

September, 2016

Director of Human Resources
Black Duck Software

Dear Director of Human Resources and Internships:

I am writing to apply for the Software Engineer position in Internship Opportunities in Development at Black Duck Software for the summer of 2017. As a junior (or senior since I will graduate in three years) both in Discrete Mathematics and Computer Science at Carnegie Mellon University, I seek the opportunity to bring to Black Duck Software the teamwork skills I have gained through development of software projects and the problem solving skills that I have gained through mathematical research. I believe an internship at Black Duck Software can help me become more familiar with software development procedure and understand software engineers better for my future career.

I have taken a broad range of software construction, algorithms and programming courses, which have helped me create effective software and applications and develop teamwork skills. In a software construction class, I was in a group of three to implement graphical social network analytics, a framework that can be equipped with data plugins for different social networks and analysis plugins to give graphical analysis of users posts, friends, etc. I was mainly responsible for the internal core structure of the framework, which was the most important part of the project. In the end, we finished our project a week earlier than planned and our framework was chosen as "the best framework" out of 50 groups. This project illustrates my programming skills, code structure designs and communication skills in teams. I hope to use these skills to build new software at Black Duck Software.

I have learned the skill to search public papers and resources as well as generate new ideas from existing results through mathematical research at Carnegie Mellon University. My teammate and I decided to study mathematical models of the spread of common virus. We began with a lot of exciting ideas and thoughts, but most of them had been experimented. We analyzed researches that had been done in recent years, made a list of answered and unanswered questions. We began to use difference equations instead of differential equations and developed a completely new model, SEIR model with delays. This model provides a day-base analysis instead of continuous analysis. Compared to existing models, our model is easier for progression and calculation, and it also models spread of virus in day unit with high accuracy. This research experience demonstrates my ability of innovating existing products. I hope to use my skill to develop better software applications as well.

I look forward to hearing back from you about internship at Black Duck Software. If you have any questions, please contact me via yangjuns@andrew.cmu.edu. Thank you for your consideration.

Sincerely,

Yangjun Sheng