**Project Proposal - Summer - July 21**

**Title:** **Action Rule Mining approach to Analyze Oxford Dataset for Better Recommendation for Policy Making on Covid-19**

**Member:** Titli Sarkar [ [C00222141@louisiana.edu](mailto:C00269380@louisiana.edu) / titli010203[@gmail.com](mailto:seshagiriprabhu@gmail.com) ]

**Problem Statement:**

The Oxford Covid-19 Government Response Tracker (OxCGRT) collects systematic information on which governments have taken which measures, and when. This can help decision-makers and citizens understand governmental responses in a consistent way, aiding efforts to fight the pandemic.

Action-rules are mined from association rules which increases the probability that change in values of some flexible attributes in antecedent will enforce change of target variable to desired target value. Such a rule can either be interpreted as a recommendation for an action, or as a counterfactual explanation for the class assigned to the instance. Using action rules will significantly help policy makers to take better decisions.

OxCGRT collects publicly available information on 23 indicators of government response. They also published #of confirmed cases and #confirmed deaths. We need to choose target variables, fixed and flexible variables and action rule mining with those helps us to find out how the target variable is impacted (#of confirmed cases/ #of confirmed deaths) in order to be able to make good policy.

Our analysis part includes studying the impact of different factors on target variable like the following:

i> choice of flexible class,

ii> different thresholds,

iii> best combination of support, confidence and lift etc.

The whitepaper on Association Mining Based Approach to analyze COVID-19 response and Case Growth in the United States by S. Kataragadda et. al. can be found [here](https://drive.google.com/file/d/1T-9kivpEdjYVFWDZQJ4hG1QlfkXczya4/view?usp=sharing).

**Tools and datasets to be used:**

**Framework:** A python module for Action Rules - [lucasSycora](https://github.com/lukassykora/actionrules)~~.~~

**Oxford Dataset:** It was provided by Dr. Satya and can be found [here](https://drive.google.com/file/d/1CKx2t3vgxINwPPvY5uweeYLZSCdkjiM7/view?usp=sharing) and the explanation about the dataset can be found [here](https://www.bsg.ox.ac.uk/sites/default/files/2021-05/BSG-WP-2020-034-v3.pdf).

**WEEKLY PLANNING:**

**Week 1 & 2:**

* **Implementation of Action Rules on Oxford Dataset**
* **Analysis of results - get a basic analysis of results**
* **Report to Dr. Satya (weekly meeting: Tuesday, Friday)**

**Week 3:**

* **Detailed analysis of results**
* **Report to Dr. Raghavan (bi-weekly)**

**Week 4:**

* **Start writing the paper**
* **Final presentation to Dr. Raju**

The project report will be completed by July 30, 2021.