

# **ENAE 631 HELICOPTER AERODYNAMICS**

## **TECHNICAL ESSAY**

### **Team:**

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### **Title:**

**“Ground Effect study on Helicopter Aerodynamics”**

### **Abstract:**

The flow around the helicopter in the presence of ground is very complex. The presence of the ground changes the aerodynamic characteristics of the rotor and the flow environment becomes much more complex compared with that of flight Out-of-ground effect (OGE) and hence the behavior of the rotor wake in the vicinity of the ground is challenging to predict. The presence of a ground vortex affects the handling qualities of the helicopter.

This report is intended to provide an insight on the physics of flow features and dynamics of ground effect on Helicopter Aerodynamics. It also aims to provide some existing models to predict the loads, moments and power requirements. Additionally, this report will explore the pros and cons of both In-Ground-Effect and Out-of-Ground Effect. Also, some results from the existing computational models are also presented to understand the accuracy of the prediction of Ground Effect influences.