

## CHAPTER 5

### CONCLUSION

#### 5.1 Conclusion

Based on the research that has been conducted, the following conclusions can be drawn:

1. The sinusoidal winglet profile on the UAV acts as a vortex generator, which can help enhance lift at high angles of attack (AoA)
2. The cant angle significantly affects the aerodynamic performance of the UAV, as it helps reduce induced drag.
3. The most optimal cant angle, providing the best  $C_L / C_D$  ratio across different configurations, is found to be  $15^\circ$ .
4. The Sinusoidal B configuration with a  $15^\circ$  cant angle demonstrated the best aerodynamic performance at high angles of attack.

#### 5.2 Suggestions

Based on the findings and limitations of this study, several suggestions are proposed for future research to improve and expand upon the current work:

1. Future research is recommended to explore other winglet geometries, such as raked or blended winglets, to improve aerodynamic efficiency.
2. Further studies may vary the amplitude or frequency of the sinusoidal profile to find the most effective design in terms of lift and drag.
3. It is suggested to simulate the UAV at different speeds and angles of attack to evaluate its performance in broader operating conditions.