

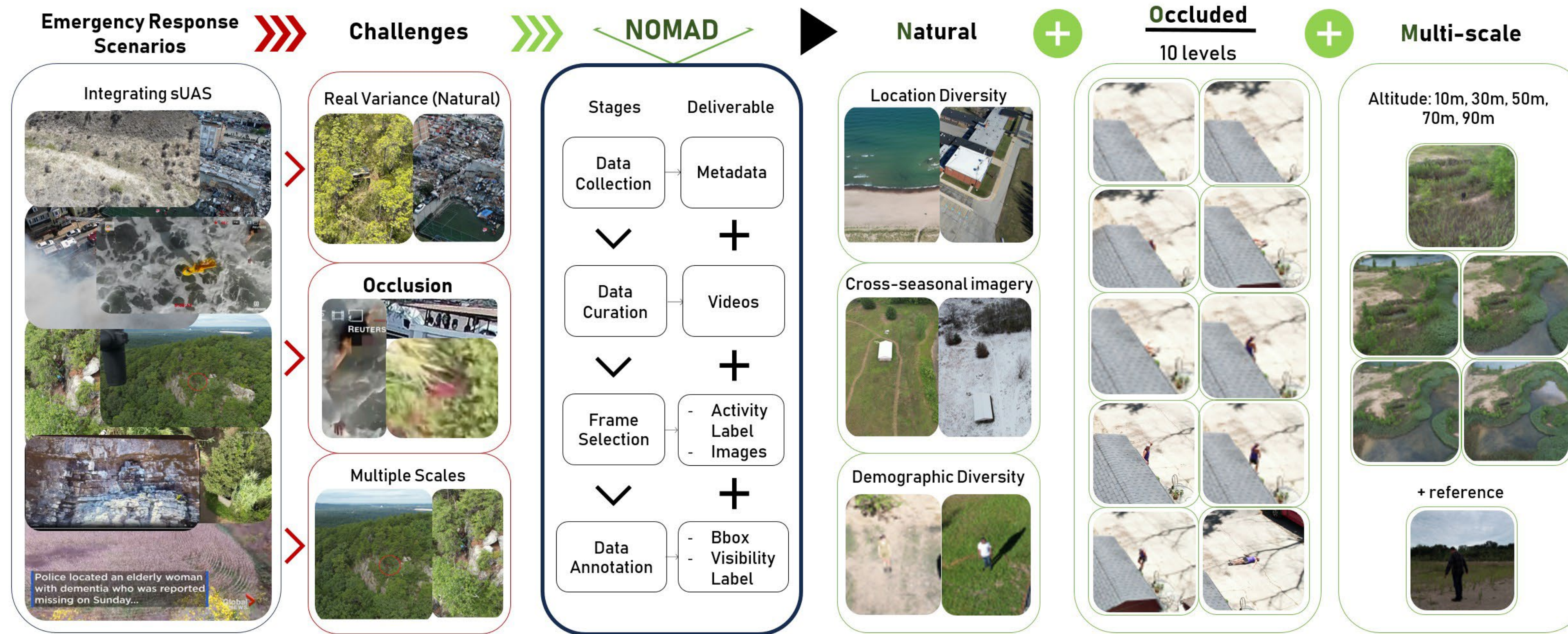
CPS: Medium: Interactive Human-Drone Partnerships in Emergency Response Scenarios

