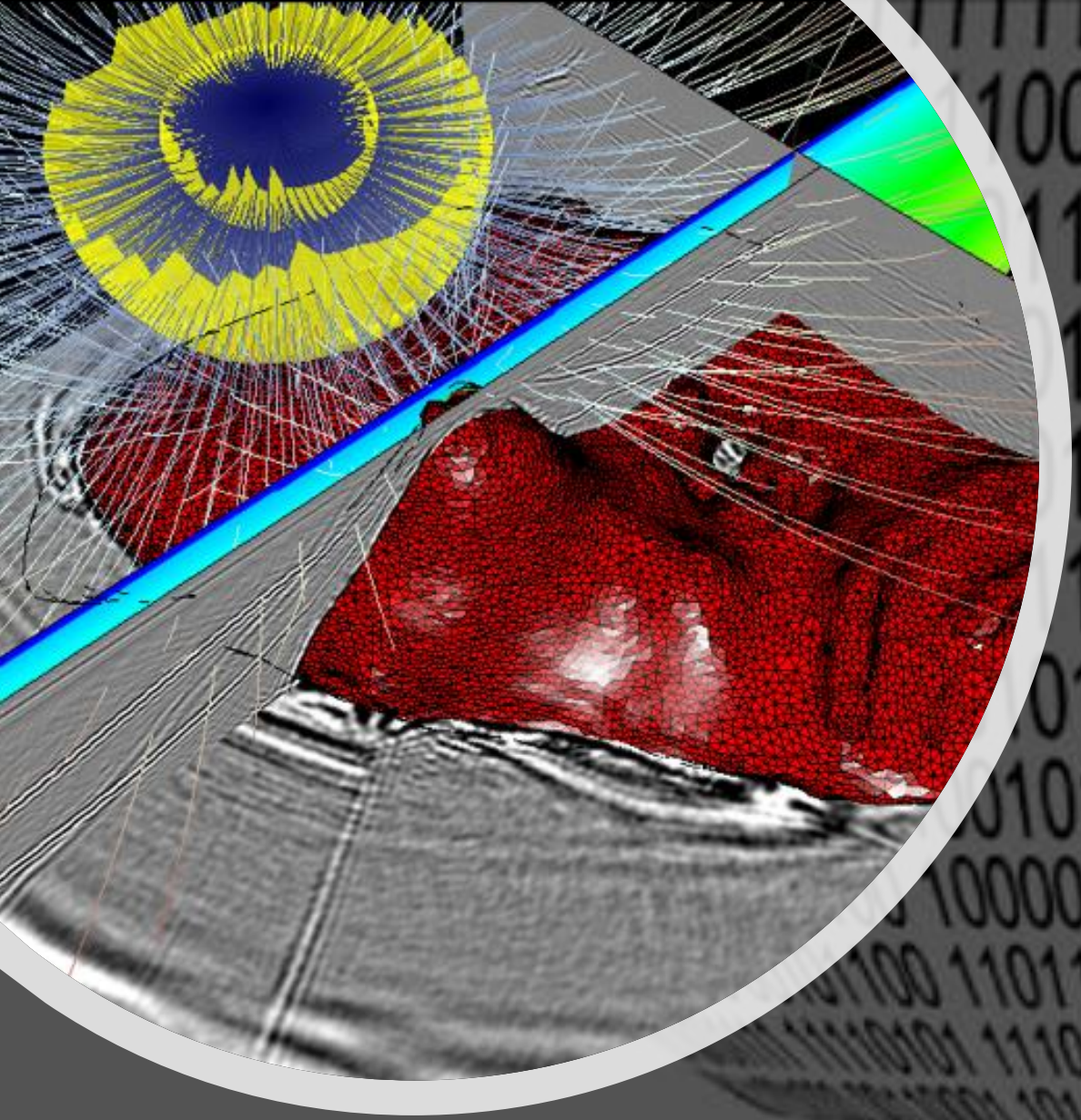
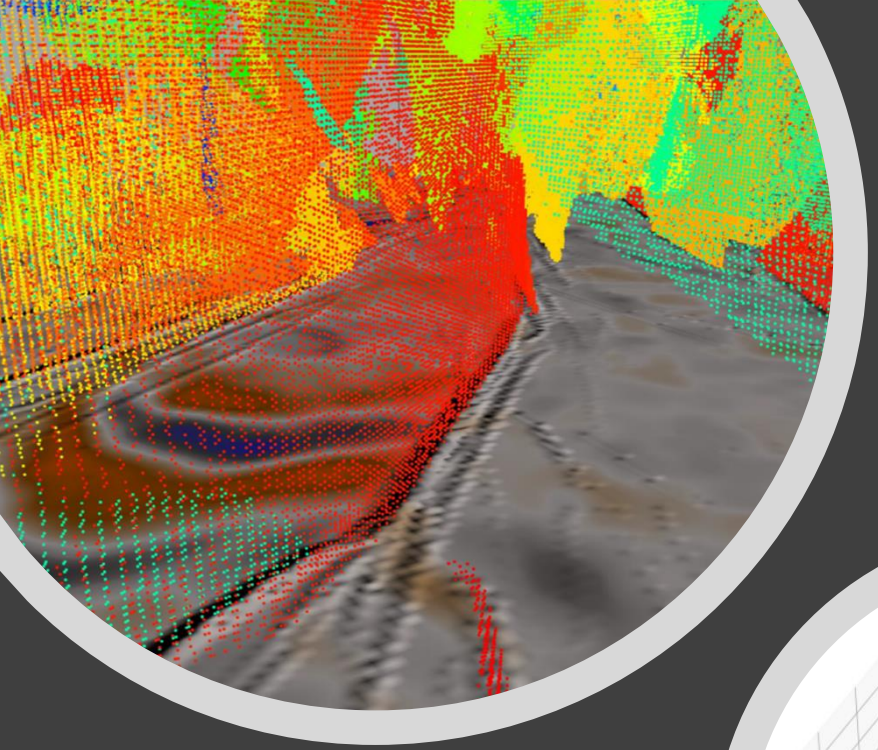
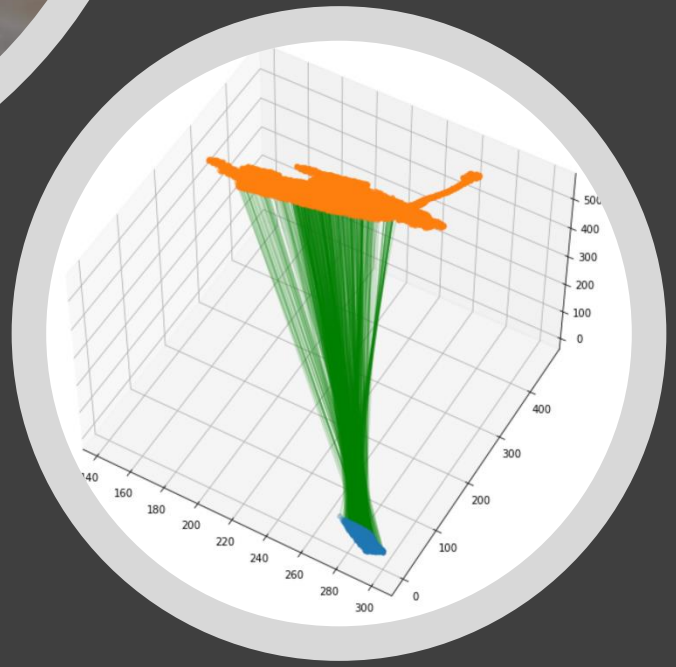


