DEVELOPMENT OF A PORTABLE 4G RADAR INTERFACE FOR MARITIME RADIOLOCATIONS

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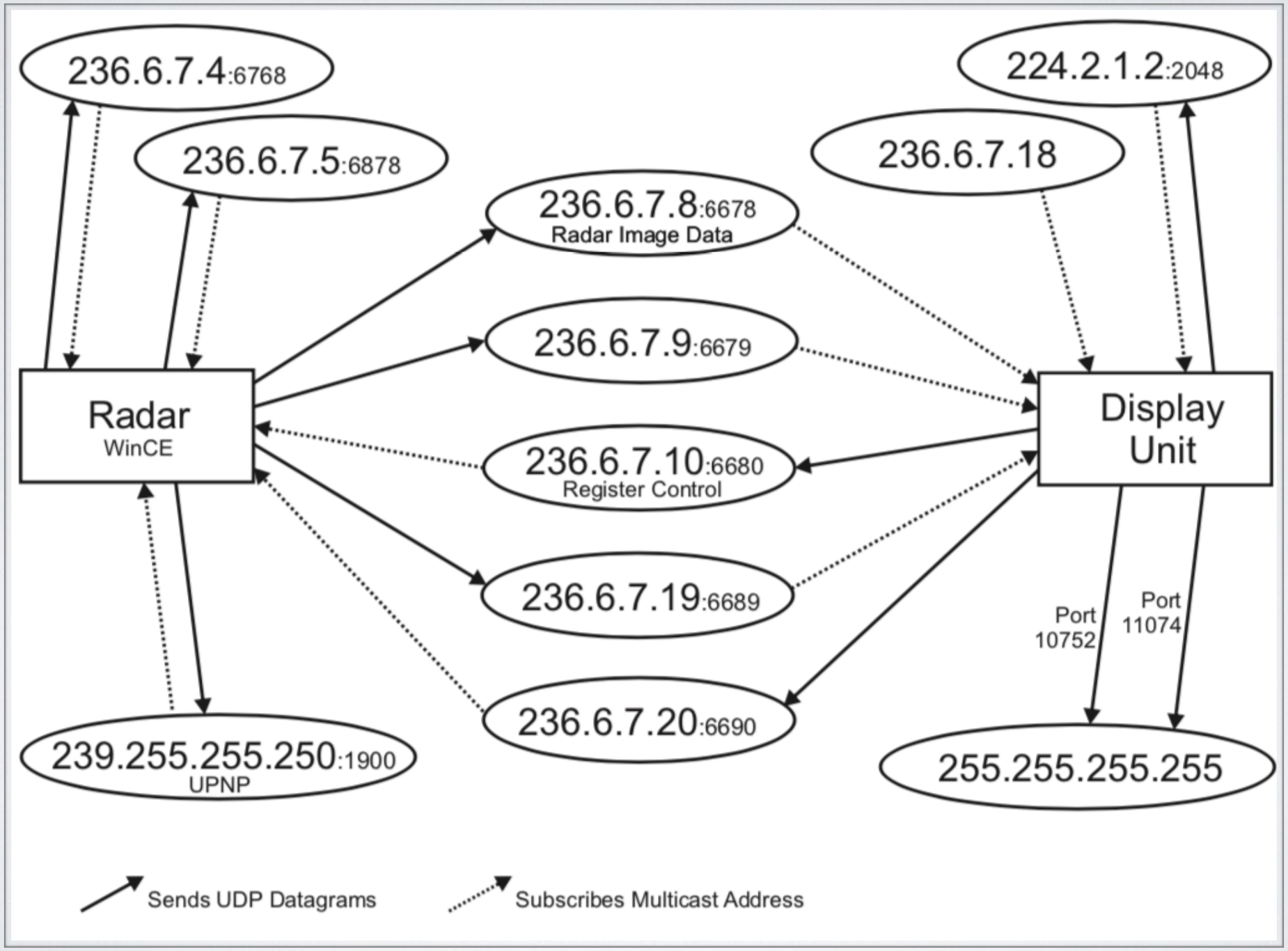
CONNECTION TO THE DEVICE



NETWORK AND TRANSPORT LAYERS

- Transport via UDP datagrams
- IGMP protocol encapsulation
- Neither delay nor risk for lost packets involved