Jane Cleland-Huang and Walter Scheirer, University of Notre Dame

<http://droneresponse.net/>

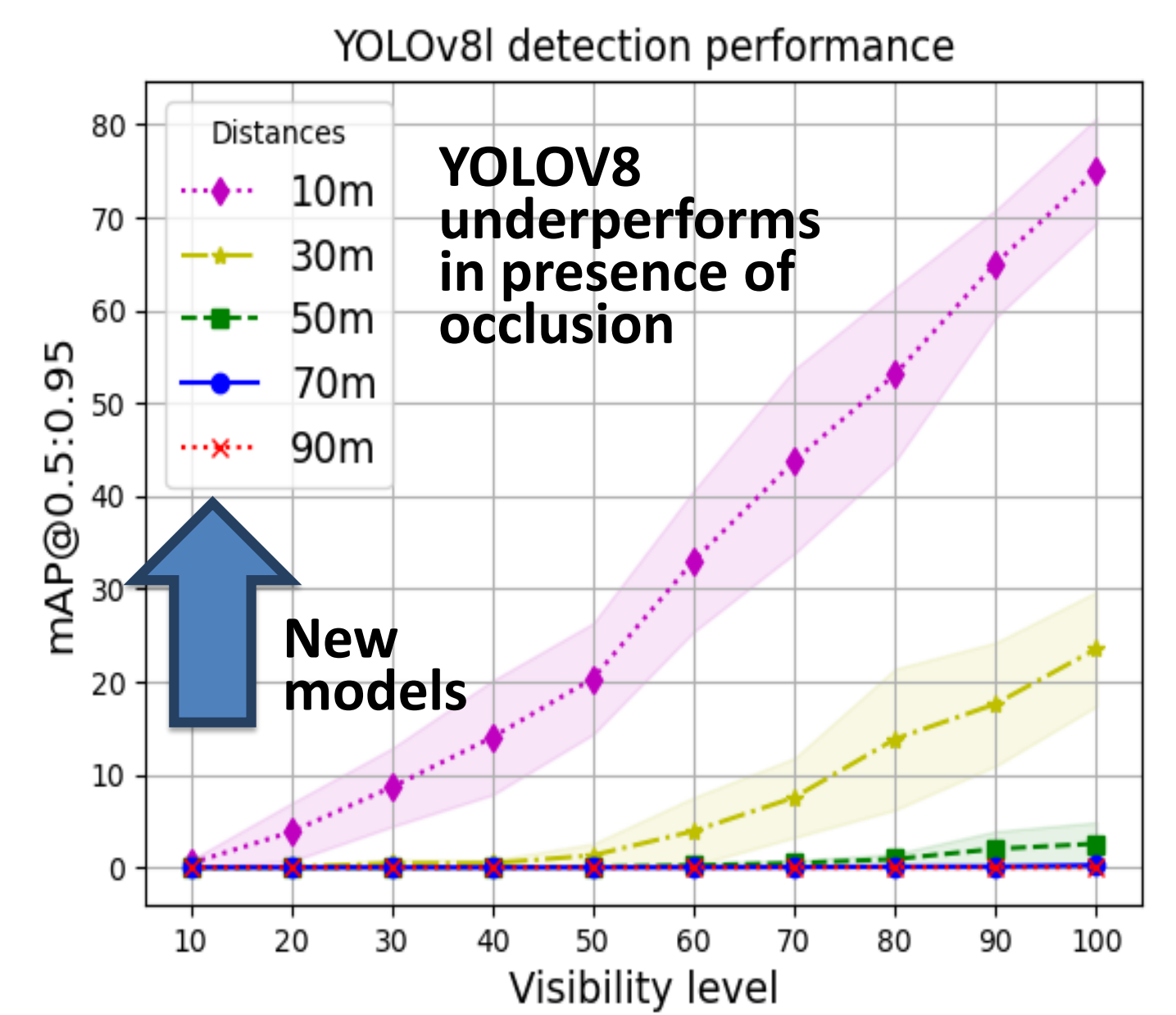
Challenge: Aerial Computer Vision for Effective Search and Rescue

Solution 1: Collect NOMAD dataset to address problem that existing aerial Computer Vision Models under-perform at altitude and occlusion.

