During the final year of my combined honours degree in Mathematics and Computing at Manchester Metropolitan University (MMU) I received an invitation to a two-day Student Mathematical Modelling Workshop at the University of Limerick in the Republic of Ireland, hosted by the Mathematics Application Consortium for Science and Industry (MACSI). The workshop was followed by the 82nd European Study Group with Industry. The maths course at MMU is highly oriented around real world problem solving involving mathematical modelling, dynamical systems, numerical methods, ODEs & PDEs and contains a strong programming element, so this was something I thought would be good to attend.

My friend Chris and I applied for our places on the workshop and booked our flights. What better way to unwind after completing a maths degree than being put to the test! Not really knowing how useful we’d be in helping solve problems, nor which type of problems we would like to tackle, we began by sizing up the problems set online. I chose a problem on Equity Options & CDS Risk Management because it seemed an interesting situation to work with. The group consisted of both those who had studied financial mathematics and those who hadn’t, so there was a mix of abilities and understanding. The finance people got on with what they have done with similar problems, explaining themselves along the way, and others found useful things to bring to the group. I personally looked at the data we had been given, analysed the trends in the evolution of option prices over time and ran a Monte Carlo simulation in MATLAB to demonstrate the effectiveness of the strategy.

The second week was the study group so the lecture theatre was filled out with academics as well as the students who had stayed on. I chose to work on a problem in Electricity Prices and Demand Side Management, looking at estimating usage for a company called Crystal Energy in Ireland who offer electricity to companies at variable tariffs based on consumption. I worked with other members of my group on analysing the company’s data in MATLAB and Mathematica. We were able to produce useful information for the group, including isolating volatile periods in the day (e.g. between 12-2am) and in the year (e.g. mid-late December) by looking at the absolute difference (error) between corresponding timeslots and plotting contour maps. A report explaining our findings has been submitted for publication.

As the study group fell after our final exams, it gave us a great insight in to the usefulness of what we had learned at university, indicated gaps in our knowledge and inspired us to attempt to solve problems that arise, small and simple or bigger and more complex problems alike. It gave us both the courage to realise that this is something we could do with our lives, applying our skills in such a real and meaningful way which could lead to significant results in personal, small or large scale industry problems.