SciPy 소개, Curve Fitting

2023.05.17.

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이제현

SciPy https://scipy.org/

- Fundamental algorithms for scientific computing in Python
  - Optimization
  - Interpolation
  - Algebra
  - Differential Eq.
  - Statistics

- Extends Numpy
  - fundamental package for scientific computing in Python

Search the docs ...

Introduction
Special functions (scipy.special)
Integration (scipy.integrate)
Optimization (scipy.optimize)
Interpolation (scipy.interpolate)
Fourier Transforms (scipy.fft)
Signal Processing (scipy.signal)
Linear Algebra (scipy.linalg)
Sparse eigenvalue problems with ARPACK
Compressed Sparse Graph Routines (scipy.sparse.csgraph)
Spatial data structures and algorithms (scipy.spatial)
Statistics (scipy.stats)
Multidimensional image processing (scipy.ndimage)
File IO (scipy.io)

SciPy User Guide

Previous
Getting started

Next
Introduction

https://docs.scipy.org/doc/scipy/tutorial/index.html

1. 반응속도상수

https://bit.ly/AIEnergy_230517_2

$$v = -\frac{d[A]}{dt} = k[A] \ (k : \text{반응속도상수})$$

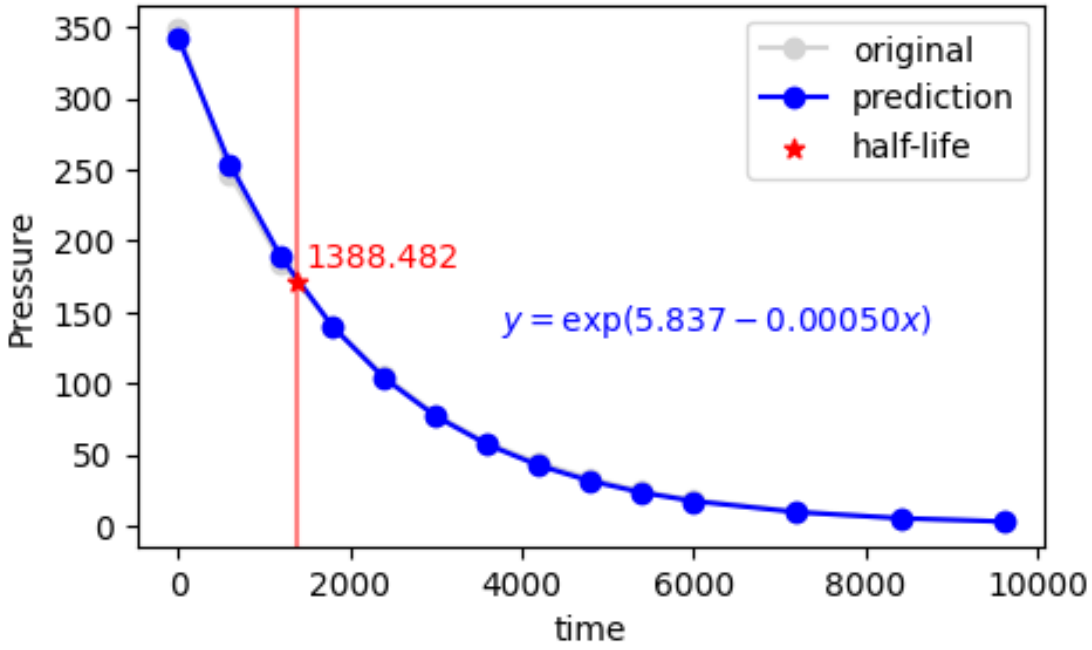
$$[\ln[A]]_{[A]_0}^{[A]_t} = -k[x]_0^t$$

$$\ln[A]_t = \ln[A]_0 - kt$$

$$[A]_t = \exp(\ln[A]_0 - kt) + a$$

예) $2N_2O_5 \rightarrow 4NO_2 + O_2$의 반응에 대하여 다음과 같은 실험 결과를 얻었다. 이 반응이 1차 반응인지를 확인하라.

