural network technology after university, and here is my open source ANN project https://github.com/zhaoxifeng/ann completely starting from scratch.

Experiences Summary

1. 9 years of software development for large scale C++ software product of Autodesk Inventor.
2. 11 years of C++/C# software development experiences for aviation systems
3. Proficient with C/C++, STL, Data Structure and Algorithm, OpenGL, OpenCV, GCC, and Git
4. Productive with: Boost, Qt, Linux, Windows, SSH, NodeJS, Matlab, SQL, python, Make, Cmake and OpenCV.
5. I have strong interest in AI. I thoroughly researched artificial neural network theory and implemented an open source project through reading books and a lot of papers and writing code. The source code is published https://github.com/zhaoxifeng/ann.

Major Employment Experiences

1. Nov. 2003 ~ Jan. 2011, 8 years of working at Autodesk by doing Inventor development
2. Jan. 2011 ~ 2022, 11 years of working at AVIAGE by doing aviation software development.

Major Project Experiences

1. **Point Cloud:** It is an Autodesk research project. I am the tech-lead of this project. The target of this project is to research the point cloud process technologies and leverage Autodesk product family to support point cloud process functionalities. The project produced a lot of good results which included automatically plane extraction, cylinder extraction, sphere extraction and semi-produce the drawing of the point cloud. The distributed computing and rendering technologies are implemented in this research project. The OCTREE and KD-tree are both implemented for fast search near points of a given point. And also the HOUGH transform and MEAN SQUARE LEAST fitting algorithm are implemented to extract lines, circles, planes, spheres and cylinders.

2. **Shrink wrap:** It is an Inventor source code project. I am the tech-lead of this project. The project target is to make large Inventor assembly file size lightweight and protect the intelligent property right by hiding the internal structural information. The key technology is using computer rendering result depth information to judge whether if the face is internal or on surface, and then discard or keep it respectively. I play the tech-lead role for this project, by responding for analyzing and designing framework, breaking down tasks, instructing team members

3. **Cross Section Analysis:** It was an Autodesk inventor source code project. I am the tech-lead of this project. The target of this project was to analyze the inventor part cross section thickness by cutting the part with a plane. An offset algorithm was designed for the thickness analysis, which is the key part for this project. The algorithm is proved effective. It is worth mentioning that the platform to develop this project was inventor source code, which was a very large platform that I probably cannot meet a larger one in my programming life. Writing code on this platform required myself to understand the original code clearly first. Through debugging the original code, drawing the related classes' diagrams and drawing the object sequence diagrams, I had got a good understanding about the code working mechanism. From doing this project, I learned how to understand a new big codebase in a short time

4. **Remote Gateway Modeling**: I lead this software tool project to support aviation avionics system ICD integration. The tool greatly improved aviation ICD configuration efficiency and quality. I build a very productive team by introducing SCRUM and GIT to the project team and guild the team about data structure and algorithm analysis, which enhanced the project's success. Meanwhile, I gave guidance to team members through code review and code refactoring to improve the code quality and maintainability. The tool was successfully delivered and its intellectual property right is applied and registered.

5. **Flight Display**: It is about aviation flight display development. It is highly safety critical concerned application. I am working on the computer graph technology research and narrow down the applicable technology and deliver proper training to display team. The develop scope includes OpenGL rendering pipeline, vertex transformation and rasterization process, coordinates system, shading, lighting, material, fonts, geometry modeling and software architecture.

6. **Smart Video Surveillance**: It is about aircraft situation monitoring. Cameras are deployed on different locations to monitor aircraft situation. Landing gear position, Aircraft entrance, cockpit entrance, emergency exit, aircraft external surface are all monitored. VLC, face detection, face recognition, image registration, people tracing technology are involved in this project.

7. **ANN:** It is a purely interest led project. I implemented and authored this as an open source project because I am deeply attracted by artificial intelligence. I believe artificial intelligence will greatly improve people's daily life in future. Bear with this in mind, I read books, papers, blogs, and implemented this an ANN open source project. The DNN, back-propagation, training is implemented so far. CNN is consumed in detail, but not yet implemented in code.