MEAN OF COMMUNICATION

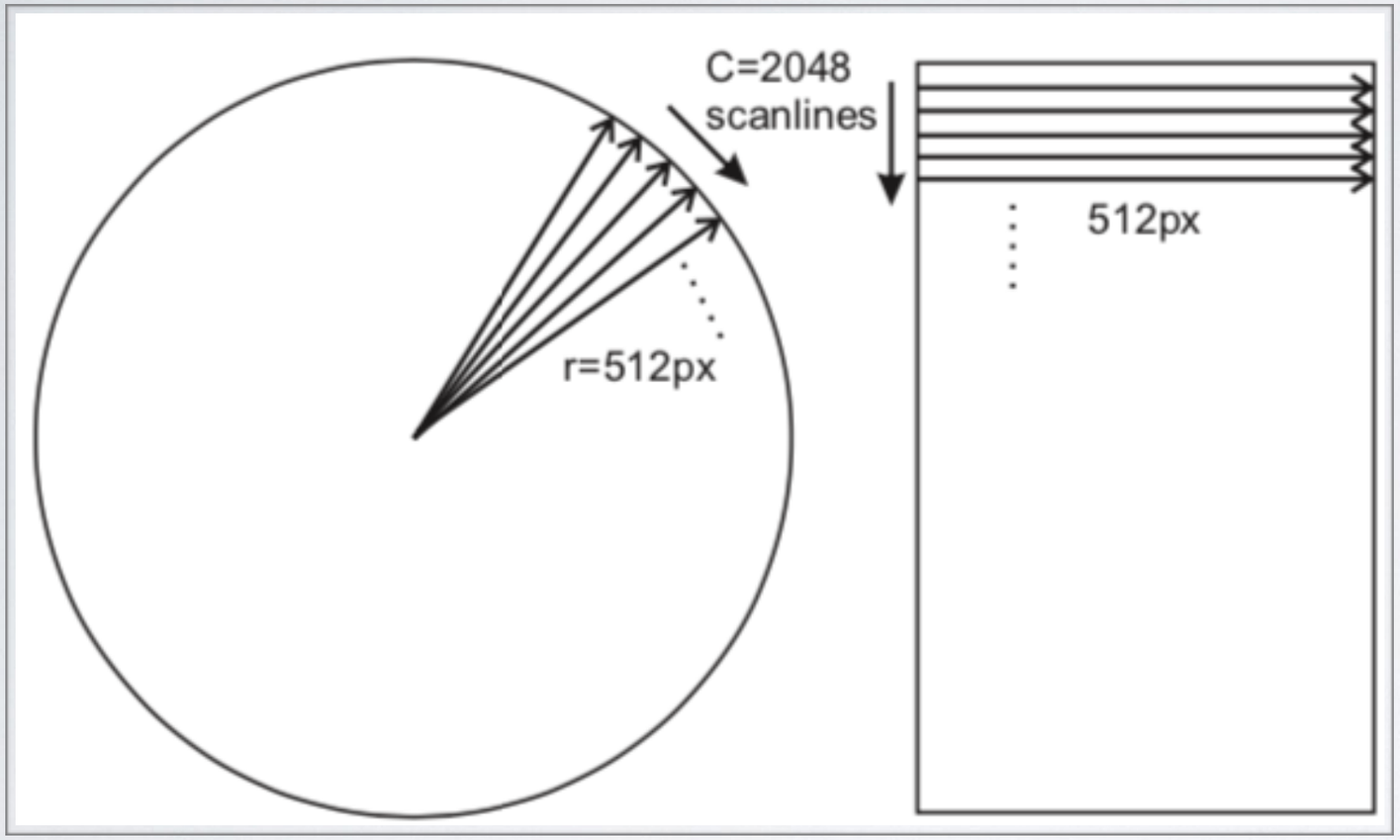
- Python is not optimised for Memory Addresses sharing but for Streams
- Communication via sockets for it is quicker than files system calls

WAY OF INTERACTION

00 — turn on/off	1 byte	on/off
01 — turn on/off	1 byte	on/off
03 — zoom level	4 bytes	sixteen different ranges in hectometers
06 — filters and preprocessing	9 bytes	five different filters
08 — interference rejection	1 byte	off/low/medium/high
0A — target boost	1 byte	low: 24rpm/medium: 36rpm/high: 48rpm
0E — local interference filter	1 byte	off/low/medium/high
0F — scan speed	1 byte	off/low/high
A0 —operation maintain	1 byte	—