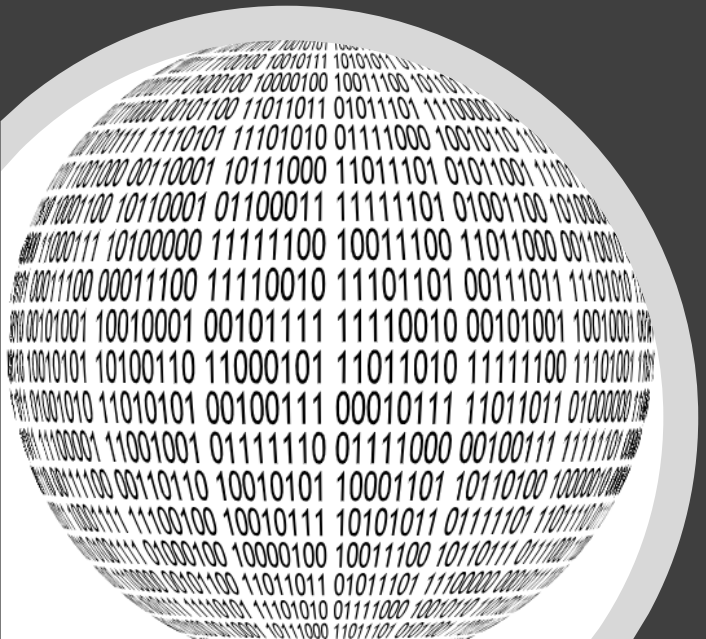
DIGITAL GEO SPECIALISTS:

