Super Resolution:
A Mobile Binoculars App

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Problem

- Goal: create phone-based binoculars
- Issue: digital cameras do not feature lossless upscaling
Solution: GANs (Generative Adversarial Networks)

- Super resolution GANs generate high-res images off learned image data
- Can zoom in on a digital image, then run it through a GAN to “enhance”
- However, GANs have high compute cost
GANs and the Edge

- To solve high compute limitations, offload to edge
- Send frames to a cloudlet, run GAN on the cloudlet, then send back the result
System Architecture

- Android Device
- OpenRTist Client
- Gabriel Server
- OpenCV Cog. Engine Running GAN

Flow:
- Input Frame from Android Device
- SR Frame from OpenRTist Client
- Cloudlet
- Output Frame to Gabriel Server
- Output SR Frame to OpenCV Cog. Engine Running GAN
Limitations of GANs

- GANs perform worse as input resolution decreases
- Best performing GANs are extremely slow (EDSR)
- See laptop for results