**Professional EPICS Weekly Progress Update**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **First & Last Name** | **Email** | **Project Name** | **EPICS Start Date** | **OPT (yes/no)** |
| Rachana Bhaskar | rbhaska5@asu.edu | Civita Laura: Machine Learning for Educational Videos (NDA) | 06/28/2021 | yes |

**Link to EPICS Team Summary Document (Google Drive):**

**Progress**

Include an itemized list of the tasks you completed this week.

|  |  |  |
| --- | --- | --- |
| **#** | **Action Item/ Explanation** | **Total Time This Week (hours)** |
| 1 | Civita Laura – team meeting and project (NDA) | 5 |
| 2 | Machine Learning by Andrew NG – Week 6 and week 7 | 14 |
| 3 | Project report (EPICS) | 1 |
|  | **Total Hours for the week:** | 20 |

**Link to Team Action Item List/Scope of Work/ Gantt chart/SCRUM or other action item list sheet (Google Drive File):**

**Team Meetings in the Past Week**

List the team meetings that occurred in the past week

|  |  |  |  |
| --- | --- | --- | --- |
| **Time & Date (month/ day/year) of meeting** | **Type of meeting (client, mentor, team meeting)** | **Names of those in attendance** | **Total Time (hours)** |
| Tuesday 7/20/2021 | Team Meeting | Laura, Sahit, Raji, Samarth, Saketh, Sharadhi, Geethanjali, me | 1 |

**Next Week Goals**

OPT Participants: list the 20 hours of goals for the next week.

|  |  |  |
| --- | --- | --- |
| **#** | **Action Item/ Explanation** | **Expected time (hours)** |
| 1 | Leetcode problems | 2 |
| 2 | Civita Laura: Machine Learning for Educational Videos (NDA) | 10 |
| 3 | Machine Learning by Andrew NG | 8 |
|  | **Total Hours for the week:** | 20 |

**\*OPT Participants: If you cannot develop 20 hours, attend Dr. Jared’s Tuesday 2-3pm office hours\***

**Verification Documentation:**

Action Item 1: Civita Laura: Machine Learning for Educational Videos (NDA) – 5 hours

* Team meeting – formed teams/groups and had a discussion on dividing various tasks among the groups.
* Reviewed the project background and worked on understanding the aim of the project.
* Reviewed the work completed so far and went through the GitHub repository.
* Researched topics related to classifying videos using different machine learning or deep learning techniques and went through research papers on video classification.

Action Item 2: Machine Learning by Andrew NG – 14 hours (week 6 and week 7 module)

* <https://www.coursera.org/learn/machine-learning/home/welcome>
  + Week6 – week 6 included topics regarding how to improve machine learning algorithms developed and debugging machine learning algorithms to improve performance.
  + Week7 – week 7 was about introducing kernels and Support vector machine (SVM) machine learning algorithm.
* Screenshot of the certification/check mark next to completion video

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* Summary of Skill Session
  + Learnt how to evaluate to the hypothesis developed using methods like – getting more training samples, trying to add different features or polynomial features to the hypothesis, tweaking gradient descent by increasing or decreasing lambda.
  + Learnt the importance of validation dataset while evaluate the model or hypothesis, and cross validation error. Just relying on the error of model over training set might not give us the best possible model.
  + Analyzed the model to check whether bias or variance is leading to bad predictions, high bias means the model is underfitting and high variance will indicate overfitting.
  + Completed programming assignment on building a linear regression model to study various bias vs variance properties.
  + Compared logistic regression to support vector machine, SVM is a large margin classifier.
  + Learnt to analyze different scenarios, for example when to use SVM with a linear kernel or gaussian kernel.
  + Solved programming assignment on how SVM can be used to build an email spam classifier.
* Key Findings
  + Learnt the importance on concepts like bias vs variance, precision and recall while evaluating a machine learning model.
  + When implementing SVM model with a kernel, we have to make sure it is a valid kernel, and this can be done by checking if the similarity function satisfies Mercer’s theorem (to ensure that SVM optimization is running correctly without diverging)
* Future Work
  + Revise week 6 and week 7 as it included a lot of new topics, learn more about SVM and its applications.
  + Try to solve different problems using SVM and analyzing when to use SVM or not.