Machine Learning Workshops

- **ProMax/SeisSpace Training**
- **Geophysical Processing and Research**
- **Geoscientific Software Development**







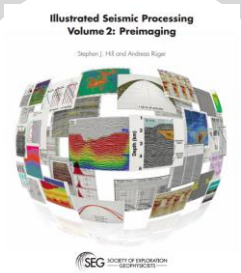
Digital Geo Specialists Workshop:

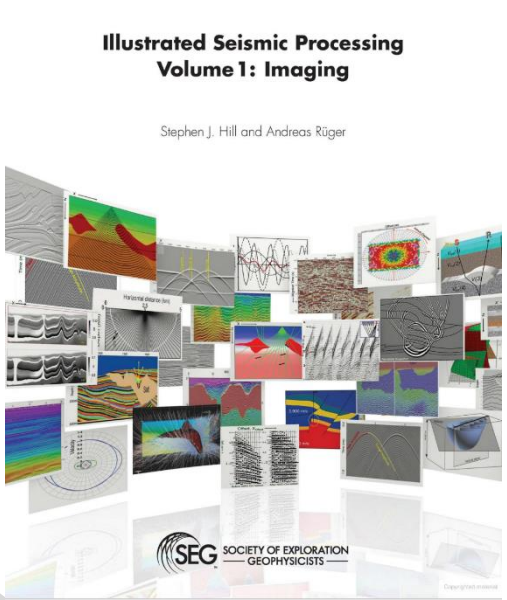
Hands-on Machine Learning

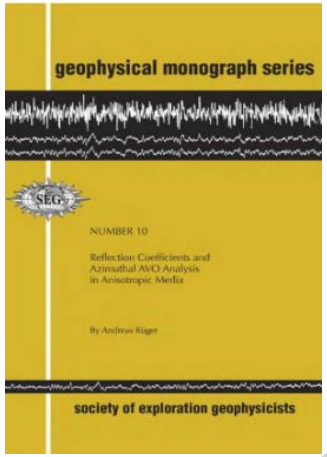
- Machine Learning for science and engineering
- Hands-on with student exercises
- Taught in the Python programming language
- Customizable for your company's needs
- Learn to make decisions on AI - Machine Learning - Deep Learning projects

