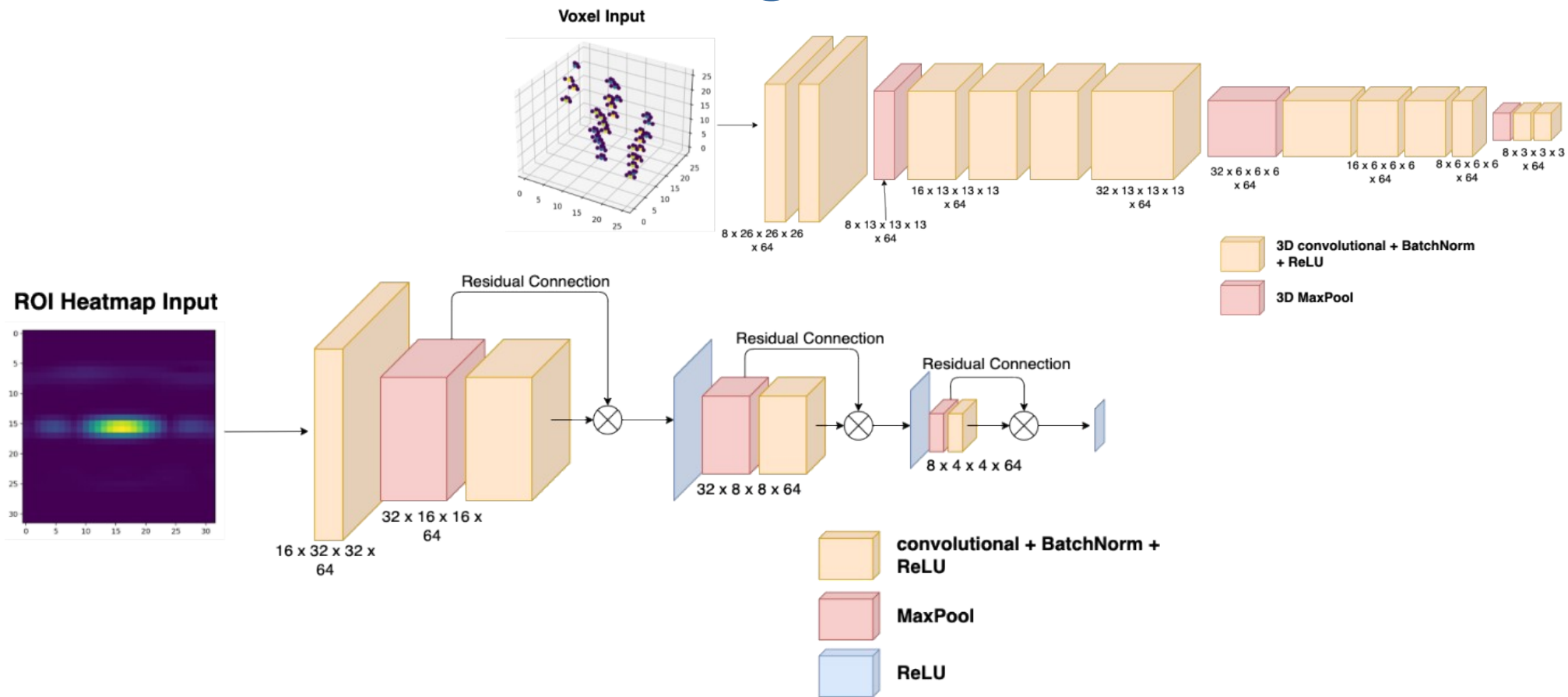


Use low-power mm-Wave sensors  
to detect people, movement and  
concealed weapons

Goal: to design the detection algorithms for a  
lightweight, portable and battery operated sensor  
to assist in anti-poaching exercises in South Africa

# Extract Information from Voxel Point Clouds and Regions of Interest



# mm-wave Classification Tasks

- Most existing work use Doppler signatures as features
- Some make use of heatmaps
- This project aims to utilize millimeter-wave sensors to classify small static objects
- Aim for a lightweight design, i.e., limit:
  - data structure size
  - runtime
  - energy usage
- Project will rely solely on data



Visual image



IR image

# Clasification Goals

- Detect small metal objects from a minimum range of 2 meters.



(a)



(b)



(c)



(d)



(e)



(f)

## Stretch goal

Detect bullet casings hidden on a person



# This project is for you if you...

- Have some experience with Machine Learning / Deep Learning / Neural Networks
- Are interested in working with a company that is on the cutting edge of mm-wave technology
- Are curious about the limits of detection technology and would like to help push the boundaries

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