ECG Data

- www.physionet.org provides several data bases of physiological signals
- Large collection of ECG databases
- Also gait databases of various forms, MR images, neural signals
- ECG data bases for standard signals, various types of arrhythmia, sudden cardiac death, fibrilation...
- Frequently heart beats are annotated (could be useful).

Example File

![Example File](image)

Close Up

Align by Crossing Zero Going Up

![Close Up](image)

![Align by Crossing Zero Going Up](image)
Looking At Aligned Beats

Possible Questions

- Differences between types of arrhythmia (can you detect them, can you predict them?)
- Predicting fibrillation episodes in advance
- Models for heartbeat dynamics
- Requires somewhat more exploration of documentation/physiology background; but lots of opportunities.

Los Angeles Traffic/Pollution Data

- Data from large-scale monitoring program in Los Angeles (April 2003)
- Collected traffic flows at nearly 200 monitoring stations.
- Hourly measurements of
  - Number of vehicles
  - Number of trucks
  - Average speed
- Additional air quality measurements (currently at one location) of
  - Ozone
  - Nitrous Oxide
  - Volatile Organic Compounds
- Large set of possibilities: you should limit what you want to do.

Monitoring Locations
Example Traffic Records

Pollution Records

Questions

Traffic
- Relationship between speed and flow
- Effect of trucks
- Effect of weekday/weekend effect; effect of other days?
- Effect of road location? Ie, movement of traffic along roads.

Pollutants
- Effect of VOC/NOX on Ozone (known chemical interaction)
- Effect of temperature
- Nearby traffic effects
- Windspeed/solar radiation data also available.