- The Radar sends registers
- The CPU unit uncaps and applies instructions

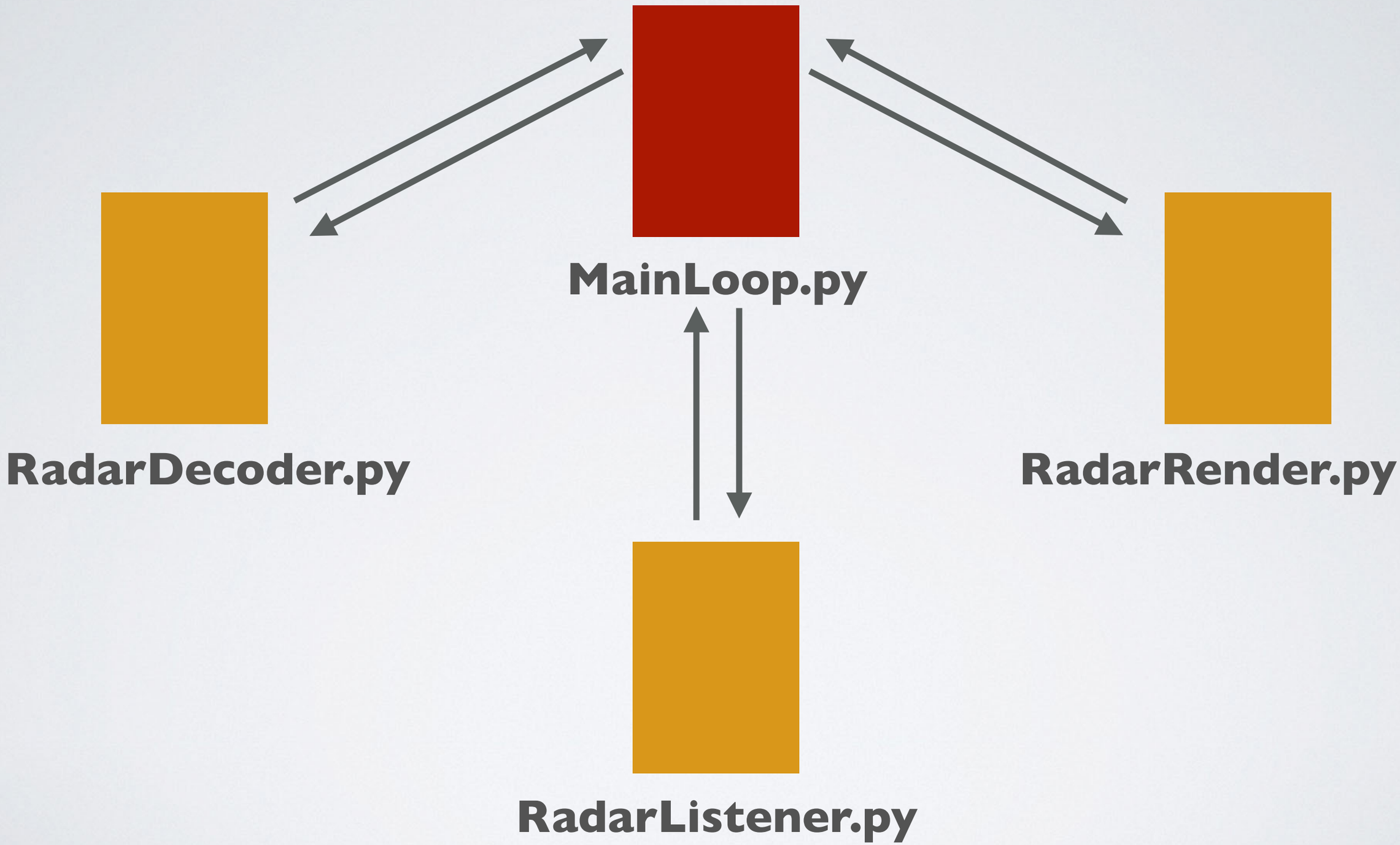
RENDERING THE FRAMES



- 3 speeds: 24, 36 and 48 rpm

- Each register brings 32 pixels
- Each complete frame includes 2048 scan-lines
- 64 registers are thus needed

