Meeting #8

Date: 10/3/19
Time: 5:30-7:30 PM
Location: EGR

Agenda:

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Meeting Notes:

- “So I guess flow sims are ass” -Alex
- Chris
    - Rectangle wings to maximize area/lift (alex after note: per wing length which divides score)
    - Top mounted is easier and gets wing wake out of way, is easier to swap, has been done by the previous team, easy to add supports, airflow is less disturbed which is good for slow planes
        - Alex says top mounted wings are good for flying stability
        - Alex says lower-mounted might help us soften the landing
        - Might not be asssss influential on our plane
    - Leading edge slats
        - Make em stationary
        - They will let us get higher angle of attack without stalling
    - Wing tips should be hoerner, not rounded. Will give us better vortexes
    - Airfoil selection
        - These show up on short take-off planes
            - USA35B
            - NACA 2412
- Jacob
    - [see presentation]
    - Main points
        - Conventional tail
        - Symmetrical airfoil for stabilizers
        - Trimmable horizontal stabilizer to account for any moment between center of lift and center of mass
- Nate
    - Its gonna be tricycle, backdragger, or multibogey
    - Multibogey only for super heavy planes
    - Tricycle rear wheels take like 80% of load
    - Tricycle scores best on capabilities/stability/cost
    - Nate has equations for positioning based off wing placement
    - Tricycle is most stable in takeoff and landing, ALSO steerable

    - Suspension: plan it for main gear (back wheels), wait and see for front wheel
    - Verdict: Tricycle
- Alex
    - Airfoil Eppler E61
- Prototype Design
    - Plan for 15lb payload (plus/minus if possible/needed)
    - Estimate 20lb empty plane
    - With FOS=1.15, lift needs to be over 40lb
    - Keep c and FL constant, span variable: see which airfoil we can make the shortest
    - Sanity check: compare drag force to our static thrust
- Prelim Report
    - Description
        - Black box (Nate)
        - Decomposition model (Chris)
    - Budget/planning
        - Tentative BOM, cost (Alex)
        - Gannt? (Nate)
    - Concept generation (team will each do their subsystems)
        - How they were generated
        - Overview of considered designs
        - advantages/dis
    - Concept eval (2-3 concepts)
        - Pugh chart/decision matrix/spec tables/calcs (team will each do subsystems)
        - Summarize best ones for ERs and CRs (with engineering numbers)
        - Rough CAD (Jacob)
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Action Items:

- **Chris will figure out chord length using aspect ratio. Alex and I will use that value to do CAD bits to send to foam people**
- **Individually register with SAE this weekend**
- **Talk to angel about getting better static test before using Ben's way to get it to dynamic**
- **Run presentation on monday**

Next Meeting: 10/7/19, 5:30 @EGR