# Neuroinformatics: Impressions from a Computer Scientist

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## **Computer Science**

Computer Science has a new kind of customer:

#### The Sciences

- ▶ Bioinformatics
- Astro-informatics
- Neuroinformatics

And we are deeply happy with that!

#### Caveat

- ► However, applying IT is *not* the same as Computer *Science*
- ► For academic interest, fundamentally new problems should have to be solved
- ► The rest is engineering (which does *not* mean that it is easy!)
- ► Computer Scientists could help in pointing out how to solve problems

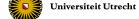
# Jaaps Workplan: Engineering

- developing technical structure such as
  - databases
  - infrastructure
- developing conceptual structure such as
  - Guidelines
  - Standards
  - Ontologies



# A final note on Engineering

- ▶ The engineering problems should, of course, be solved.
- Not by academic computer scientists, but there are lots of knowledgeable people that can consult.





## Jaaps Workplan: Science

- ► Data analysis, visualization, data mining, machine learning...
- computational models
- ▶ simulation



#### **Some Characteristics**

#### Certainly not complete:

- ▶ Images and pattern recognition in images.
- Reconciling models on different levels of detail/space/time
- Using data from different sources (fMRI and EEC)
- ▶ Many dimensions and large amounts of data



#### **But is this Unique?**

- ► Robert Cannon compared against Astronomy, but what if he had compared against \*omics?
- ► There is lots of ongoing work on problems with these characteristics:
  - Large bioinformatics programs
  - Large Multimedia projects
  - Large Computational Science programs (esp. modelling and simulation)



## **Perhaps**

- ► There is not enough funding to the necessary imaging etc research
- ► An integrative program offers possibilities that go over these "traditional" borders
- ▶ Do you want fundamental CS research (as in CLS) or do you want fundamental Neuro research (as in IOP Genomics)?