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| Report for International Internship |  |
| Student Name: | Prakhar Tripathi |
| Program Name: | Summer Research Internship |
| University: | University of Michigan, Ann Arbor, MI USA |
| Department: | Naval Architecture and Marine Engineering |
| Project Topic: | Development of Ship-centric Markov decision process framework. |
| IITKGP Dept./School/Center and Degree Program: | Ocean Engineering and Naval Architecture |
| Duration of Internship: | Eight weeks ( 11th May to 11th July 2019) |
| Supervisor Name: | Dr David J. Singer |

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

The aim of the project is to develop a framework based on the weather data of the pacific ocean and application of some of the A.I. techniques such as Markov Decision process. The framework is intended to provide the decision making ideas to the Ship designers in the early stage design phase.

* **I learned**- How the research works, what are the types of research and how to approach to solve some problem.
* The application of Markov Decision Process to real problems. During the project my programming skills got improved. I wrote new codes and reformed existing ones in the project.
* Got insight into research experience and how is the life being a research student. Working with Prof on a project along with his Phd students was a new experience.
* **Application in real life**- The framework developed will be helpful in designing the vessel in a more efficient way with only focus on the optimized conditions the vessel will face during her voyage.
* The cost of production and the time to complete the design process will have direct benefits from this framework. Specially in complex vessels where the importance of these parameters becomes much more important.
* Can be extended in future for further applications to use it in wide areas of decision making.

Some of the remaining work is still in progress. A journal/conference publication from the research is expected in coming days.

**OTHER ACTIVITIES:**

Other than my usual research time I used to go to the various events and community sessions in Ann Arbor. Ann Arbor summer fest was going on throughout the month so went there and had fun.

I got the chance to visit the ‘*Henry Ford museum of American innovation*’ in Dearborn, MI. The museum is much different from other museums which I ever visited. It’s quite inspiring and worth visiting.

The University campus itself was huge and a great place to be there with many iconic places such as Law Library, Big house(football stadium), Huron river and Gallup park, Nicholas Arboretum, Botanical gardens etc. I visited all these places and saw their beauty.