CPF INVESTMENT ADVISOR
IRS – GROUP 8

INDIVIDUAL REPORT FOR NIRAV PARIKH

Personal **contribution** to group project?

It was truly a group project which each member contributing to key aspects of the project. We all had good project proposals, and I was grateful that the team converged on my proposal. As this proposal was linked to Finance, I could also serve as the team domain specialist. While we all collaborated on all three project modules, specifically I lead the effort on coding the third module ie the GA Optimizer. I also researched & implemented persistence of the trained learned, and load them at run-time to perform the predictions. And finally, given my familiarity with the finance jargon, I volunteered to do the video (although to be fair Kahghi prepared the slides & wrote the script).

What learnt is most **useful for you?**

While it was great to get exposure to all three modules of the project, the GA module appealed to me the most, both intellectually as well as its applicability to my work (more on the later). I got deeply involved with understanding GA implementation bottoms up, and adapted several key aspects of the implement including the constraints, the cross-over and mutation & the objective function fit the project requirements. It was gratifying to understand the beauty & simplicity of the GA while still amazed at how effectively it could cover the search space and work its way out of local optimas.

How you can apply the knowledge and skills in **other situations or your workplaces?**

The GA implementation has several practical applications in my workplace. I work on the Markets & Trading side of the bank, where we utilize several risk & pricing models with non-linear characteristics and the need to find best-fit solutions for problems that are hard to derive mathematically. In some of these cases, I think we can use the GA to find better solutions, especially for those problems where we have to rely on heuristics (Value at Risk) or approximations (Options hedging, Curve fitting etc). In the past, we have tried using the Excel Solver for similar problems, but without an understanding of what the solver does under the hood, and with no ability to modify other than some basic parameters, we have had limited success. But now with a bottom-up understanding of GA and the ability to customize almost any & every aspect of the implementation, I am excited and have started experimenting with it on some of our long standing problems.