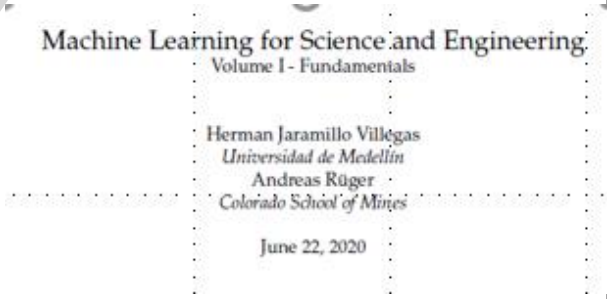
Workshop: Based on our Textbooks

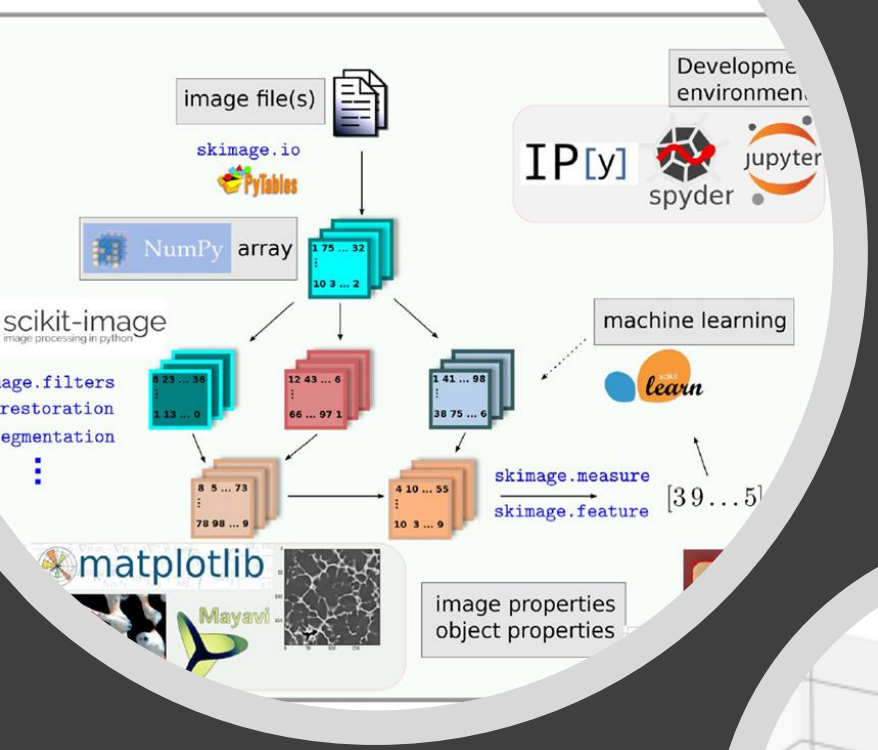
- Machine Learning for Science and Engineering – Vol 1 Fundamentals
  - *Jaramillo and Rueger, SEG, accepted*
- Illustrated Seismic Processing – Vol 1 and Vol 2
  - *Hill and Rueger, SEG, 2019, 2020*
- Reflection Coefficients and Azimuthal AVO analysis
  - *Rueger, SEG, 2002*

