**Design Project Group #10: Project Proposal**

**Project Name:** Using Pose Machines for Identifying Penalties in Hockey Videos

**Group Members:**

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**Project supervisors:**

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**Intellectual property:**

As per McGill’s Policy on Intellectual Property (see <https://www.mcgill.ca/gps/files/gps/policyonintellectualproperty.pdf>), the project supervisors (Prof. Martin Levine, PhD Fay Askari) and the group members (Karl Godin, Marine Huynh and Shawn Vosburg) will be equally known as the authors of the work resulting from this research project. General procedure following possible commercialization of Intellectual Property will follow McGill’s Policy on Intellectual Property.

**Non-disclosure agreement:**

There are no non-disclosure agreements (NDA) for this project.

**Group meeting and meeting with advisors:**

Weekly meetings will take place in Prof. Martin D. Levine’s office on Thursdays at 13h00. This schedule is subject to change as the project progresses along.

**Project requirements:**

We will require access to lab computers (with somewhat strong GPUs if possible) to train our models. This could be done remotely via TeamViewer or SSH, for example. We will also require storage space for our data (hockey video broadcast snippets) as discussed with Fay Askari and Prof. Levine. Also, a git repository will need to be created (either by us or Fay Askari) to host the code developed during this project.

**Abstract:**

The goal of this project is first and foremost, trying to solve an engineering issue based on the knowledge and acquisitions we have gained throughout the years. More specifically, the problem we decided to focus on is the detection of penalties on broadcast video during hockey games. This project will require us to implement automated image comprehension of human poses and use machine learning to predict human actions and activities. Part of the project’s complexity arises from the density and relative speed of the players found on screen and how they interact with each other.

Possible applications for this capstone project includes use in live hockey broadcasting to help commentators and viewers identify penalties made by players. Also, team managers and league employees could quickly compile a list of small clips of players committing penalties. Eventually, statistics on the frequency of a certain type of penalty could also be drawn.

The expected outcome of this project is to have a working trained neural network model that predicts if a penalty has occurred in the clip. The code will be written in python and is expected to include a procedure to train and to test the model, along with a labeled dataset of hockey penalties.

**Google Signup:**

The google signup has been completed and submitted.