

## **Innovative Uses of Drones for Last Mile Delivery with a Focus on Healthcare**

IES'22 Industrial Engineering Session

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This webinar discusses a novel strategy for employing a combination of drones and delivery vehicles, such as trucks, for last mile delivery to homes and businesses. The work is general, but we aim for a healthcare application. This strategy uses drones to resupply trucks during the day for same day delivery, as orders are made available at a central depot. The trucks deliver the orders to the customers but do not have to return to the depot during the day since they are being supplied by the drones for new orders. A mathematical model is formulated and solved for this strategy. We show that this strategy offers benefits in customer service and cost of delivery compared to traditional truck delivery only. We focus our work on healthcare and specifically the delivery of medical supplies and tests (such as COVID tests) in challenged, rural environments. We are complementing our algorithmic and computational work with animations and a limited physical field trial.