WARM-UP: Computer Coding Challenge Round #1

Problem: Video transects are cumbersome to annotate manually.
Challenge: Address this issue by harnessing the power of cloud computing, machine learning/artificial intelligence, and image recognition/processing. Create a program that annotates a video transect for one species – in this case, the grooved tanner crab, *Chionoecetes tanneri*.

Video transect: Computer Coding Challenge Round #1 video from the Monterey Bay National Marine Sanctuary. Video courtesy of MBARI and the ROV Ventana.
https://vimeo.com/515385883/3bafce8be4

Your challenge is to design a computer program that can determine if/when a grooved tanner crab is seen in the video. You are to provide an annotation showing the time stamp (time from start of video) for each crab in the video. A secondary objective is to determine the size of each grooved tanner crab. Size measurements are determined across the carapace of the crab. As a size reference, the laser dots in the video are 22.86 cm apart.

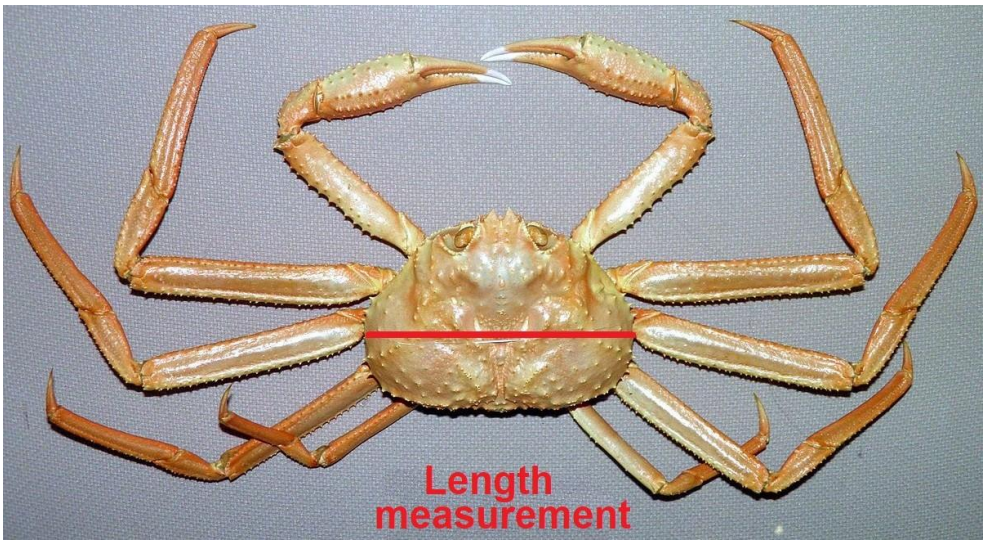

Photo from Wikidata.org

For example, if five crabs are seen in a one minute of the video, and those crabs are first seen on the screen at 11 seconds, 17 seconds, 28 seconds, 37 seconds and 54 seconds, then the annotation, including size of the crabs would look like:

Grooved tanner crab survey	
Time	Size estimation (cm)
0:11	5.1
0:17	3.2
0:28	4.9
0:37	4.9
0:54	5.8

Submissions:
Teams undertaking the Computer Coding Challenge will have 4 weeks to create their program and deliver that program, the resulting spreadsheet with each crab's time stamp and size, and a video demonstrating your solution working real time, to MATE ROV Competition officials. The program, spreadsheet, and video must be submitted no later than 11:59 PM, Hawaii time, March 29, 2021. The following naming convention should be used for your submissions: School or organization name_company name_ document type 2021, where document type is either the program or spreadsheet. The spreadsheet must be submitted as an XLS file. The program should be submitted as a PDF file. The video should be uploaded to YouTube or Vimeo and a link provided to that video.

The program, spreadsheet, and video link should be submitted to the 2021 MATE Computer Coding Challenge Round #1 Submission form.