Preface

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SciPy 2014, the thirteenth annual Scientific Computing with Python conference, was held July 6–12th in Austin, Texas. SciPy is a community dedicated to the advancement of scientific computing through open source Python software for mathematics, science, and engineering.

The SciPy conferences have become a prominent forum for Python users from the academic, commercial and government sectors to present and develop their latest tools and innovations. Topics cover a wide array of domains, from cross-language interactions to education and cutting-edge research. These events, by virtue of embracing both in-depth scientific exploration and programming/code, form a unique connection between the academic and developer communities. At SciPy, code, science, and math live on the same screen.

It is an exciting time to be part of this community that has spent the last decade developing sophisticated tools—tools that are now ideally suited to address technical problems arising at the blooming intersection of specialized domains and computation. Many contributors to the community have been hired at university data institutions, Python has become the number one language for undergraduate teaching, and many productive partnerships have been formed with industry.

The conference continues to grow with almost 500 participants from across the globe. More than half of attendees are now from industry, the rest split between government laboratories and the academy. The organizing committee is committed to increasing representation from underrepresented groups. This year, 15% of attendees were women, a significant increase from 3% in 2013. A Diversity Committee was formed to ensure that this trend continues.

Geospatial Computing and Education were central themes this year, with additional minisymposia on the following topics:

- Astronomy and Astrophysics
- Bioinformatics
- Geophysics
- Vision, Visualization, and Imaging
- Computational Social Science and Digital Humanities
- Engineering

Birds of a Feather sessions were organized around select solicited topics, providing an effective platform for discussing issues relevant to the community. New open space activities, sponsor funded social events and tutorials effectively exposed newcomers to the welcoming and inclusive scientific Python community.

We were privileged to have three prominent community members present keynotes. Greg Wilson gave a heart-felt call for action, encouraging the enhancement of tools for education in scientific computing. Lorena Barba focused on the interactions between computation, the system under study and learning, highlighting the importance of tools that facilitate those connections. The final keynote speaker, Python core developer Nick Coghlan, presented his perspective on the distribution of open source tools, emphasizing the need to bridge gaps that exist between various channels of distribution.

These proceedings contain 16 peer-reviewed contributions, based on talks presented at the conference. They provide a peek into the current state of the ever-evolving landscape of Python in Science. We hope you find pleasure in the effort the authors have made to carefully present their work in a clear and accessible fashion.

On behalf of the SciPy2014 organizers,

Andy Terrel & Kelsey Jordahl, conference chairs
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