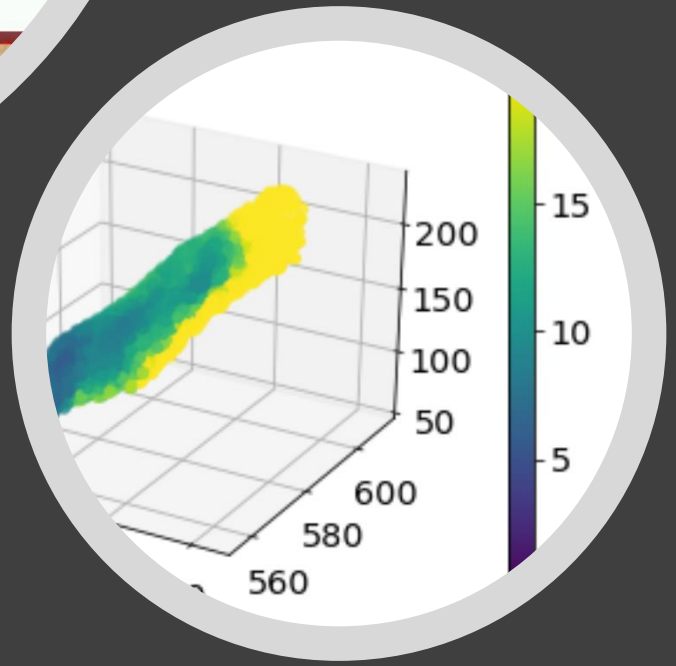


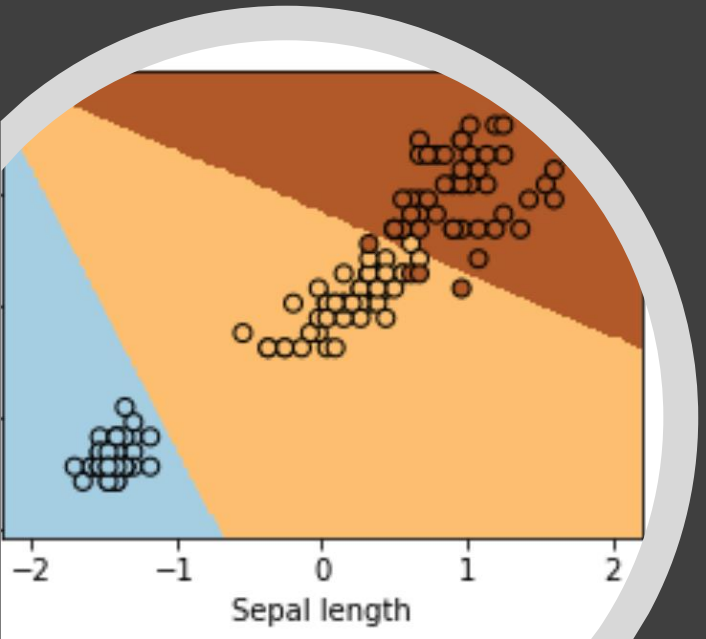






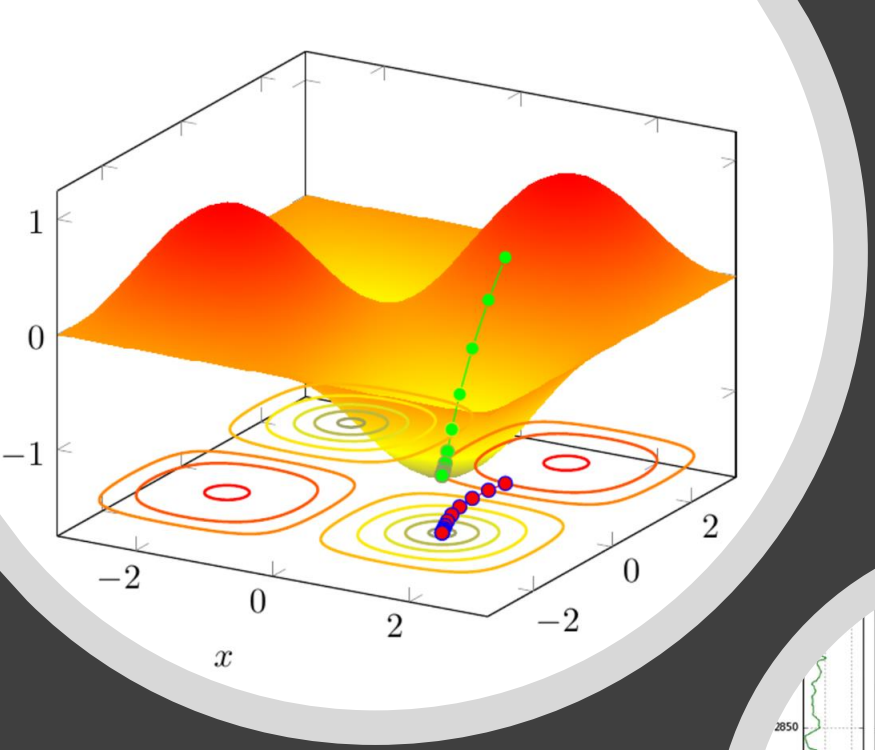


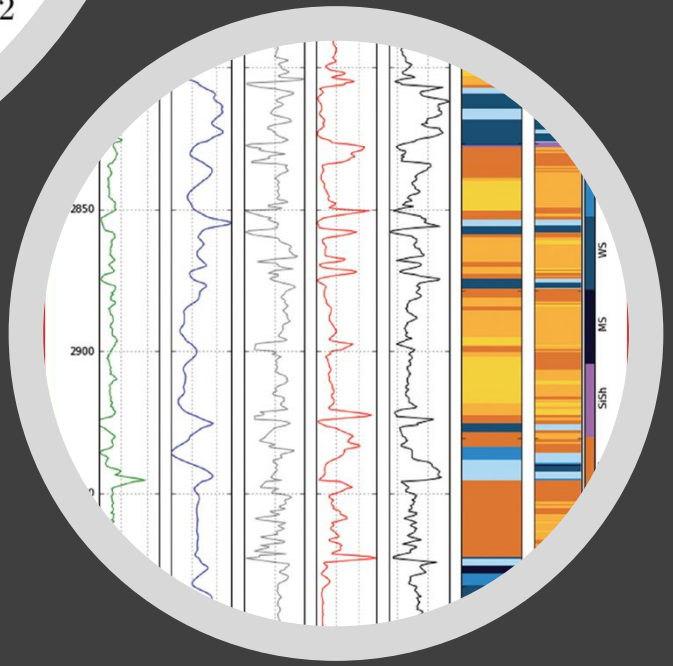


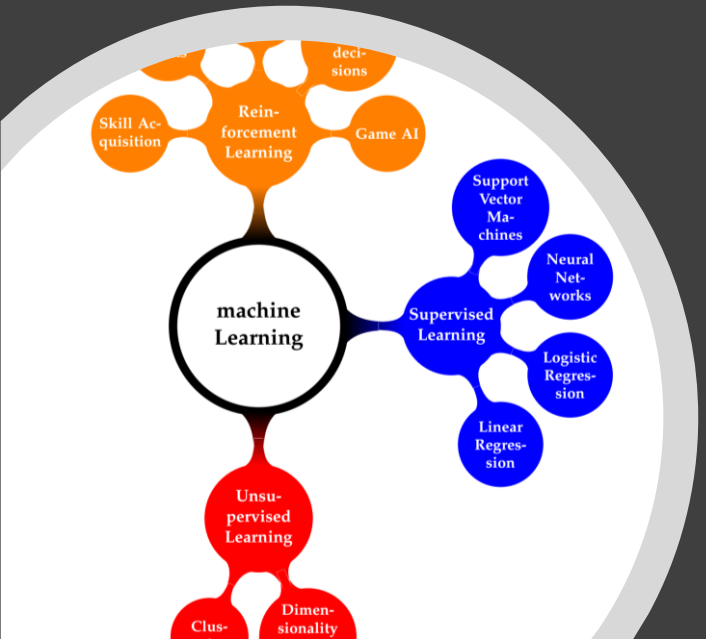


Workshop settings

- Available in multiple languages
  - English, Spanish, German
- Conducted in a Python-language ecosystem
- Instructed by PhD Geoscientists
- Small class sizes, one-on-one breakout sessions
- Detailed installation instructions
- Exercises designed to deepen your understanding
- Real data examples







What you will learn

Scientific Python computing

- Array processing in NumPy
- Statistical analysis in Pandas
- Advanced visualizations

Supervised Machine Learning

- Regression and Classification
- Support Vector Machines
- Random Forests
- Neural Networks

