CREATING A SIMPLE ANTENNA CONTROL INTERFACE

by Antonio Ochoa
Outline

• About me
• Project
• Background
  • Radio astronomy
  • Current interface
  • Stellarium
• Progress
• What I have learned
About Me

- Student at Cal Poly Pomona
- Mathematics and Computer Science double major
Project

• Context: Make a simple interface for controlling Deep Space Network antennas intended for K-12 education

• Write software to allow Stellarium to send “go to” commands to Deep Space Network antennas

• Develop additional interface
  • Display antenna information
  • Display data received
  • Perform additional antenna controls
What is Radio Astronomy?

• Almost *everything* emits electromagnetic radiation

• Radio astronomy is the study of the electromagnetic energy of extraterrestrial objects at radio frequencies

• This is done using radio telescopes like Deep Space Station – 13 located in Goldstone, California
Current Interface: Xant + XPlot
Stellarium

- Open-source planetarium for your desktop
- Virtual sky
- Object selection with appropriate coordinates
Interface Snapshot

- Graphical selection of antenna offsets.
- Display antenna data
- Graphical selection of frequency based on mapping of visible spectrum to radio frequencies
- Work in progress…
Stellarium + Interface
I Learned...

- Python Programming Language:
  - Networking
  - Writing Graphical User Interfaces
  - Capabilities of C Programming Language and Python interactions

- Radio astronomy

- How to appropriately complain about gas prices.
Thank You

- Dr. Thomas Kuiper
- [Supervisor ??]
- Dr. Daisy Sang
- SIRI Program