# **Monthly Meeting #1**5**:** Challenge Advisor **Meeting**

| **Meeting Date:** | Oct 24, 2023 8:00 PM | |
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| Meeting Time: | 8:00 PM ET | |
| Meeting Location: | Virtual | |
| Meeting Type: | Challenge Advisor Meeting | |
| Student Team Members: *(check box if in attendance)* | * Rachel * Vanessa * Kashish * Pamela * Elena * Nyah | |
| Other Attendees:  *(e.g., Challenge Advisor, TA)* | Maria | |

# MEETING AGENDA

1. Recap
2. The next step: grabbing all the images and annotations that we need in order to customize an existing architecture
3. Pamela’s notes: <https://zircon-cruiser-31a.notion.site/Maria-Meeting-4-10_24_23-8aef725be5f24c4d88d4da85317af7b0?pvs=4>

Check out: <https://github.com/asvath/mobile_robotics/blob/master/nuscenes%20extract%20and%20write%20out%202d%20full%20annotation%20boxes.ipynb>

Notes:

* **Nuimages.py** in the dev kit shows all the functions that can be used to manipulate the data
* Options: train a model from scratch, using a pre trained model (custom object detection)
* If we had no annotations, tools like label studio to handle label images
* Pascal VOC XML -> contains the filename, annotation, bounding box, and other metadata
* We need something that converts things from image data into the Pascal XML file that
* Tensorflow records -> take the custom labels and translate them into stuff tensorflow can understand
* XML files are lightweight enough to pass info through tensorflow records
* XML files are efficient bc they don’t waste much disk space from Maria’s experience
* Our goal right now: create a custom object detector that is specialized to recognizing pedestrians and cyclists

Taking an existing object detector and using transfer learning to specialize how objects are being detected

* Sensor fusion - > combining images with other types of sensors(?), combining multiple different sources of data(?)
* LIDAR is good at giving you a sense of how far things are
* Integrate LIDAR with object detector to figure out how far pedestrians are
* Training the model to determine if behavior is safe or unsafe will prob take a lot more time and background info than we have, so that’s not the main goal for us right now
* Feel free to send Maria code so she can give feedback!

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# ACTION ITEMS

| **Task/Assignment** | **Team Member** | **Deadline** |
| --- | --- | --- |
| Research on how to convert to XML | Kashish, Nyah |  |
| Set up Tufts HPC (?) | Vanessa (?) | **Done** |
| Convert the annotations to something custom object detection will need (XML file) | Student team | Oct 28, 2023 |
| Optional?: read about transfer learning for a custom object detection model: <https://medium.com/swlh/creating-your-own-custom-object-detector-using-transfer-learning-f26918697889> | Student team |  |
|  |  |  |
| Create training set with images that only include pedestrians and cyclists - IN PROGRESS | Student team |  |
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