**Project Status Report #1**

April 19, 2020

**Project Identification**

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| **Project Name** | Vnomics: Engine RPM Profile Detection |
| **Project Team** | Chunlei Zhou, Zichu Li, Haoyuan Dong, Yuan Lu |
| **Project Sponsor** | Vnomics |
| **Team Drive Link** | [**https://bitbucket.org/vnomics/university\_of\_rochester\_projects/src/master/**](https://bitbucket.org/vnomics/university_of_rochester_projects/src/master/) |

**Vision & Goal Summary**

* Our vision is to use the RPM profile for coaching on driving behavior to save fuel.
* Our goals:

1. Develop algorithms to detect HighRPM and MaxRPM
2. Create routines for statistical analysis to evaluate accuracy of detection.
3. Analyze the relationship between driving score and RPM profile.

**Major Milestones & Updated Status**

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| --- | --- | --- |
| **Milestone** | **Original Date** | **Status & Date** |
| Milestone 1: Met with sponsor and gathered requirement | 2/14/2020 | Completed -2/14/2020 |
| Milestone 2: Made initial plan of the modeling | 2/14/2020 | Completed -2/14/2020 |
| Milestone 3: Assigned team work | 2/14/2020 | Completed -2/14/2020 |
| Milestone 4: Developed algorithms for the models | 2/21/2020 | Completed -2/21/2020 |
| Milestone 5: Implemented the models | 2/28/2020 | Completed -2/28/2020 |
| Milestone 6: Completed project charter | 3/06/2020 | Completed -3/06/2020 |
| Milestone 7: Analyzed model results | 3/13/2020 | Completed -3/13/2020 |
| Milestone 8: Delivered midterm presentation | 3/30/2020 | Completed -3/30/2020 |
| Milestone 9: Model improvement | 3/27/2020 | In Progress  Note: This will be our continuous effort until the end of this semester. Therefore, the original date has been changed to 5/06/2020. |
| Milestone10: Prepared project progress report | 4/19/2020 | Completed -4/19/2020 |
| Milestone11: Performed statistical analysis | 4/12/2020 | In Progress  Note: This will be our continuous effort until the end of this semester. Therefore, the original date has been changed to 5/06/2020. |
| Milestone12: Prepared project report #2 | 4/19/2020 | Cancelled due to class change |
| Milestone13: Prepared final project presentation | 4/19/2020 | In Progress |
| Milestone14: Prepared final project report | 5/06/2020 | In Progress |

**Deliverable Progress**

* Gathered requirements, initialized plans of modeling, and assigned team work
* Developed and implemented algorithms for the models
* Analyzed model results and improved algorithm by avoiding overfitting and tuning parameters
* Completed testing on new dataset provided by sponsor
* Discussed feedback with the sponsor and specified next steps
* Team meeting with sponsor on Friday every two weeks

**Plan for Upcoming Deliverables**

* Complete final presentation slides by April 20, 2020
* Compare and combine two approaches for best prediction by April 20, 2020
* Finalize API and README file for better readability by May 06, 2020
* Wrap up project and deliver final report to sponsor by May 06, 2020

**Risks & Opportunities**

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| **Risk** | **Mitigation** |
| Team disengagement | Establish small, frequent deadlines (dependencies) to promote consistent cooperation |
| Late deliverables | Delegate tasks, create early “soft” deadlines (prior to actual) to allow flexibility |
| Misunderstanding of the requirements | Produce a comprehensive scope document and project criterion, then confirm the details with the sponsor. |
| Software environment conflict | All team members program in the same virtual environment to ensure the consistency of final codes. |
| Failure of success criteria | Iterate experiments based on the previous result, tune the hyperparameters until getting satisfied results. |

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| **Opportunities** | **Significance** |
| Encapsulate RPM detection API | Determining the solid RPM detection models, and encapsulating the models into API in order to facilitate the application of the models. |
| Prospective | Establishing response system to optimize the weights of driving scores |

**Baseline-to-Actual: Budget Comparison**

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| --- | --- | --- |
| **Milestone Name** | **Budget Hours** | |
| **Projected** | **Actual** |
| Milestone 1: Met with sponsor and gathered requirement | 8 | 10 |
| Milestone 2: Made initial plan of the modeling | 4 | 4 |
| Milestone 3: Assigned team work | 4 | 4 |
| Milestone 4: Developed algorithm for the models | 30 | 32 |
| Milestone 5: Implemented the models | 32 | 48 |
| Milestone 6: Completed project charter | 4 | 4 |
| Milestone 7: Analyzed model results | 40 | 50 |
| Milestone 8: Delivered midterm presentation | 8 | 8 |
| Milestone 9: Model improvement | 12 | -- |
| Milestone10: Prepared project progress report | 4 | 4 |
| Milestone11: Performed statistical analysis | 20 | -- |
| Milestone12: Prepared project report #2 | N/A | N/A |
| Milestone13: Prepared final project presentation | 10 | -- |
| Milestone14: Prepared final project report | 32 | -- |

**Upcoming Meetings and Presentations**

* Monday, April 20, 2020 → Final Presentation
* Friday, May 1, 2020 → Team Meeting with sponsor

**Current Project Assessment**

Although class agenda has been changed due to coronavirus, we are currently still on track to complete the project on schedule. No adjustment other than the deadlines designated by the class schedule is needed. Our team members were able to meet in class with Dr. Ajay Anand and on Fridays with our sponsor (Lloyd from Vnomics) for team meetings to discuss project progress. Every member of our team has been actively engaged in designing/implementing the algorithms, and updating the progress within the team and with our sponsor. Our instant communication with Dr. Ajay Anand and Lloyd from Vnomics by emails and Slack ensures timely feedback to be received by our team members. Despite the chaos caused by coronavirus pandemic, we are able to devote projected budget time or more to meet our milestones. Our sponsor is satisfied with our progress both verbally in team meetings and by writing in our communications.



