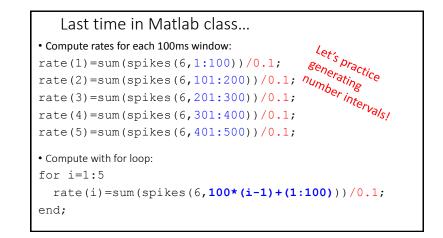
Systems Neuroscience Matlab, indexing and summarizing

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New data set: object and noise perception

View objects and noise Task: press button if pic(t) == pic(t-1) Variables: accuracy, reaction time, object or non-object

Questions:

- What picture was shown?
- What button was pressed?
- How quickly was button pressed?

Results recorded in: ExptRecord

ExptRecord columns • ExptRecord (:, 3) - 0 is noise, 1 is object • ExptRecord (:, 10) - 1 should press button, -1 should not press button • ExptRecord (:, 11) - 1 subject presses button, 0 subject not press • ExptRecord (:, 12) - 0-1000ms, number of ms until button press

Exploring your data

- size data dimensions
- plot display data contents in figure
- max maximum value in vector
- min minimum value in vector
- sort order vector from low to high values
- hist count frequency of values in vector
- MatVariable(:) convert AxB matrix into single vector

Finding desired values find (vector<number) find (c<2) Return indices in vector that are less than number Example: vector=[5, -1, 0, 12]; smallLocations=find (vector<2); smallLocations contains [2 3] Comparisons • d<2, d>2 strict inequality • d<=2, d>=2 semi-inequality • d==2 equality s

vector=[5, -1, 0, 12]; Combining searches Logic combinations • d>5 & d<8 the AND operation - all conditions must be true • d<5 | d>8 the OR operation - one or more conditions true Example: find(vector<2 & vector>-2) Can combine results from multiple matrices: vecB=[12 3 8 0]; find(vector<2 | vecB>4)

Looking at data subsets Look at average Reaction Time for button press for objects vs noise

```
objTrials = find(ExptRecord(:,3)==1);
ExptRecObj=ExptRecord(objTrials,:);
objClick=find(ExptRecObj(:,11)==1);
mean(ExpRecObj(objClick,12))
noiseTrials = find(ExptRecord(:,3)==0);
```

```
ExptRecNoise=ExptRecord(noiseTrials,:);
noiseClick=find(ExptRecObj(:,11)==1);
mean(ExpRecNoise(noiseClick,12))
```

Looking at data subsets

• Look at how often subject presses button when she should for objects and for noise:

length(find(ExptRecObj(:,10)==ExptRecObj(:,11)))

length(find(ExptRecNoise(:,10) == ExptRecNoise(:,11)))

...turns out they are equal