

<b>REPORT FOR INTERNATIONAL INTERNSHIP</b>	
<b>STUDENT NAME:</b>	Vignesh Viswanathan
<b>PROGRAM NAME:</b>	IIT KGP Foundation International Internship Award
<b>UNIVERSITY:</b>	National University of Singapore
<b>DEPARTMENT:</b>	Department of Computer Science
<b>PROJECT TOPIC:</b>	Algorithmic Game Theory / Computational Economics
<b>IITKGP DEPT./SCHOOL/CENTER AND DEGREE PROGRAM:</b>	B.Tech in Computer Science and Engineering from the Department of Computer Science and Engineering
<b>DURATION OF INTERNSHIP:</b>	Two and a half months (70 days)
<b>SUPERVISOR NAME:</b>	Assistant Prof. Yair Zick

**PROJECT DETAILS, OUTCOMES AND SUMMARY (3-4 BULLET POINTS OF WHAT YOU LEARNED AND HOW IT IS GOING TO APPLY TO REAL LIFE):**

**Project Details:**

In this project, we looked to find ways to learn equilibrium allocations in markets when you do not have complete information about the market. An equilibrium allocation is an allocation of goods to people such that everyone, with a high likelihood, is happy with what they received. This was an application of theoretical machine learning to a game theoretic setting. Markets, here, do not refer to the markets around us but refer to the abstract notion of Fisher markets as defined by the Econ/CS community.

**Outcomes:**

Using the Probably Approximately Correct (PAC) learning framework, we created algorithms that could learn accurate equilibrium allocations from data with a high probabilistic guarantee. In addition to this, we also managed to provide theoretical guarantees on the efficiency of the allocations that we could learn.

These results will now be submitted to the 34<sup>th</sup> AAAI conference on Artificial Intelligence (a top-tier conference) so that it can get published.

**Summary:**

From this internship, I learnt how to conduct literature reviews and adapt results from past research to my project. I learnt about how research works in universities and about how one can publish papers in the academic community. I also learnt how to write research papers but most importantly, this internship helped me figure out what I want to do in life which is to become a scientist. Given my future goals, the skills I picked up at this internship will be extremely useful all throughout my career.