MACHINE LEARNING FROM MULTIMODAL DATA

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Overarching Idea

- **How does adding multimodality improve the classification performance of supervised learning algorithms?**
  - **Machine learning focus:**
    - Supervised Learning
    - Classification problems
  - **Multimodal focus:**
    - Images
First Steps

- Work with cameras of different modes

- VIS: Speed
  - PCO 1200hs
  - FLIR A7600SC

- VIS-NIR: Sensitivity
  - Princeton ProEM-HS:1024

- UV
  - PCO Ultraviolet

- SWIR: Resolution
  - UTC GA1280JS

- LWIR
  - FLIR T650SC

- LIDAR
  - Velodyne HDL32E

Wavelength (μm)
Next Steps

- Test performance level with multimodal images
  - Static/Non-Static
  - Non-human

- Submit IRB proposal
  - Potentially move to data involving humans
Bigger Picture

- Curate more datasets that can be used for training
- Expanding machine learning beyond commercial uses
  - Improve performance for machine learning’s many applications
Bigger Picture

- **Military**
  - visual occlusion
  - (e.g. fog, high forest density)
  - drones

- **Medical**
  - more accurate diagnostics

- **Security**
  - surveillance, airport security
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