Flying Birdie

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Commercial jet airliners use an average of $1,212 in jet fuel per hour. This translates to $34.1 billion per year spent on jet fuel by commercial carriers. There are several factors that help determine fuel efficiency of an airliner and improving any one of these factors would have massive economic and environmental impacts. I chose to engineer a way to reduce the drag on an airfoil in an effort to address the fuel efficiency of commercial airliners. I decided to focus on dimpling airfoils to test the effect on drag because I observed the effects of a dimpled golf ball and wondered how it would translate into aviation. I hypothesized that an airfoil dimpled up to CP (Center of pressure), or 50% dimpling, would be the best. This was proven correct, as the air turbulated and decreased induced drag by an entire degree. With these results in mind, it is completely plausible that, with the correct texture of wing, dimpled airfoils can decrease drag and increase fuel efficiency.

Awards Won:
Air Force Research Laboratory on behalf of the United States Air Force: First Award of $750 in each Intel ISEF Category