Real-time analysis of signal from ActiveTwo EEG device

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Problem

- BioSemi ActiveTwo EEG device doesn't do real-time data analysis
- We need:
  - real-time Fourier transform (frequency-power visualisation)
  - real-time time-frequency visualisation
  - must be filterable by channel (there are 32)
Why this problem?

- Seemed like a good task for a software developer – mostly programming
- I wanted to learn Python
- Task with practical results – if I'm successful, the program might be taken to use in the lab
Solution

- Python 3.4
- pyqtgraph – for plotting, matplotlib – too slow
- QtDesigner – for UI design
- other PyQt4 libraries, numpy, scipy
- Connection to ActiveTwo's own software over TCP/IP (running on the same machine)
Results/problems

- I learned a lot about signal processing and Python programming
- Plotting is fast, but we discovered that there was lag between ActiveTwo software and my program
- Needs another lab visit to “field test” it
- Still some regular software bugs to fix
- Seems slower on some machines (Win8?)
Demo