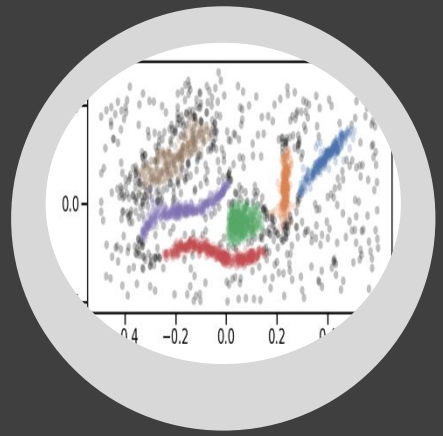
Unsupervised Machine Learning

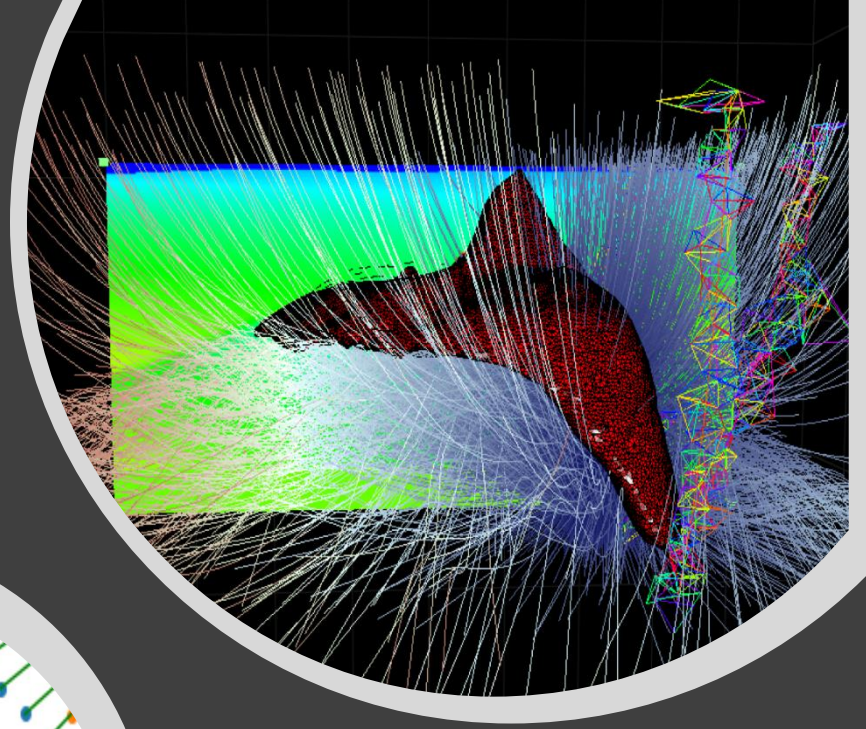
- Advanced data clustering
- Principal Component Analysis

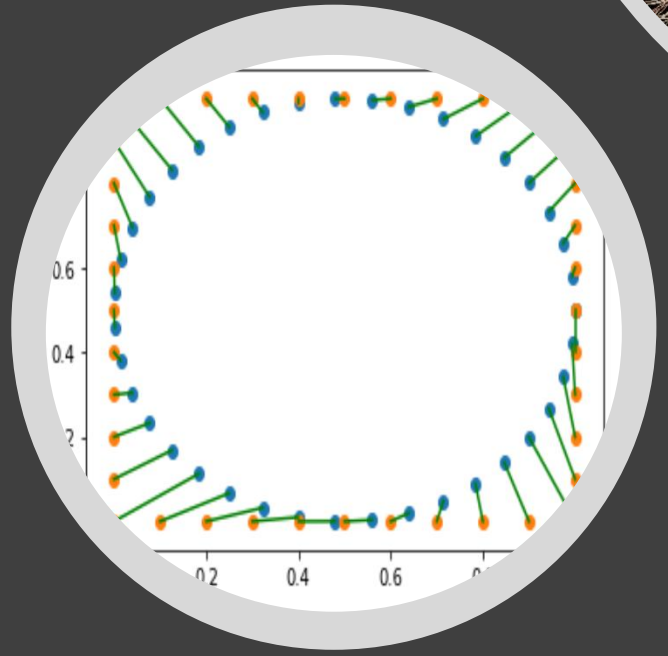
- **Participants will receive:**
  - Concise, instructive reviews of all concepts
  - Working code, in the form of Jupyter notebooks, which form a solid basis for future learning and research

