zfit

scalable pythonic fitting

Ingredients

- Interest in Python and coding
- Supervision from core developers
- Machine Learning ecosystem in Python
- Software engineering-based principles
- A handful of applied statistics

Method

- Structure the code for longevity
- Discuss ideas with other people
- Implement a piece and taste it
- Write about it, offer others to try
- Change recipe according to feedback
- Enjoy the result together, hot or cold

Contact

If something interests you, feel free to contact Nicola Serra (nicola.serra@cern.ch) or Olaf Steinkamp (olafs@physik.uzh.ch).

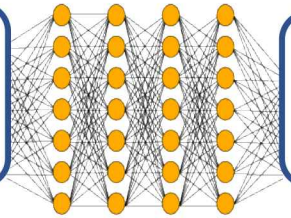
More information can be found at https://www.physik.uzh.ch/groups/serra/

Or learn about it on Youtube

Flavour physics

Recipes to search for new particles

Machine Learning



Particle Physics

Ingredients

- Supervision from experts (try your local institute)
- A pinch of hardware or software (to taste)
- One mature lab for hardware work
- Easy-to-use software packages.

Method

- Mix hardware and software for future experiments.
- Train ingredients until mixture is smooth.
- Leave hardware to cool in the lab here in Zurich.
- Garnish result with presentation
- If recipe followed carefully, expect big impact
- In small experiment

Ingredients

- Unique mixture of physics and machine learning
- Modern machine learning techniques, fresh
- Ready-to-use preprocessed data

Method

- Start from well-established examples
- Re-bake with modern machine learning techniques
- Add real world physics problems to mixture
- Validate recipe using expert palettes
- Roll out the prepared tool for others to enjoy
- Profit

Ingredients

- Supervision from LHCb expert chefs
- Real LHC data (substitute: Monte Carlo simulation)
- Collaboration between experiment and theory
- Develop novel reconstruction as a tasty addition

Method

- Search LHCb supermarket shelf for new physics signals
- Start with the ready-to-use, precooked data
- Sieve using machine learning techniques (optional)
- Analyse data until results solid
- Travel to CERN to present dish to gourmet experts
- Serve while hot