Time(s)	$P_{N_2O_5}$ (Torr)	Time(s)	$P_{N_2O_5}$ (Torr)
0	348.4	4200	44
600	247	4800	33
1200	185	5400	24
1800	140	6000	18
2400	105	7200	10
3000	78	8400	5
3600	58	9600	3
-	-	∞	0

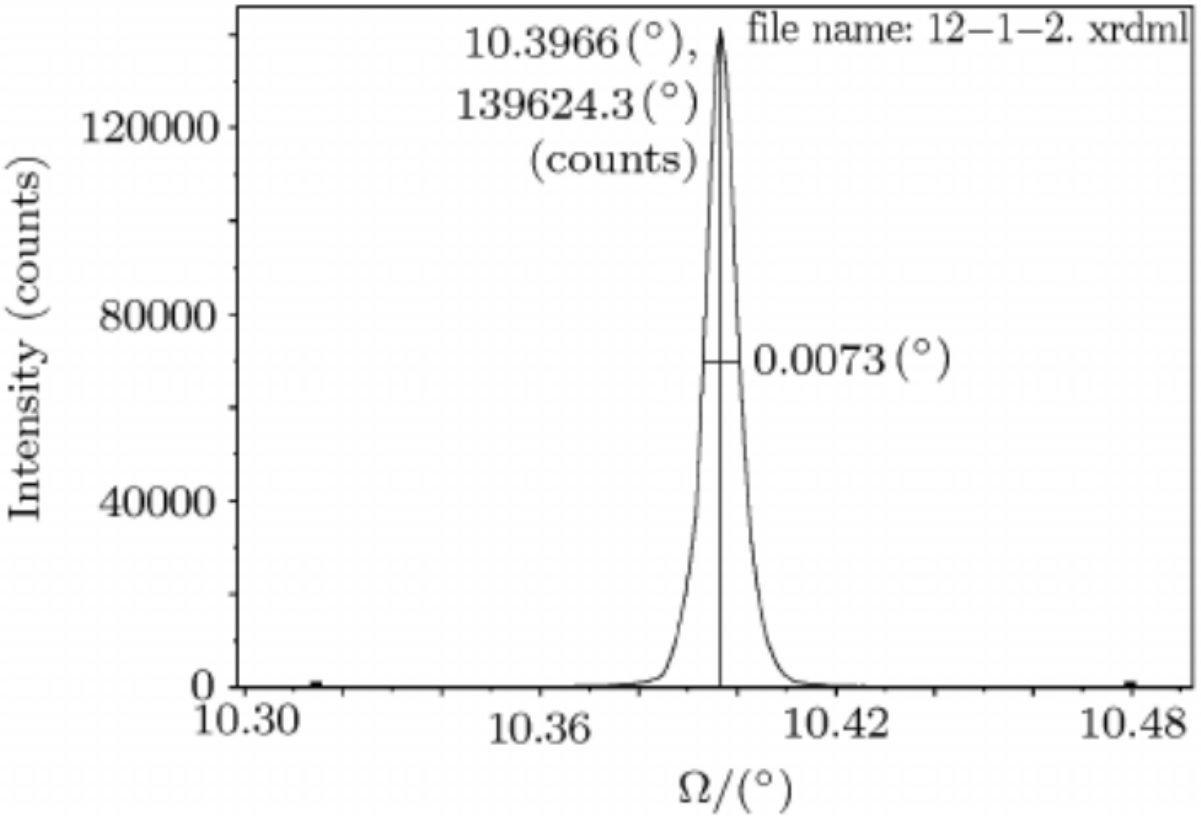


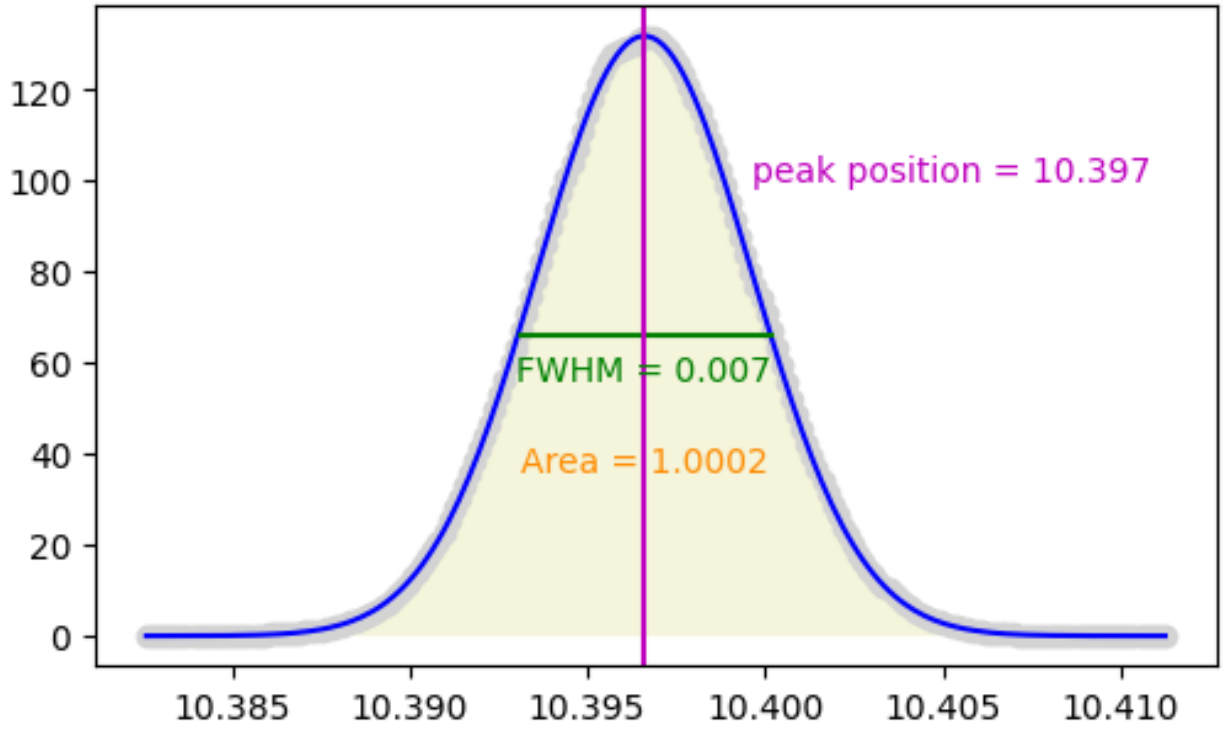
2. Peak Detection

https://bit.ly/AIEnergy_230517_2

$$f(x) = a \cdot \exp(-\frac{-(x-b)^2}{2c^2})$$

$$F = \int_{x_0}^{x_1} a \cdot \exp(-\frac{-(x-b)^2}{2c^2})dx$$





SciPy Conference

SciPy.org Sponsored By Enthought

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About

The annual SciPy Conferences allows participants from academic, commercial, and governmental organizations to:

- showcase their latest Scientific Python projects,
- learn from skilled users and developers, and
- collaborate on code development.

The conferences generally consists of multiple days of tutorials followed by two-three days of presentations, and concludes with 1-2 days developer sprints on projects of interest to the attendees.

Upcoming

SciPy 2023

Austin, TX, July 10-16, 2023

SITE

Archives

Tags

CATEGORIES

EuroSciPy

SciPy

SciPyArgentina

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SciPy 2021 *20th Python in Science Conference - Austin, Texas (July 12 - 18, 2021)*

