Developing PSRCHIVE tools

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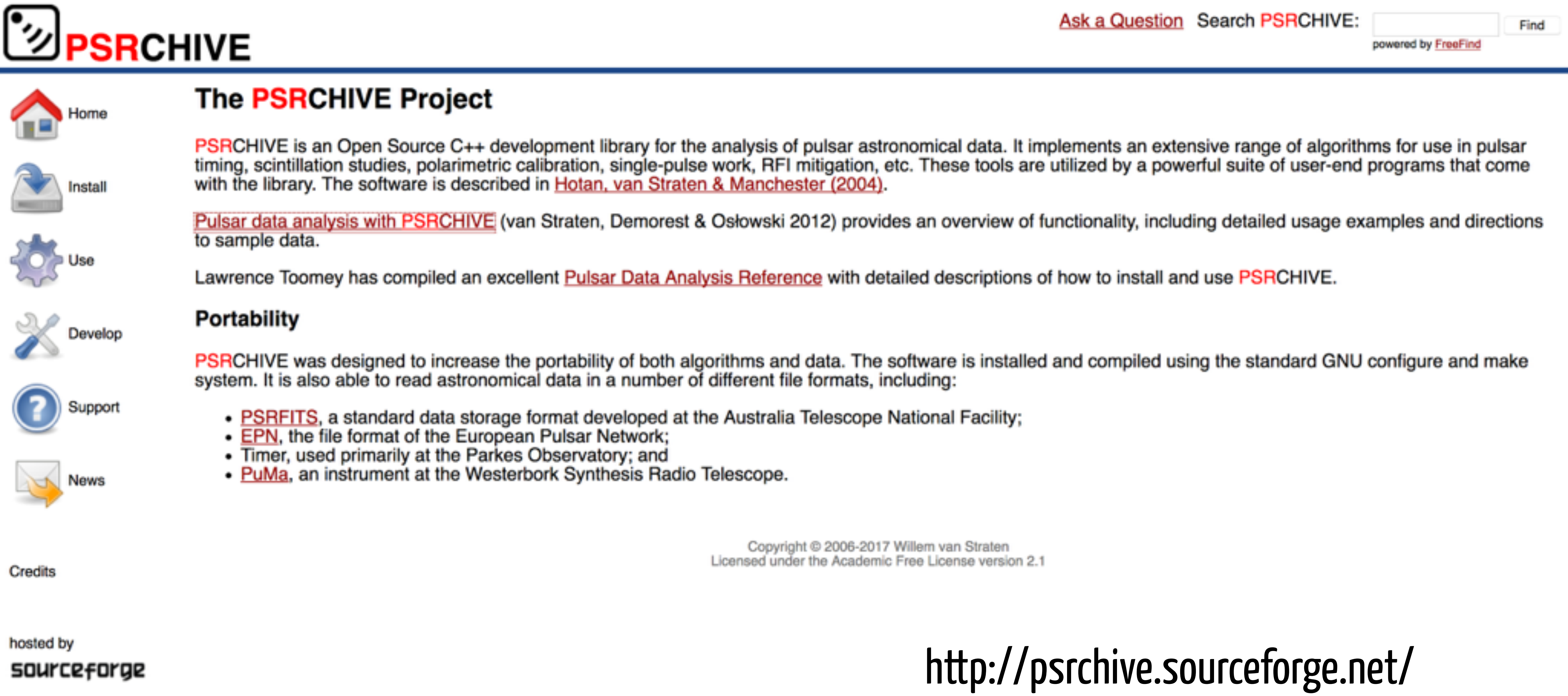
PSRCHIVE

- “PSRCHIVE and PSRFITS: An Open Approach to Radio Pulsar Data Storage and Analysis”, A. W. Hotan, W. van Straten and R. N. Manchester, PASA, 2004, 21, 302; (arxiv/0404549)

- “Pulsar Data Analysis with PSRCHIVE”, W. van Straten, P. Demorest; Osłowski, Stefan, ART, 2012, 9, 237; (arXiv:1205.6276)

PSRCHIVE



The PSRCHIVE Project

PSRCHIVE is an Open Source C++ development library for the analysis of pulsar astronomical data. It implements an extensive range of algorithms for use in pulsar timing, scintillation studies, polarimetric calibration, single-pulse work, RFI mitigation, etc. These tools are utilized by a powerful suite of user-end programs that come with the library. The software is described in Hotan, van Straten & Manchester (2004).

Pulsar data analysis with PSRCHIVE (van Straten, Demorest & Osłowski 2012) provides an overview of functionality, including detailed usage examples and directions to sample data.

Lawrence Toomey has compiled an excellent Pulsar Data Analysis Reference with detailed descriptions of how to install and use PSRCHIVE.

Portability

PSRCHIVE was designed to increase the portability of both algorithms and data. The software is installed and compiled using the standard GNU configure and make system. It is also able to read astronomical data in a number of different file formats, including:

- PSRFITS, a standard data storage format developed at the Australia Telescope National Facility;
- EPN, the file format of the European Pulsar Network;
- Timer, used primarily at the Parkes Observatory; and
- PuMa, an instrument at the Westerbork Synthesis Radio Telescope.

http://psrchive.sourceforge.net/

PSRCHIVE

- object-oriented C++
- version control (git)
- portability (autotools)
- backwards portability
- ~~unit-testing~~
- python bindings

PSRCHIVE

- Start by looking at a simple example application: psrchive/More/Applications/example.C
- In particular, look at the "process" function
- More details http://psrchive.sourceforge.net/tutorial/application.shtml
- and overall: http://psrchive.sourceforge.net/tutorial/

Resources

- everything: https://www.google.com.au/ & https://stackoverflow.com/
- C++: http://www.cplusplus.com/
- git: https://www.atlassian.com/git/tutorials & https://git-scm.com/doc
- psrchive: http://psrchive.sourceforge.net/devel/
- auto tools : https://www.lrde.epita.fr/~adl/autotools.html (not so important)
- example of python data processing tool: https://github.com/plazar/coast_guard and P. Lazarus MNRAS, 2016, 458, 868L, arxiv:1601.06194