

* I’ve put things into MATLAB so you can reformat as you need to for what you have to do.
* runs\_ICRA.mat contains MATLAB struct variables: N\_S\_1 (black), N\_S\_2 (blue), and E\_W\_2 (red)
  + the vehicle telemetry data is interleaved with the target data
  + they are ordered in time histories as you requested;
  + therefore, each row of the struct contains an instant in time of vehicle telemetry or vehicle telemetry+detection
  + the struct variables contain row entries:
* if it is vehicle telemetry, a row is composed of:

reduced\_vehicle\_log = [double(Date\_year), double(Date\_month), double(Date\_day), double(Time\_hr), double(Time\_min), double(Time\_sec), Latitude, Longitude, GPS\_True\_Heading, Vehicle\_Speed\_\_kn\*0.51444, Pitch\_Angle, Roll\_Angle, DVL\_\_Altitude\_\_m, double(Number\_of\_Sats),zero\_pad,zero\_pad,zero\_pad,zero\_pad,zero\_pad,zero\_pad,zero\_pad,zero\_pad, zero\_pad,zero\_pad,zero\_pad,zero\_pad,zero\_pad,zero\_pad

such that: zero\_pad = zeros(length(C{2}),1);

* if it is a detection, a row is composed of:

ICRA\_detection = [

detection\_ping\_time\_year;

detection\_ping\_time\_month\_num;

detection\_ping\_time\_day;

detection\_ping\_time\_hr;

detection\_ping\_time\_min;

detection\_ping\_time\_sec;

UUV\_latitude\_deg;

UUV\_longitude\_deg;

UUV\_heading\_deg;

UUV\_speed\_mps;

UUV\_pitch\_deg;

UUV\_roll\_deg;

UUV\_altitude\_m;

detection\_slant\_range\_m;

detection\_latitude\_deg;

detection\_longitude\_deg;

tif\_image\_start\_time\_year;

tif\_image\_start\_time\_month;

tif\_image\_start\_time\_day;

tif\_image\_start\_time\_hr;

tif\_image\_start\_time\_min;

tif\_image\_start\_time\_sec;

tif\_image\_end\_time\_year;

tif\_image\_end\_time\_month;

tif\_image\_end\_time\_day;

tif\_image\_end\_time\_hr;

tif\_image\_end\_time\_min;

tif\_image\_end\_time\_sec;

];

* as you can see, for a detection, the detection info is appended to the end of the time and vehicle telemetry
* for a pure vehicle telemetry row, what would have been entires for the detection are padded with zeros
* There’s about 50 or 60 detections based on the parameters I put into the ATR. If you think you can deal with more I will have the ATR filters be less discriminating. Let me know.