# Case Study: Boeing 737 Max

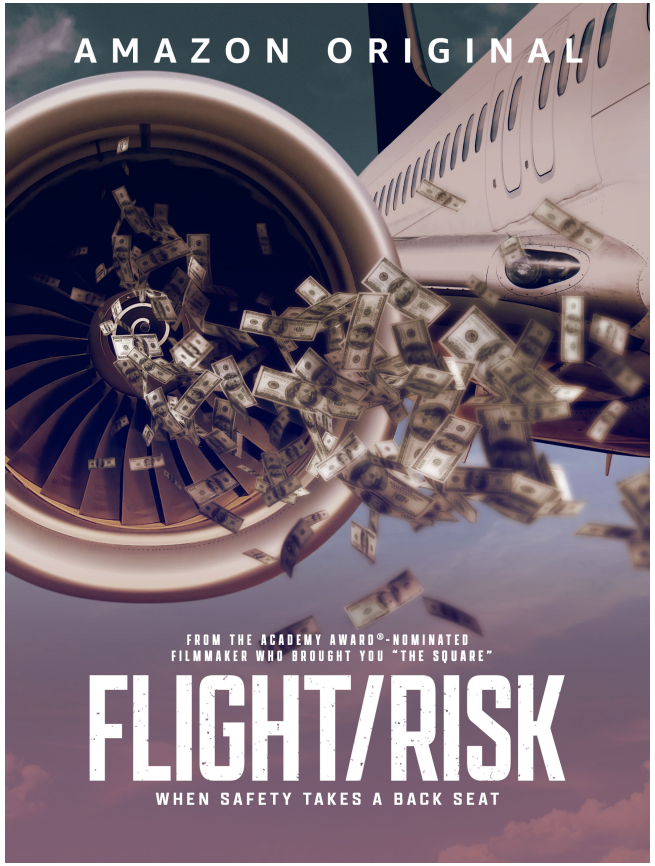
17-313

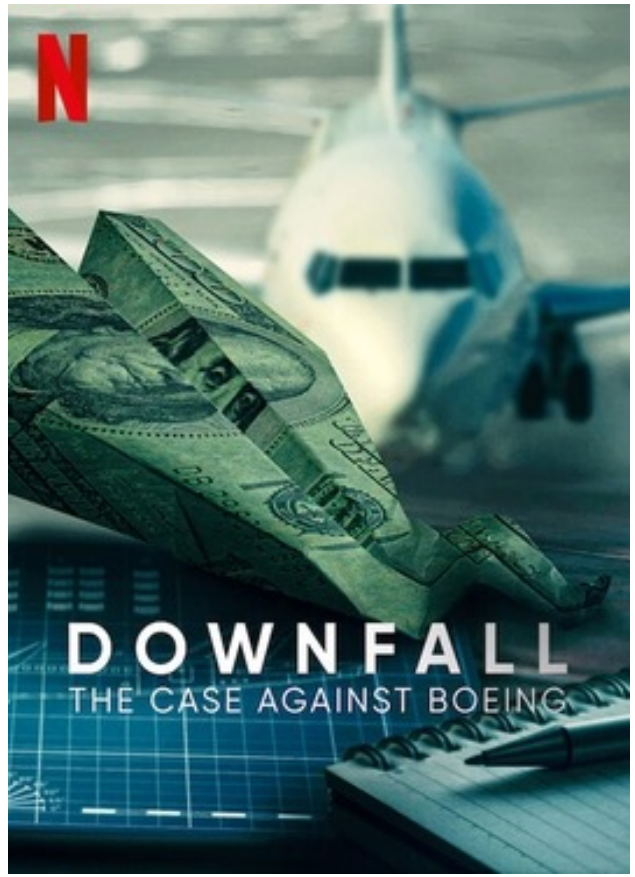
# Learning Goals

- Understand issues around the Boeing 737 Max problems, and discuss how to avoid them
- Consider real and hypothetical solutions, and discuss when they are appropriate

# Administrivia

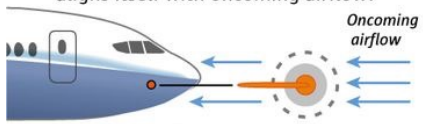
- Project 2A: Due tonight
  - Feel free to ask scope-related questions on #projects
- Team self-assessments due tomorrow (please fill every week!)
- Next Tuesday (Sep 19): An exciting workshop on continuous deployment
  - **Bring your laptop**. If possible, sit near your team (or make new friends).
  - This week's recitation important pre-req.
  - Try to get basic-web-app deployed on at least one of Render or GCP. Will use the running app in Tuesday lecture.

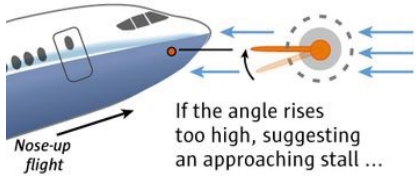

## How the MCAS (Maneuvering Characteristics Augmentation System) works on the 737 MAX

**1. The angle-of-attack sensor** aligns itself with oncoming airflow.




The angle of attack is the angle between the wing and the airflow.

**2.** Data from the **sensor** is sent to the flight computer.




If the angle rises too high, suggesting an approaching stall ...

... the **MCAS** activates.

**3.** MCAS automatically swivels the **horizontal tail** to lift the plane's tail while moving the nose down.


In the Lion Air crash, the angle-of-attack sensor fed false information to the flight computer.

*Sources: Boeing, FAA, Indonesia National Transportation Safety Committee, Leeham.net, and The Air Current*

Reporting by DOMINIC GATES,
Graphic by MARK NOWLIN / THE SEATTLE TIMES

# Activity: If you missed class, be prepared to discuss

- Facts of the case
- Relationships between facts
- Lessons learned from this case