SciPy 2020 *19th Python in Science Conference - Austin, Texas (July 6 - 12, 2020)*

SciPy 2019 *18th Python in Science Conference - Austin, Texas (July 8 - 14, 2019)*

SciPy 2018 *17th Python in Science Conference - Austin, Texas (July 9 - 15, 2018)*

SciPy 2017 *16th Python in Science Conference - Austin, Texas (July 10 - 16, 2017)*

SciPy 2016 *15th Python in Science Conference - Austin, Texas (July 11 - 17, 2016)*

SciPy 2015 *14th Python in Science Conference - Austin, Texas (July 6 - 12, 2015)*

EuroSciPy 2014 *7th European Conference on Python in Science (EuroSciPy 2014) - Cambridge, UK*

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Tags

CATEGORIES

EuroSciPy

SciPy

SciPyArgentina

SciPy Conference Korea 2023

SciPy Korea 2023

박찬성 (1:00 - 1:40)
ETRI / ML Google Developer Expert
밑바닥에서 하나씩 LLM 챗봇 서빙 개발하기

김태영 (1:40 - 2:20)
AIFactory / Microsoft RD & MVP
대규모 언어모델에 날개를 달아줄 랭체인

이태호 (2:30 - 3:10)
코르카 테크 리드
GPT4를 이용한 당신의 에이전트, EVAL

박조은 (3:10 - 3:50)
오늘코드 / Microsoft MVP
머신러닝을 위한 정형데이터, 사이킷런 쓸까? 판다스 쓸까?

이제현 (4:00 - 4:40)
한국에너지기술연구원 책임연구원/ Microsoft MVP
Back to the Basic: SciPy 활용 연구 데이터 프로세싱

안상선 (4:40 - 5:20)
M-Robo 대표 / 서울사이버대학교 겸임교수
Classification Model의 불균형 데이터세트에 대한 문제점 및 개선

일시 2023년 5월 20일(토) 오후 1시 ~ 오후 6시
장소 마루 180 이벤트홀, 강남구 역삼로 180