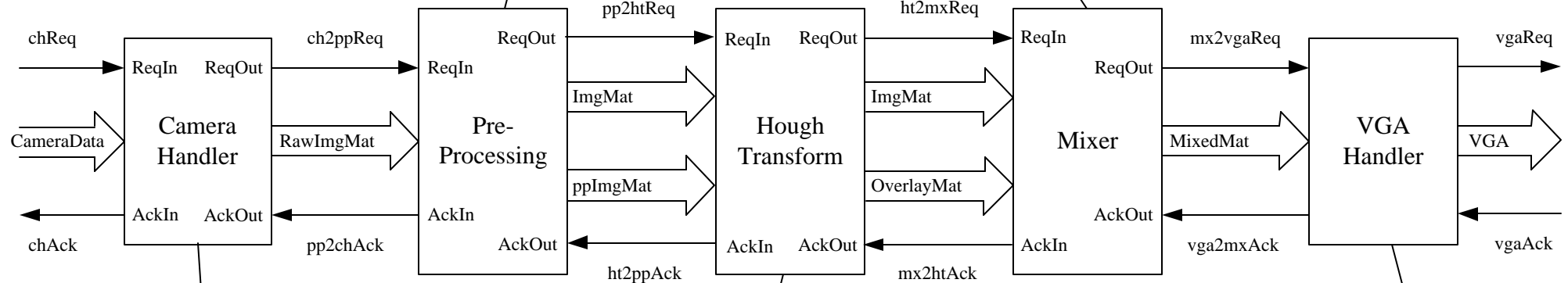# Real time Hough Transform

- Async pipeline

- Get raw matrix
- Convert to grayscale (mean RGB)
- Resize if necessary
- ImgMat = Mix and display
- ppImgMat = Do HT on this

- Put the line output from HT over the top of ImgMat
- Maybe colour?

chReq → | Camera Handler | ch2ppReq → | Pre-Processing | pp2htReq → | Hough Transform | ht2mxReq → | Mixer | mx2vgaReq → | VGA Handler | vgaReq →

Camera Handler
- ReqIn / ReqOut
- CameraData
- RawImgMat
- AckIn / AckOut
- chAck

Pre-Processing
- ReqIn
- ImgMat
- ppImgMat
- AckIn
- AckOut
- pp2chAck

Hough Transform
- ReqIn / ReqOut
- ImgMat
- OverlayMat
- AckIn / AckOut
- ht2ppAck

Mixer
- ReqIn
- ReqOut
- MixedMat
- AckIn
- AckOut
- mx2htAck

VGA Handler
- VGA
- vga2mxAck
- vgaAck

- Rip frames from camera
- Raw matrix output

- Do Hough Transform
- Keep ImgMat pipelined

- MixedMat turn to VGA data