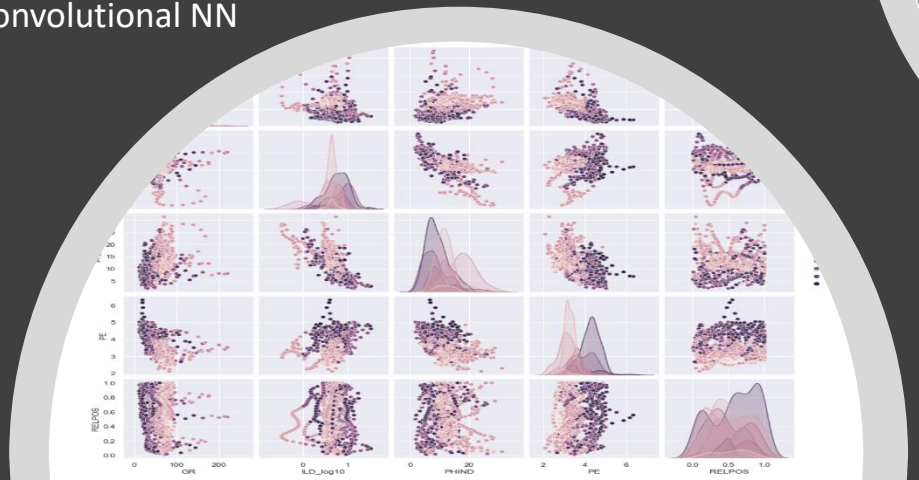
Example Agenda

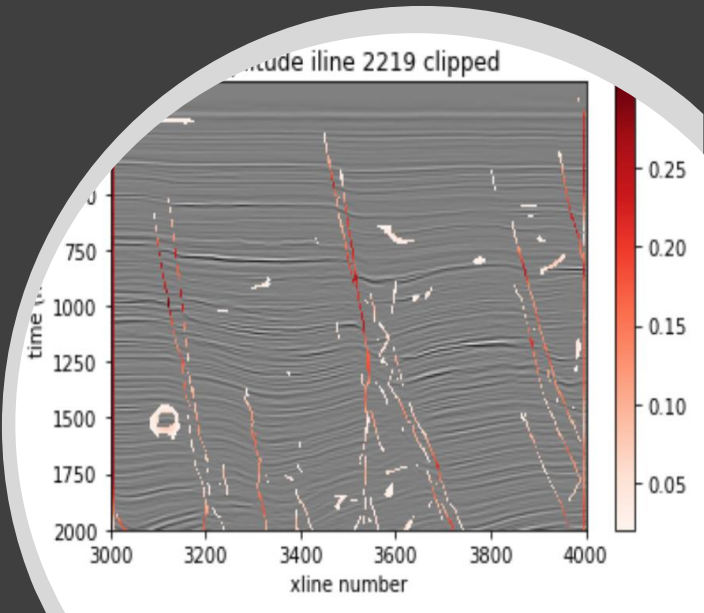
1. Python Intro
2. NumPy
3. Pandas
4. Visualization
5. Linear models
6. Gradient Descent
7. Logistic regression
8. GridSearch and validation
9. Support Vector Machines
10. Neural Networks
11. Dimensional Reduction
12. Hierarchical n-dim clustering
13. Convolutional NN











Chief Geophysicist - Andreas Rueger, PhD

- Professor of Geophysics, Colorado School of Mines
- SEG Karcher Award Recipient
- 3 (+1) published Geophysical/ML textbooks
- 20+ years at LGC, Principal Tech Advisor

Bob Basker	ProMAX/SS processor, architect	**Art Barnes, PhD**	Seismic Attributes
Dan Grygier	ProMAX/SS product expert	**Paul Petermann**	ProMAX/SS training
Herman Jaramillo, PhD	Geophy. and Machine Learning Instructor	**Cesar Arias, PhD**	Geophysical cloud processing expert
Chuck Sembroski	GeoProbe developer	**Joseph McKinsey**	MSc Mathematics

Digital Geo Specialists

Chief Software Architect – Phil Ensign, PhD

- PhD in Theoretical Physics, University of Colorado
- 30 years in industry (20+ at LGC)
- Architect of DTExpress, DSG

More information at:

www.digitalgeospecialists.com