CODE ARCHITECTURE



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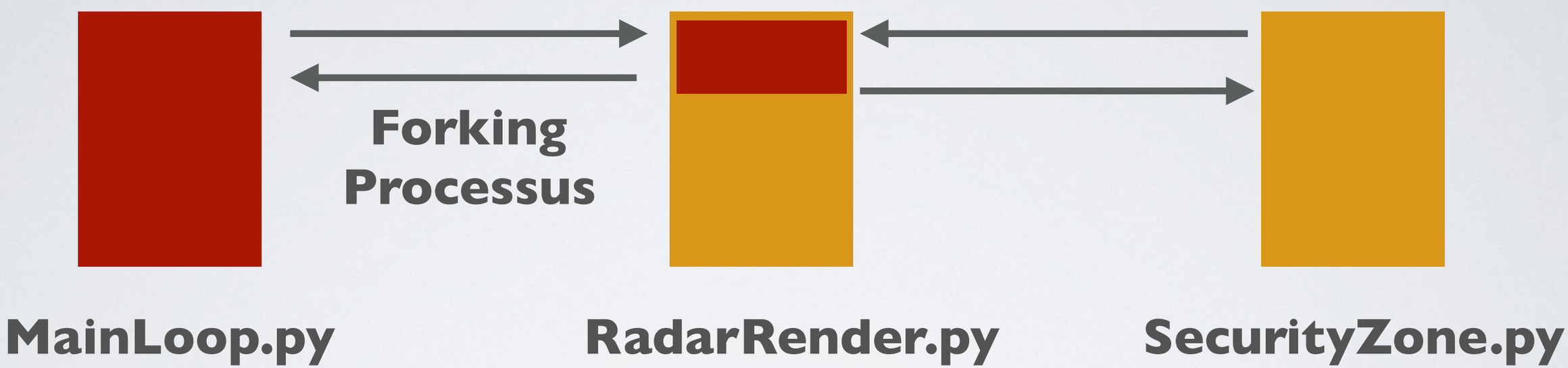


- The forked siblings are programmed for autodestruction after resolution
- The GUI of Microsoft forbids to give the hand to forked processus

SECURITY ZONE

- Use of a hysteresis thresholding in order to smooth the shapes
- Thresholds have to be set in real conditions

HOW IT WORKS

23	45	56
123	220	246
122	198	235

→

23	45	56
123	220	246
122	198	235

→

0	0	56
123	255	255
122	255	255

- *Upper threshold* = ***190***
- *Lesser threshold* = ***50***
- *3 pixels have to be fixed*

