

An Introduction and Practical View of Scientific Python

Carmen Carrano*

Abstract and bio –

In my time signal and image processing here at LLNL I've been exposed to various tools of the trade for algorithm development. My early years were spent working primarily with an in-house C-based macro capable language called View, as well as some early incarnations of Matlab and PVWave. Then as View development faded, we realized how much the commercial offerings had improved and how much cheaper it was to just purchase COTS software for signal processing. I became very proficient in IDL due to my work in the astronomy community. As I branched out beyond that community, my relationship with Matlab was solidified as well. In recent years, though, my attention has been turning to Python as a tool for many of my algorithm development and data processing needs. In my presentation, I will talk about what makes Python so attractive, both in general and in contrast to Matlab and then present some basics of the language including some side-by-side code comparisons to Matlab. Finally, I will show a few examples of what some of Python's major scientific computing modules can do.

Carmen Carrano is employed as an Engineer working on Global Security projects in the Computational Engineering Division at Lawrence Livermore National Laboratory (LLNL). Her general research interests include signal, image and video processing applications and algorithms. She is currently contributing to video-based feature extraction, analysis, and understanding efforts underway at LLNL. She also leads the long-range, high-resolution surveillance imaging through atmospheric turbulence with speckle imaging efforts at LLNL. Past projects include persistent surveillance video processing with an emphasis on motion detection and feature-based vehicle tracking in low-resolution and low frame-rate imagery as well as image processing and reconstruction related to adaptive optics and wavefront sensors for both astronomical and laser applications as well as radar image processing (SAR, RAR, and ship wake detection). Carmen received her B.S. and M.S. in electrical and computer engineering from the University of California at Santa Barbara (1991, 1992).

Location:

LLNL LVOC / HPCIC / Building 6475
Greenville Rd → 100 m south of the Eastgate Drive and Lupin Way traffic signal

Snacks and drinks are complementary and are provided by the IEEE / OEB Signal Processing Chapter.

This location is on US Government property and requires foreign national visitors to be properly documented in order to attend. Please contact Ron Kane (kane2@llnl.gov) if you have questions.