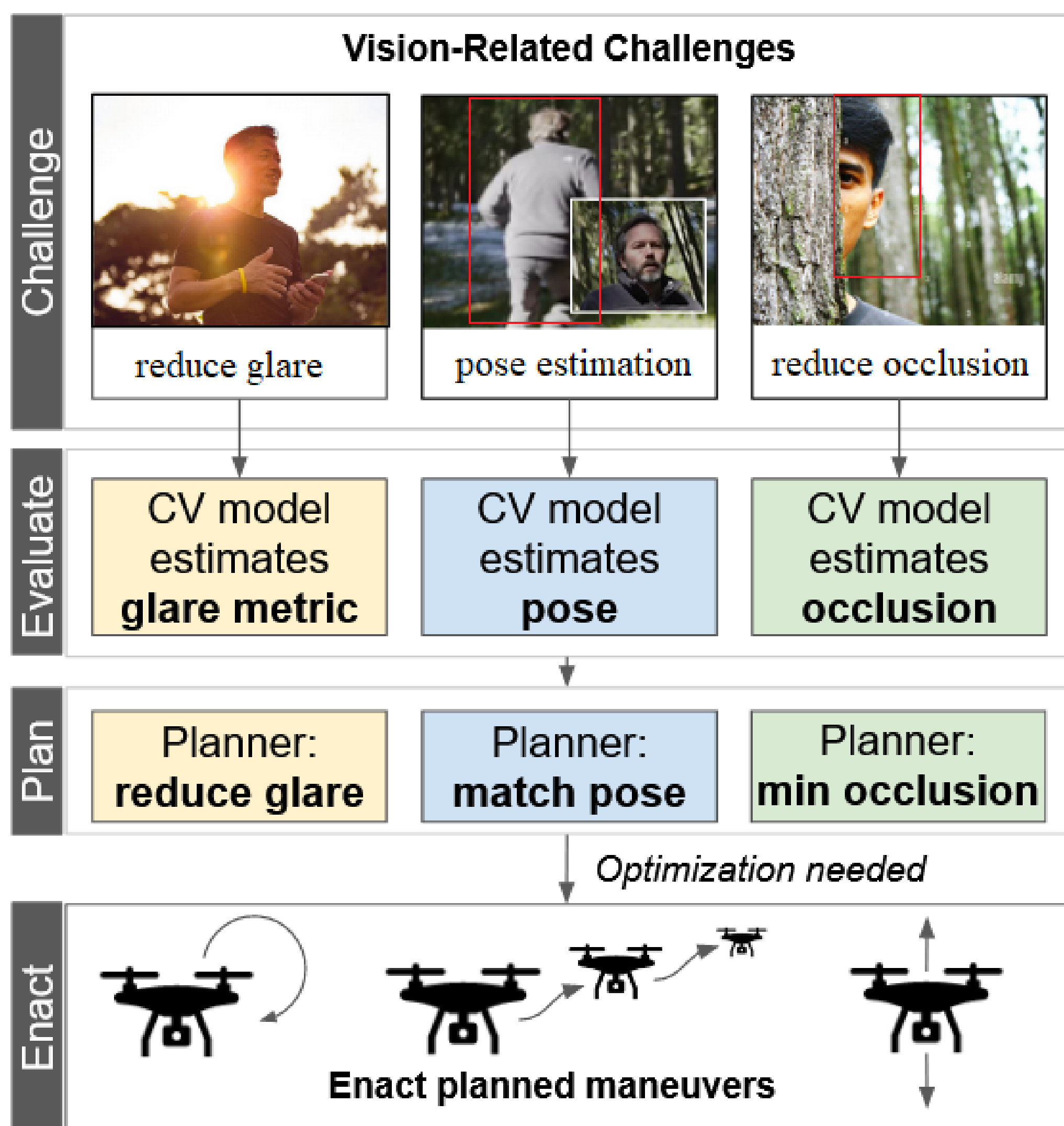


NOMAD Dataset

- 100 actors
- sUAS at varying distances and perspectives
- 42,825 frames @ 5.4k resolution videos
- Baseline CV model trained on YoloV8
- Custom model in training



Solution 2: Develop a CV-driven sUAS maneuver model for autonomously maneuvering into a more ideal position to minimize occlusion and reduce glare etc.



Solution 3: Deploy increasingly sophisticated, autonomous, multi-sUAS missions.



Solution 4: Tackle limitations of CV at the edge, by developing a plug-and-play autonomy payload.



Societal impact through faster and more effective emergency response.



Research opportunities for 10 Undergraduate Students '23-23. Outreach to K-12 through South Bend Aviation Day, 2024.