HOW IT WORKS

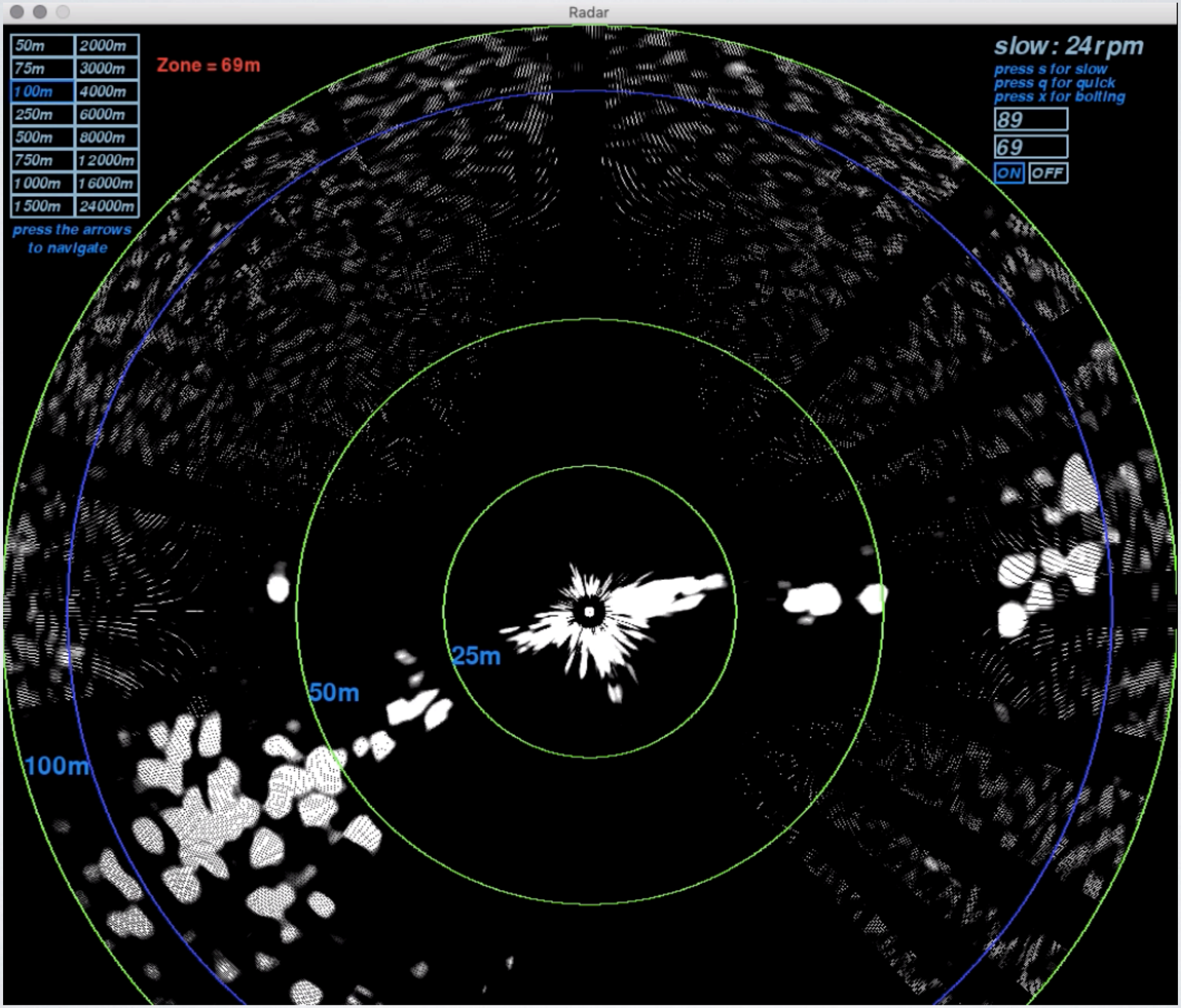
0	0	56
123	255	255
122	255	255

By nearby comparison,

the algorithm spreads
the colours
a homogeneous way

0	0	0
0	255	255
255	255	255

ABOUT THE INTERFACE



