



GNU Data Language (GDL) - a free and open-source implementation of IDL

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GNU Data Language (GDL) is developed with the aim of providing an open-source drop-in replacement for the ITTVIS's Interactive Data Language (IDL). It is free software developed by an international team of volunteers led by Marc Schellens - the project's founder (a list of contributors is available on the project's website). The development is hosted on SourceForge where GDL continuously ranks in the 99th percentile of most active projects.

GDL with its library routines is designed as a tool for numerical data analysis and visualisation. As its proprietary counterparts (IDL and PV-WAVE), GDL is used particularly in geosciences and astronomy. GDL is dynamically-typed, vectorized and has object-oriented programming capabilities. The library routines handle numerical calculations, data visualisation, signal/image processing, interaction with host OS and data input/output. GDL supports several data formats such as netCDF, HDF4, HDF5, GRIB, PNG, TIFF, DICOM, etc. Graphical output is handled by X11, PostScript, SVG or z-buffer terminals, the last one allowing output to be saved in a variety of raster graphics formats.

GDL is an incremental compiler with integrated debugging facilities. It is written in C++ using the ANTLR language-recognition framework. Most of the library routines are implemented as interfaces to open-source packages such as GNU Scientific Library, PLPlot, FFTW, ImageMagick, and others. GDL features a Python bridge (Python code can be called from GDL; GDL can be compiled as a Python module). Extensions to GDL can be written in C++, GDL, and Python. A number of open software libraries written in IDL, such as the NASA Astronomy Library, MPFIT, CMSVLIB and TeXtoIDL are fully or partially functional under GDL. Packaged versions of GDL are available for several Linux distributions and Mac OS X. The source code compiles on some other UNIX systems, including BSD and OpenSolaris.

The presentation will cover the current status of the project, the key accomplishments, and the weaknesses - areas where contributions and users' feedback are welcome! While still being in beta-stage of development, GDL proved to be a useful tool for classroom work on data analysis. Its usage for teaching meteorological-data processing at the University of Warsaw will serve as an example.