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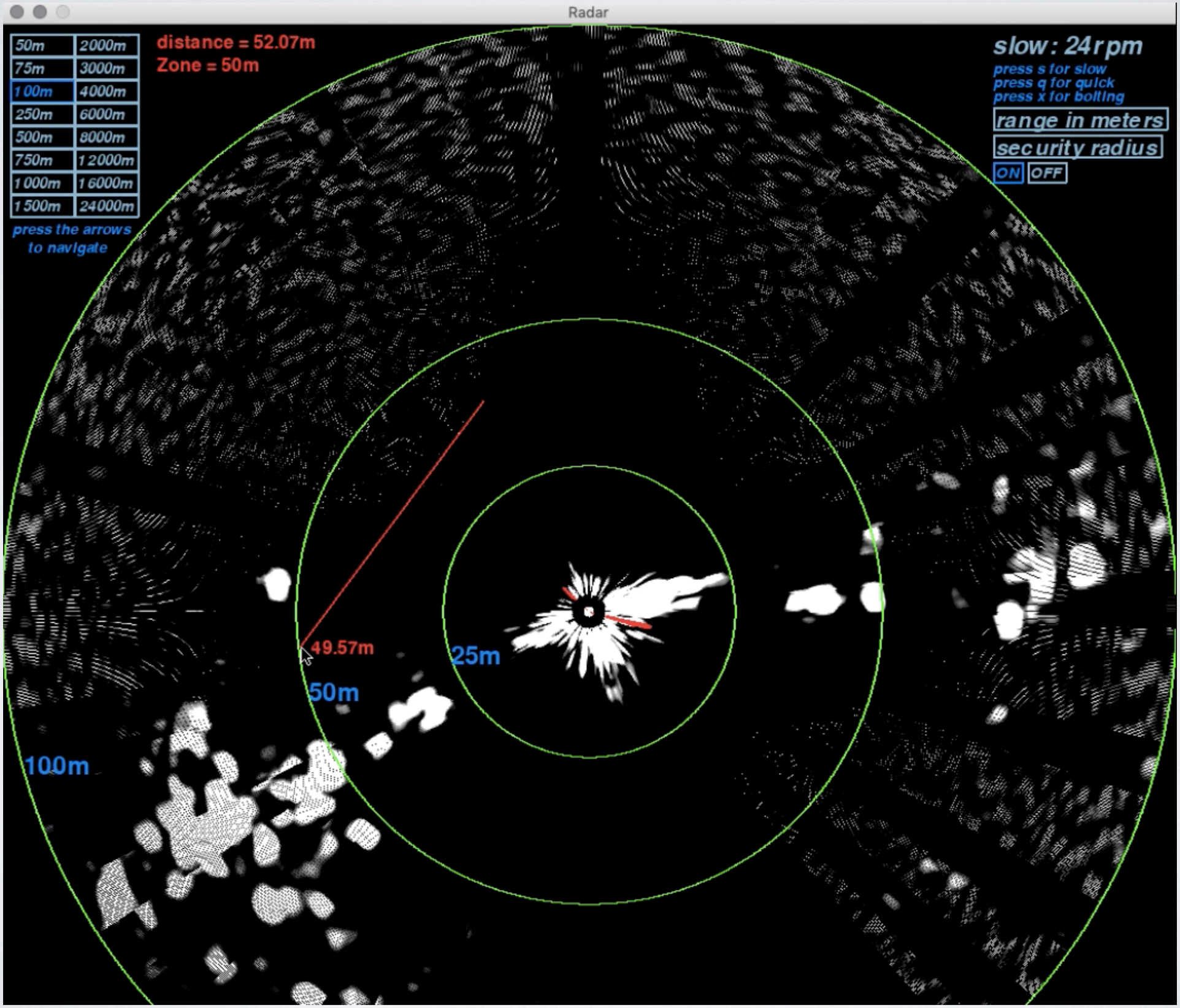
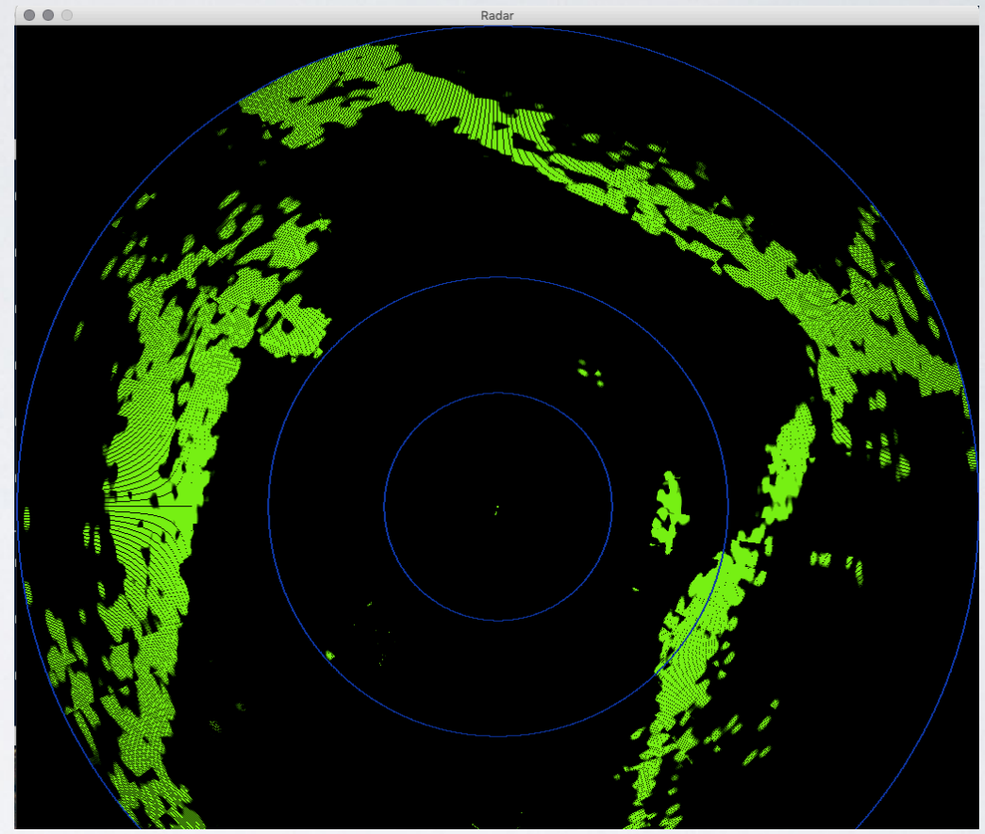


REAL CONDITIONS TESTS



ACKNOWLEDGEMENTS

Thank you for watching!